

TEACHER[®]S Guide

A perfect fusion of Thai Syllabus and Singapore Maths approach

Textbook Prathomsuksa 4

Based on the Basic Education Curriculum B.E. 2551 (Revised Edition B.E. 2560)

Chapter 1 Numbers

The big idea

- 1. Ask the students to look at the picture carefully.
- 2. Ask them these questions to start a discussion:
 - Have you been to a bee farm?
 - Do you see bees there?
 - Are there many bees?
 - What do the bees produce?
 - Are bees small or big? How big are they?
 - How much honey do you think a bee can produce?
 - Does a bee farm need many, many bees to produce enough honey for sale?



Strand 1: Numbers and algebra

Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/1 Read and write Hindu- Arabic, Thai numerals and numbers in words showing cardinal numbers exceeding 100,000.

M 1.1 Gr4/2 Compare and arrange sequence of cardinal numbers exceeding 100, 000 from various situations.

M1.1 Gr4/7 Reasonably estimate the results of addition, subtraction, multiplication and division from various situations.



Activity for Reinforcement

Help the students to recall by asking them these questions. Get other students to verify the answers.

- How many ones make 1 ten?
- How many tens make 1 hundred?
- How many hundreds make 1 thousand?
- How many thousands make 1 ten thousand?
- How many ten thousands make 1 hundred thousand?

Lesson 1 Counting beyond 100,000

Lesson objectives

By the end of the lesson, the students should be able to:

- Count in millions, hundred thousands, ten thousands, thousands, hundreds, tens and ones.
- 2. Read and write numbers in Hindu-Arabic and Thai numerals and in words.
- 3. Tell the place value of each digit in the numbers.
- 4. Write numbers in expanded form.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Million, hundred thousand

Materials needed

Number discs, paper

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Tell the students that numbers can get so big that they might not able to imagine.
- Guide them to understand millions, ten millions and hundred millions using the number discs, and how they are related to each other.
- 3. Guide them to spell out million.

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- Using the examples, lead them to count the number discs to find the total number represented by the number discs.
- 5. Guide them to read the numbers aloud while pointing to the numerals.
- 6. Get a student to write the numbers in words.
- 7. Repeat with other large numbers.

100,000 10	,000 1,000	0 1,000	100 100	10	1
100,000 10	,000 1,000	0 1,000	100 100	10	1
100,000 10	,000 1,000		100 100	10	1
10	,000 1,000		100	10	1
	1,000		100	10	1
	347,85	55 (nca), c	۲ <i>۵</i> ۲)	100 0	
Three hundre	d and forty-seve	en thousand e	ight hundred a	nd fifty-fi	ve
1,000,000 100	.000 10,000	1,000	100 100	10	1
1,000,000 100	000	1,000	100 100	10	1
100	000	1,000	100 100	10	1
100	000	1,000	100 100		1
		1,000	100		1
m 1111 n	2,415,93	5 (b, ර රේ,	ද්ඝඥී)		
Two million four	hundred and fi	fteen thousan	d nine hundred	and thirt	y-five
10,000,000	1,000,000	100,00	0 100	10	
10,000,000	1,000,000		100	10	5
	1,000,000)	100		
	1,000,000)	<u> </u>		
Twenty-four r	24,100,32 nillion one hund	0 (bc , ooo dred thousand	,ຕ ໂ ສວ) I three hundred	and twee	nty

Extra notes

What are after millions? Ten: 10 (1 zero) Hundred: 100 (2 zeros) Thousand: 1,000 (3 zeros) Ten thousand 10,000 (4 zeros) Hundred thousand 100,000 (5 zeros) Million 1,000,000 (6 zeros) Billion 1,000,000,000 (9 zeros) Trillion 1,000,000,000 (12 zeros) Quadrillion 1,000,000,000,000 (15 zeros)



 $532,\!468\!=\!5$ hundred thousands 3 ten thousands 2 thousands 4 hundreds 6 tens 8 ones

532,468 = 500,000 + 30,000 + 2,000 + 400 + 60 + 8

The digit 5 in 532,468 is in the hundred thousands place. Its value is 500,000. The digit 3 in 532,468 is in the ten thousands place. Its value is 30,000.

The digit 2 in 532,468 is in the thousands place. Its value is 2,000.

The digit 4 in 532,468 is in the hundreds place. Its value is 400.

The digit 6 in 532,468 is in the tens place. Its value is 60.

The digit 8 in 532,468 is in the ones place. Its value is 8.

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Teaching ideas

- 1. Write 532,468 on the board. Ask the students these questions:
 - How many digits are there?
 - How do we read this number?
 - How do we write this number in words?
- 2. Guide them to understand that each digit in the number represents a value depending on its position in the number.
- 3. Draw a place-value chart and guide the students to fill the chart by asking these questions:
 - Where is the digit 5 in the number?
 - What is the place value of the digit 5?

• What is the value of the digit 5? Repeat with other digits in the number.

4. Write the number in expended form.

- 5. Repeat with the example.
- Repeat with other numbers such as 12,845,967 and 234,156,890.
- Guide the students to refer to Starting Point on page 2. Ask them to answer the question. Have a discussion to conclude the lesson.

8,751,349				
Millions (M)	Hundred thousands (HTh)	Ten thousands (TTh)	Thousands (Th)	Hundreds (H)
8	7	5	1	3

 $8{,}751{,}349 = 8$ millions 7 hundred thousands 5 ten thousands 1 thousand 3 hundreds 4 tens 9 ones

Tens

(T)

4

Ones

 $(\mathbf{0})$

9

8,751,349 = 8,000,000 + 700,000 + 50,000 + 1,000 + 300 + 40 + 9

The digit 8 in 8,751,349 is in the millions place. Its value is 8,000,000. The digit 7 in 8,751,349 is in the hundred thousands place. Its value is 700,000. The digit 5 in 8,751,349 is in the ten thousands place. Its value is 50,000. The digit 1 in 8,751,349 is in the thousands place. Its value is 1,000. The digit 3 in 8,751,349 is in the hundreds place. Its value is 300. The digit 4 in 8,751,349 is in the tens place. Its value is 40. The digit 9 in 8,751,349 is in the ones place. Its value is 9.

Fun at Maths!

- 1. Work in pairs.
- 2. Write a number with more than 5 digits on a piece of paper.
- 3. Show it to your partner.
- 4. Your partner will read out the number and say the value of each digit in the number.





Fun with Maths!

Materials required: Paper

Objective of the activity: Reading large numbers and telling the value of each of its digits

Ask the students not to have a number with similar digits.

I. Count. Write in nur	nerals and words.		
1,000,000 100,	000 10,000 10,000	1,000 1,000 100	
1,000,000 100,	000 10,000 0,000	1,000 1,000	
100,	000 10,000	1,000 1,000	10 1
	10,000	1,000	10
Thai numerals:		Hindu-Arabic num	erals:
Words:			
(c) $4,624,382 =$ (d) = 1,0	+ 600,000 + 300,0000 + 300,0000 + 300,0000 + 300,000000 + 300,0000000000	70,000 + 2,000 + 500	0 + 80 + 2 0 + 50 + 4
3. Fill in the blanks.			
3. Fill in the blanks.	7,364,15	9	
3. Fill in the blanks.(a) The digit 7 in 7	7,364,15 ,364,159 is in the	9 place. Its val	uc is
3. Fill in the blanks.(a) The digit 7 in 7(b) The digit 3 in 7	7,364,15 7,364,159 is in the 7,364,159 is in the	9 place. Its val place. Its val	ue is ue is
 3. Fill in the blanks. (a) The digit 7 in 7 (b) The digit 3 in 7 (c) The digit 6 in 7 	7,364,159 is in the ,364,159 is in the ,364,159 is in the ,364,159 is in the	9 place. Its val place. Its val place. Its val	ue is ue is ue is
 3. Fill in the blanks. (a) The digit 7 in 7 (b) The digit 3 in 7 (c) The digit 6 in 7 (d) The digit 4 in 7 	7,364,159 is in the 3,364,159 is in the 3,364,159 is in the 3,364,159 is in the 3,364,159 is in the	9 place. Its val place. Its val place. Its val	ue is . ue is . ue is . ue is .
 3. Fill in the blanks. (a) The digit 7 in 7 (b) The digit 3 in 7 (c) The digit 6 in 7 (d) The digit 4 in 7 (e) The digit 1 in 7 	7,364,159 is in the ,364,159 is in the	9 place. Its val place. Its val place. Its val place. Its val place. Its val	ue is ue is ue is ue is
 3. Fill in the blanks. (a) The digit 7 in 7 (b) The digit 3 in 7 (c) The digit 6 in 7 (d) The digit 4 in 7 (e) The digit 1 in 7 (f) The digit 5 in 7 	7,364,159 is in the ,364,159 is in the	9 place. Its val place. Its val place. Its val place. Its val place. Its val place. Its val	uc is, ue is, uc is, uc is, ue is, ue is,

Try This!

Get 12 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 1 to 4 in Go Get Maths Workbook P4.

Lesson 2 Comparing and ordering numbers

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Compare numbers beyond 100,000.
- 2. Order numbers beyond 100,000.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- 1. Tell the students that when comparing numbers, it is better to use the place-value charts.
- 2. Ask the students in which place value they should compare the digits first.
- Highlight to them that they must always compare the digits in the greatest place value first.
- Write 234,770 and 243,859 on the board. Get a student to draw and fill up the place-value charts. Get another student to give statements comparing the numbers. Repeat with other numbers.







- 5. Repeat with the example.
- Write 3,459,130 and 3,459,136 on the board. Get a student to draw and fill up the place-value charts. Get another student to give statements comparing the numbers. Repeat with other numbers.
- 7. Tell the students that we can use a number line to compare the numbers too.
- Guide them to use the number lines to compare the numbers. Use the example given.
- Write 2,580,550 and 2,517,550 on the board. Draw a number line starting with 2,510,000 to 2,590,000 at intervals of 10,000. Get two students to mark 2,580,550 and 2,517,550 on the number line. Then, get another student to make statements comparing them on the number line.

- Write three numbers with more than 5 digits each on the board with their empty place-value charts.
 - Invite 3 students to fill up the chart.
 - Invite another 3 students to compare the numbers. Ask them to explain how they compare using the chart.
 - Ask another 2 students to tell the greatest number and the smallest number among the 3 numbers.
 - Guide them to arrange the numbers from the smallest to the greatest and also from the greatest to the smallest.
- 2. Repeat with 3 numbers more than 5 digits each.
- Advise the students to be cautious when ordering numbers, not to order wrongly.
- 4. Use the example to explain how to compare 4 numbers.
- 5. Repeat with 4 numbers more than 5 digits each.

Learning to know Ordering numbers

Arrange 678,048, 785,888, 674,874 and 40,658 starting with the smallest number.

		HTh	TTh	Th	н	Т	0
678,048	-	6	7	8	0	4	8
785,888	+	7	8	5	8	8	8
674,874	+	6	7	4	8	7	4
40,658	•		4	0	6	5	8

Compare the number of digits. 40,658 has only 5 digits and the rest have 6 digits. So, 40,658 is the smallest.

Compare the hundred thousands of 678,048, 785,888 and 674,874. 7 is greater than 6. So, 785,888 is the greatest.

Compare the hundred thousands and ten thousands of 678,048 and 674,874. They are the same.

Compare the thousands of 678,048 and 674,874. 8 is greater than 4. So, 678,048 is greater than 674,874.



Arrange 2,431,410,	6,474,333,	427,041,	427,654	and	2,774,210	starting	with the
greatest number.							

		Μ	HTh	TTh	Th	Н	Т	0
2,431,410	⇒	2	4	3	1	4	1	0
6,474,333	⇒	6	4	7	4	3	3	3
427,041	⇒		4	2	7	0	4	1
427,654	⇒		4	2	7	6	5	4
2,774,210	⇒	2	7	7	4	2	1	0

Compare the number of digits.

427,041 and 427,654 have 6 digits while the rest have 7 digits. So, 427,041 and 427,654 are smaller than the rest.

Compare the hundred thousands, ten thousands and thousands of 427,041 and 427,654. They are the same.

Compare the hundreds of 427,041 and 427,654. 0 is smaller than 6. 427,041 is the smallest.

Compare the millions of 2,431,410, 6,474,333 and 2,774,210. 6 is greater than 2. So, 6,474,333 is the greatest.

Compare the hundred thousands of 2,431,410 and 2,774,210. 4 is smaller than 7. So, 2,431,410 is smaller than 2,774,210.

6,474,333 2,774,210 2,431,410 427,654 427,041 greatest smallest

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- Write five numbers with more than 5 digits each on the board with their empty place-value charts.
 - Invite 5 students to fill up the chart.
 - Invite another 5 students to compare the numbers. Ask them to explain how they compare using the chart.
 - Ask another 2 students to tell the greatest number and the smallest number among the 5 numbers.
 - Guide them to arrange the numbers from the smallest to the greatest and also from the greatest to the smallest.
- 7. Use the example to explain further.
- 8. Repeat with other numbers.

- 9. Tell the students that we can compare and order numbers using a number line.
- 10. Use the example to explain further.
- 11. Get a few students to use the placevalue charts to check the answer.
- 12. Write 1,345,780, 1,360,556, 1,358,900, 1,375,500, 1,378,200 on the board. Draw a number line starting with 1,340,000 to 1,380,000 at intervals of 10,000. Get two students to mark the numbers on the number line. Then, get another student to make statements comparing them on the number line.
- Guide the students to refer to Starting Point on page 6. Ask them to answer the question. Have a discussion to conclude the lesson.

958,000	1,004,000	990,000	966,000	972,000
958,00	0 972,000	⊧ + + + + + + + + + + + + + + + + + +	1,004,000	D + + + + - >
	966,000	990,000		
1,004,000 greates	0 990,000 t	972,000 9	66,000 95	8,000 nallest
TRY THIS!				
1. Fill in the blank	cs with $<$ or $>$.			
(a) 578,287 (c) 6,148,017	9,184,711	(b) 5,7 (d) 15	,141,176	5,714,433
2. Arrange these r 5,743,014	5,734,014	vith the smalles	7,876,258	7,876,267
 Mark these nur greatest numbe 	nbers on the num r.	ber line. Then,	arrange them	starting with the
247,000	225,000	241,000	230,000	228,000
a				
	230,000	240,00	0 25	50,000

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 5 to 8 in Go Get Maths Workbook P4.



Extra notes

Usually in mathematics, we work to get accurate answers. However, in some situations, estimation gives a quick and almost realistic answer. Estimation saves time. We can achieve a better picture of things in a simpler way with estimation.

Lesson 3 Estimation

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Estimate to the nearest ten, hundred and more.
- 2. Use \approx as the symbol of estimation.
- 3. Use estimation in daily life.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Estimation, rounded to

Materials needed

-

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- Tell the students that we can round a number to the nearest ten. This means we need to find which ten it is nearest to.
- 2. For the first example, to round 22 to the nearest ten, ask them 'What is the tens before and after 22?'
- Guide them to draw a number line from 20 to 30. Ask them to mark 22 on the line. Ask them which ten is nearer to 22.
- 4. Guide them to realize that 22 is 20 when rounded to the nearest ten.
- Inform them that ≈ is the sign used to show that values have been rounded.
- 6. Repeat with 29.

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- 7. Guide the students to round 45 to the nearest ten. Tell them that 45 is exactly halfway between 40 and 50. For this, we always round up to 50. So, that 45 is 50 when rounded to the nearest ten
- Based on the few examples, ask the students to conclude how to round a number to the nearest ten. Use that conclusion to check rounding 476 and 5,544 to the nearest ten. Refer to the example shown.



Activity for Reinforcement

The students need to practice more in order to round the numbers to the nearest ten correctly. Get a few students to round these numbers to the nearest ten. Get others to verify the answers.

43	75	186	468
2,452	4,795	6,737	26,111



Activity for Reinforcement

The students need to practice more in order to round the numbers to the nearest hundred correctly. Get a few students to round these numbers to the nearest hundred. Get others to verify the answers.

482	750	546	4,759
3,289	5,410	17,845	45,524

- Tell the students that we can round a number to the nearest hundred. This means we need to find which hundred it is nearest to.
- 2. For the first example to round 755 to the nearest hundred, ask them 'What is the hundreds before and after 755?'
- Guide them to draw a number line from 700 to 800. Ask them to mark 755 on the line. Ask them which hundred is nearer to 755.
- 4. Guide them to realize that 755 is 800 when rounded to the nearest hundred.
- 5. Repeat with 9,150 and 14,315.
- Based on these few examples, ask the students to conclude how to round a number to the nearest hundred. Use that conclusion to round 348, 3,550 and 18,728 to the nearest hundred.

- Tell the students that we can round a number to the nearest thousand, ten thousand and even hundred thousand.
- 2. Use the examples to explain further.



Activity for Reinforcement

The students need to practice more in order to round the numbers correctly. Get a few students to round these numbers. Get others to verify the answers.

- 5,682 (to the nearest thousand)
- 458,876 (to the nearest ten thousand)
- 145,789 (to the nearest hundred thousand)
- 934,610 (to the nearest thousand)
- 743,123 (to the nearest ten thousand)
- 347,924 (to the nearest hundred thousand)





So, when 245,565 is rounded to the nearest ten thousand, we get 250,000. $245.565 \approx 250.000$





2. 2,750 (to the nearest hundred)

4. 1,578,147 (to the nearest ten thousand)

So, when 3,786,820 is rounded to the nearest hundred, we get 3,786,800. 3,786,820 \approx 3,786,800

TRY THIS! Round these numbers.

1. 478 (to the nearest ten)

3. 14,041 (to the nearest thousand)

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Teaching ideas

- 3. Ask the students to read the general rules of rounding numbers. Then, read with them and explain in detail.
- 4. Use the examples to guide the students to identify the rounding digits and to explain further.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 9 to 11 in Go Get Maths Workbook P4.

- 1. Ask the students if they know how to use estimation.
- Estimation should be reasonable. For example, if the capacity of a pail is 5 *l*, then the estimation of the volume of water in it cannot be more than 5 *l*.
- Use the examples to show how we can use estimation to check if our answers of addition and subtraction are reasonable.



Activity for Reinforcement

Use the following examples to show how estimation is used in our daily life.

- Mother wants to make sure she has enough flour to make 18 cakes if each cake needs 375 g of flour.
- 2. You want to check your answers by seeing if your estimation is close to your answers.
- 3. The mechanic estimates the cost to repair a damaged car by looking at it.

Ask the students to give examples of how they might have used estimation in their life.

Mike gave the cashier 10,000 Baht for his purchase of 2,587 Baht. Estimate his change. Check if your estimation is reasonable.

2,587 ≈ 3,000 $10,\!000-2,\!587\approx 10,\!000-3,\!000$ ≈ 7,000

The change is about 7,000 Baht. 10,000 - 2,587 = 7,4137,000 is close to 7,413. So, the estimation is reasonable.

Learning to know Estimating products and quotients

Multiply 87 by 27. Estimate to check if the answer is reasonable.

 $87 \times 27 = 2,349$

 $87 \approx 90$ $27 \approx 30$ $87 \times 27 \approx 90 \times 30$ ≈ 2.700

2,349 is close to 2,700. So, the answer is reasonable.

Kelly bought 34 kg of flour. Each kg of flour cost 52 Baht. Estimate the amount she paid for the flour. Check if your estimation is reasonable.

 $34 \approx 30$ $52 \approx 50$ $34\times52\approx30\times50$ ≈ 1,500

She spent about 1,500 Baht on the flour. $34 \times 52 = 1,768$ 1,500 is close to 1,768. So, the estimation is reasonable.

Teaching ideas

4. Tell the students that they can have a quick guess if the change they receive is correct by estimating the balance. This is very useful.

- 1. Tell the students that we can use estimation for multiplication and division too.
- 2. Use the examples to show how we can use estimation to check if our answers of multiplication and division are reasonable.

- 3. Use the examples to explain further.
- Guide the students to refer to Starting Point on page 12. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 12 and 13 in Go Get Maths Workbook P4. Divide 5,913 by 9. Estimate to check if the answer is reasonable. $5,913 \div 9 = 657$ 5,913 ≈ 6,000 $9 \approx 10$ $5,913 \div 9 \approx 6,000 \div 10$ ≈ 600 657 is close to 600. So, the answer is reasonable. 21,232 g of rice are packed into 8 bags. Estimate the mass of each bag. Check if your estimate is reasonable. Gues (max) 603 603 600 600 Geres) 21,232 ≈ 21,000 $8 \approx 10$ $21,232 \div 8 \approx 21,000 \div 10$ ≈ 2,100 The mass of each bag is estimated to be 2,100 g.

TRY THIS! Find the answers. Check if your answers are reasonable.

 $21,232 \div 8 = 2,654$

2,100 is close to 2,654. So, the estimation is reasonable.

22,780 + 67,127
 72,578 - 69,500

3. 79 × 88 **4.** 9,243 + 9





Chapter 2 Addition and subtraction

The big idea

- 1. Help the students to recall how to add and subtract. Here is an example:
 - a. Write '236,702 + 588,342' on the board.
 - b. Invite a volunteer to give the answer and explain how he gets the answer.
 - c. Get another student to verify.Repeat with other addition and subtraction questions.
- 2. Ask the students to look at the picture carefully. Ask them these questions to start a discussion:
 - How many visitors visited the temple last month?
 - How many visitors visited the temple this month?
 - How many visitors visited the temple in the 2 months in total?
 - How many more visitors visited the temple this month than last month?

Strand 1: Numbers and Algebra

Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/8 Find the unknown numbers in addition and subtraction equations of cardinal numbers exceeding 100,000 and 0.

Lesson 1 Addition

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Add two numbers with more than 5 digits without regrouping.
- 2. Add two numbers with more than 5 digits with regrouping.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- 1. Write 345,145 + 310,731 vertically on the board.
- Guide them to add the ones, followed by the tens, hundreds, thousands, ten thousands and hundred thousands. Ask them for the answer of the addition.
- 3. Tell them that the alignment of the numbers based on the place value of each digit is important.
- At this stage, the students should not be depending on number discs for understanding. However, the number discs can still be used to assist them if really needed.
- 5. Use the example to explain further.
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Activity for Reinforcement

The students need to practice more in order to add correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.

> 239,361 + 250,615 = 734,902 + 142,076 = 531,624 + 227,243 = 2,123,262 + 1,663,125 =

Teaching ideas

- 6. Use the example to explain further.
- 7. Guide them to check if the answers are reasonable by estimation.

- 1. Write 283,678 + 178,669 vertically on the board.
- Guide them to add the ones, followed by the tens, hundreds, thousands, ten thousands and hundred thousands. Ask them to regroup when needed.
- Reiterate that the alignment of the numbers based on the place value of each digit is important.
- At this stage, the students should not be depending on number discs for understanding. However, the number discs can still be used to assist them if really needed.
- 5. Use the example to explain further.



- 6. Use the example to explain further.
- 7. Guide them to check if the answers are reasonable by estimation.
- Guide the students to refer to Starting Point on page 21. Ask them to answer the questions. Have a discussion to conclude the lesson.



Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 14 to 17 in Go Get Maths Workbook P4.

Activity for Reinforcement

The students need to practice more in order to add correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.





Lesson 2 Subtraction

Lesson objectives

By the end of the lesson, the students should be able to:

- Subtract a number with more than 5 digits from a number with more than 5 digits without regrouping.
- Subtract a number with more than 5 digits from a number with more than 5 digits with regrouping.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

-

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- 1. Write 367,839 164,704 vertically on the board.
- Guide them to subtract the ones, followed by the tens, hundreds, thousands, ten thousands and hundred thousands. Ask them for the answer of the subtraction.
- Reiterate that the alignment of the numbers based on the place value of each digit is important.
- 4. Use the example to explain further.

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- 5. Use the example to explain further.
- 6. Guide them to check if the answers are reasonable by estimation.

Teaching ideas

- 1. Write 457,923 183,748 vertically on the board.
- Guide them to subtract the ones, followed by the tens, hundreds, thousands, ten thousands and hundred thousands. Ask them to regroup when needed.
- Reiterate that the alignment of the numbers based on the place value of each digit is important.
- At this stage, the students should not be depending on number discs for understanding. However, the number discs can still be used to assist them if really needed.
- 5. Use the example to explain further.





Activity for Reinforcement

The students need to practice more in order to subtract correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.





Activity for Reinforcement

The students need to practice more in order to subtract correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.

> 420,274 - 174,956 = _____ 3,546,231 - 1,364,784 = _____ 524,520 - 288,580 = _____ 1,253,853 - 975,736 = _____

Teaching ideas

- 6. Use the example to explain further.
- 7. Guide them to check if the answers are reasonable by estimation.
- Guide the students to refer to Starting Point on page 24. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 18 to 21 in Go Get Maths Workbook P4.



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Lesson 3 Finding the unknowns

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Find the unknowns in addition.
- 2. Find the unknowns in subtraction.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

-

Materials needed

-

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Help the students to recall the relationships between the numbers in a fact family using the example.
- 2. Then, draw a bar model and ask some students to list all the addition and subtraction equations based on it.
- 3. Use the examples to guide the students to find the unknowns in addition.



Activity for Reinforcement

Get a few students to write these questions on the board. Then, get others to find the unknowns. Ask them to explain their answers. Invite a few to verify the answers.



- 1. Use the examples to guide the students to find the unknowns in subtraction.
- Guide the students to refer to Starting Point on page 27. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 22 and 23 in Go Get Maths Workbook P4.

Activity for Reinforcement

Get a few students to write these questions on the board. Then, get others to find the unknowns. Ask them to explain their answers. Invite a few to verify the answers.

13,849 -	= 4,129
- 34,210	= 9,239
123,424 -	= 72,123
- 73,718	= 4,562

Lesson 4 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Solve word problems beyond 100,000.
- 2. Create word problems.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

machines can print in a week? Learning to know Solving word problems involving addition Mr. Lim managed to save 152,780 Baht. His wife managed to save 278,590 Baht. How much money did both of them manage to save? 152780 278590 431370 152 780 278 590 152,780 + 278,590 = 431,370

Word problems

Machine A can print 153,789 stamps in a week.

Machine B can print 102,089 stamps in a week. How do we find the total number of stamps the



Both of them managed to save 431,370 Baht.

Lesson 4

Starting point

A factory produced 3,457,478 surgical masks in March. In April, it produced 1,089,722 more masks than in March. How many masks did it produce in April?





Teaching ideas

Starting point

1. Introduce the 3 simple steps to solve a word problem.

question. Ask them if they know the answer

Step 1: Understand the problem

Help the students to understand the

and what they will learn today.

- Ask the students to read the number story and the question silently. Then, read them together with the students. Explain further the number story and the question if the students do not understand.
- Ask the students these questions to • ensure they understand:
 - a. What information is given?
 - b. What do you need to find?
 - c. Are you comparing the items?

Learning to know Solv

Solving word problems involving subtraction

6,569,263 people were living in this city. 3,547,751 were males. How many females were living in this city?



Music video A is viewed 1,257,456 times online. Music video B is viewed 374,789 fewer times online than music video A. How many times is music video B viewed online?



Teaching ideas

Step 2: Plan and execute

- Ask the students to draw the suitable bar model including the knowns and unknowns.
- Ask them to find the keyword in the problem that indicates the operation whether to add or to subtract.
- Analyze the bar model drawn.
- Then, write the number equation and solve it.

Step 3: Check the answer

- Always ask the students to check their answer. They need to check if the answer makes sense and is reasonable.
- 2. Work with them the 3 steps in solving the word problems. Ask them to always check their answers.

Teaching ideas

1. Repeat with the word problems involving subtraction.

- 1. Write 678,740 + 478,247 = 1,156,987 on the board.
- 2. Guide them to create a word problem based on the equation. Use the example to explain further.
- Invite some students to create other word problems based on the same equation.
- 4. Repeat the same for the subtraction equation.
- Guide the students to refer to Starting Point on page 29. Ask them to answer the question. Have a discussion to conclude the lesson.





Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 24 to 28 in Go Get Maths Workbook P4.

Chapter 3 Multiplication and division

The big idea

Ask the students to look at the picture and read the speech bubble carefully. Ask them these questions to start a discussion:

- 1. How much does the tour package cost for 1 person?
- 2. How much does the tour package cost for 2 persons?
- 3. How much does the tour package cost for 3 persons?
- 4. How much does the tour package cost for 4 persons?
- 5. How did you find the answers? Did you add them up?



Strand 1: Numbers and Algebra

Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/9 Find the unknown numbers in multiplication equations of many digits numbers of 2 numbers, and the product is not more than 6-digit numbers. And find the unknown numbers in division equations that dividend is not more than 6 digits and divisor is not more than 2 digits.



Lesson 1 Multiplication

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Multiply a number with many digits by a 1-digit number.
- 2. Multiply a number by 10, 20,... and their multiples.
- 3. Multiply a number with many digits by a 2-digit number.
- 4. Multiply a number with many digits by a 3-digit number.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed Number discs

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Help the students to recall the multiplication tables by asking them to recite the tables.
- 2. Write 45,478 x 3 vertically on the board.
- Guide the students to multiply the ones first, then follow by tens, hundreds, thousands, and ten thousand.
- 4. Tell them to group when necessary.

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- 5. Use the next examples to further explain.
- 6. Guide them to write the numbers vertically.
- 7. Reiterate that the alignment of the numbers based on the place value of each digit is important.
- Tell them to always multiply the ones first before multiplying the tens, hundreds, thousands, ten thousands and hundred thousands.
- 9. Guide them to use estimation to check if the answers are reasonable.



When we are using estimation to check if our answers are reasonable, it does not tell us if the answers are correct. It helps to check the accuracy of our answers and tells us that our answers are most probably right.





Activity for Reinforcement

The students need to practice more in order to multiply correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.




 Using the number discs, guide them to multiply 2 by 10, 2 by 100 and 2 by 1,000. Help them to realize the pattern in the answers.

2 x 1 = 2	
2 x 1 <mark>0</mark> = 20	
2 x 100 = 200	
2 x 1,000 = 2,000	

- 2. Tell the students that to multiply a number by 10, 100 or 1,000, we need to:
 - Multiply the non-zero part of the numbers.
 - Count the zeros in the 10, 100 or 1,000.
 - Add the same number of zeros to the product.
- Repeat with multiplication of 11 by 10, 120 by 100 and 21 by 1,000. Help them to realize the pattern in the answers.



4. Repeat with multiplication of 24 x 20, 107 by 400 and 44 by 6,000. Help them to realize the pattern in the answers.

24 x 20 = 480 107 x 400 = 42,800 44 x 6,000 = 264,000

- 5. Tell the students that to multiply a number by a multiple of 10, 100 or 1,000, we need to:
 - Multiply the non-zero part of the numbers.
 - Count the zeros in the multiple of 10.
 - Add the same number of zeros to the product.

Teaching ideas

- 1. Write 785 x 18 vertically on the board.
- Show them the steps to multiply. Guide them to multiply 785 by 8 and multiply 785 by 10, before adding the products together.
- 3. Guide them to realize that when multiplying a number by a 2-digit number, they are actually finding the sum of the product of the number by the ones of the 2-digit, and the product of the number by the tens of the 2-digit number.
- 4. Reiterate that the alignment of the numbers based on the place value of each digit is important.
- 5. Ask them to always check if the answer is reasonable.



Activity for Reinforcement

The students need to practice more in order to multiply correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



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Activity for Reinforcement

The students need to practice more in order to multiply correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



Teaching ideas

- 6. Use the examples to explain further.
- 7. Reiterate that the alignment of the numbers based on the place value of each digit is important.
- 8. Ask them to always check if the answer is reasonable.



- 1. Write 358 x 147 vertically on the board.
- 2. Show them the steps to multiply. Guide them to multiply 358 by 7, multiply 358 by 40 and multiply 358 by 100, before adding all the products together.
- 3. Guide them to realize that when multiplying a number by a 3-digit number, they are actually finding the sum of the product of the number by the ones of the 3-digit, the product of the number by the tens of the 3-digit number and the product of the number by the hundreds of the 3-digit number.
- 4. Reiterate that the alignment of the numbers based on the place value of each digit is important.
- 5. Ask them to always check if the answer is reasonable.

- 6. Use the examples to explain further.
- Reiterate that the alignment of the numbers based on the place value of each digit is important.
- 8. Ask them to always check if the answer is reasonable.
- Guide the students to refer to Starting Point on page 34. Ask them to answer the question. Have a discussion to conclude the lesson.



Activity for Reinforcement

The students need to practice more in order to multiply correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



				ς.,
-	n v	T	1 a 1	
	16 T	1.81	1 A - I	

(a) $2 3 8 2 0 1 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\$	(b) <u>2 5 3 8 8</u> <u>7</u>
(c) $3 3 4 1 \times \frac{4 7}{4 7}$	(d) $1 \ 8 \ 2 \ 7 \ 4 \ 2 \ 5 \ \times$
(c) $4 \ 0 \ 2 \ 7 \\ 2 \ 4 \ 3 \\ \times$	$ \underbrace{ \begin{pmatrix} (1) \\ & 1 & 6 & 7 & 1 \\ & & 5 & 1 & 7 \\ \hline \end{array} \times $
Fill in the blanks. (a) $347 \times 10 =$	(b) 1,654 × 70 =
(e) $1,687 \times 212 =$	(i) $2,3/4 \times 23 =$ (f) $5,341 \times 174 =$

Try This!

Get 12 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 29 to 34 in Go Get Maths Workbook P4.

Lesson 2 Division

Lesson objectives

By the end of the lesson, the students should be able to:

- Divide a dividend not more than 6 digits by a 1-digit divisor.
- 2. Divide by 10, 100 and 1,000, and their multiples.
- 3. Divide a dividend not more than 6 digits by a 2-digit divisor.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed Number discs

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- Help the students to recall which are the dividend, divisor and quotient in a division equation.
- 2. Write 14,255 ÷ 5 on the board in the long division method.
- Guide the students to divide step by step starting with the ten thousands, followed by the thousands, hundreds, tens and lastly ones.
- 4. Ask the students to regroup when needed.
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Activity for Reinforcement

The students need to practice more in order to divide correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



Teaching ideas

- 5. Ask the students to check their answer.
- 6. Use the example to explain further.
- 7. Ask the students to always check their answers by multiplying their answers with the divisor.

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- 1. Using the number discs, guide the students to divide 30 by 10, 300 by 100 and 3,000 by 1,000.
- 2. Ask them if they notice the pattern.

- 3. Here, we can cancel the same number of zeroes from the dividend and the divisor.
- Using the number discs, guide the students to divide 210 by 10, 1,100 by 100 and 12,000 by 1,000.
- 5. Ask them if they notice the pattern.

210 ÷ 10 = 21 1,100 ÷ 100 = 11 12,00 ÷ 1,000 = 12

6. Here, we can also cancel the same number of zeroes from the dividend and the divisor.





Activity for Reinforcement

The students need to practice more in order to divide correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



Teaching ideas

- Ask them to always take note of both the dividend and divisor ending with zeros.
- 8. Use the examples to explain.

- Dividing a dividend by a 2-digit number is similar to dividing a dividend by a 1-digit number.
- 2. Write 421 ÷ 13 on the board using the long division method.
- 3. Guide them to divide step by step.
- 4. Ask the students to use estimation to help. For instance, for 40 tens ÷ 13,
 - 13 is close to 10.
 - So, 40 tens \div 10 = 4 tens.
 - However, 4 tens x 13 = 52 tens which is greater than 42 tens.
 - So, we need to use 3 tens instead of 4 tens.
 - 3 tens x 13 = 39 tens
- 5. Remind the students to always check the answers.



- 6. Use the examples to explain further.
- Guide the students to refer to Starting Point on page 41. Ask them to answer the question. Have a discussion to conclude the lesson.



Activity for Reinforcement

The students need to practice more in order to divide correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



TRY THIS!

1. Divide. Show your workings.

(a) $3\overline{)60714}$	(b) 7) 6 5 0 2 7 4
(c) 14) 5 7 3	(d) 34)1258
(e) 26) 5 4 0 2 3	(f) 61)3 4 8 7 3 7
Fill in the blanks. (a) 340 + 10	(b) 470.000 ÷ 100 =

Try This!

Get 10 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 35 to 40 in Go Get Maths Workbook P4.

Lesson 3 Finding the unknowns

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Find the unknowns in multiplication.
- 2. Find the unknowns in division.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

-

Materials needed



Lesson 3 Finding the unknowns

There are 122 lemons in each basket. There are 4

How do we find the total number of lemons in

We can use a bar model to represent this information.

2,671

Learning to know Finding the unknowns in multiplication

2,671

There are 4 boxes. Each box has 2,671 marbles. There are 10,684 marbles altogether.

10,684 marbles

2,671

2,671

Starting point

all the baskets?

baskets.

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Help the students to recall the relationships between the numbers in a fact family of multiplication and division using the example.
- Then, draw a bar model for multiplication and ask some students to list all the multiplication and division equations based on it.
- Use the example to guide the students to find the unknowns in multiplication based on the fact family.

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Activity for Reinforcement

Get a few students to write these questions on the board. Then, get others to find the unknowns. Ask them to explain their answers. Invite a few to verify the answers.





Activity for Reinforcement

Get a few students to write these questions on the board. Then, get others to find the unknowns. Ask them to explain their answers. Invite a few to verify the answers.

$$\begin{array}{c} 4,366 \div \boxed{} = 74 \\ \boxed{} \div 85 = 259 \\ 152,019 \div \boxed{} = 63 \\ \boxed{} \div 8 = 1,534 \end{array}$$

Teaching ideas

4. Use the example to explain further.

Teaching ideas

- Use the examples to guide the students to find the unknowns in division based on the fact family.
- Guide the students to refer to Starting Point on page 47. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 41 to 43 in Go Get Maths Workbook P4.

Lesson 4 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Solve word problems involving division.
- 2. Create word problems.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

 Introduce the 3 simple steps to solve a word problem.

Step 1: Understand the problem

- Ask the students to read the number story and the question silently. Then, read them together with the students. Explain further the number story and the question if the students do not understand.
- Ask the students these questions to ensure they understand:
 - a. What information is given?
 - b. What do you need to find?
 - c. Are you comparing the items?





21,670 × 8 = 173,360 Kasem managed to save 173,360 Baht.

The factory makes 17,540 kg of noodles a week. How much noodles does the factory make in 14 weeks?



 $17,540 \times 14 = 245,560$ The factory makes 245,560 kg of noodles in 14 weeks.





The factory makes 26,478 mini buns. 32 mini buns are packed into a small bag. How many bags are needed to pack all the mini buns? Will there be any buns left?



827 bags are needed. There will be 14 buns left.

A factory distributes 267 boxes of erasers to some shops. Each box contains 150 erasers. How many erasers are distributed to the shops?



Teaching ideas

Step 2: Plan and execute

- Ask the students to draw the suitable • bar model including the knowns and unknowns.
- Ask them to find the keyword in the • problem that indicates the operation whether to add, subtract, multiply or divide.
- Analyze the bar model drawn.
- Then, write the number equation and solve it.

Step 3: Check the answer

- Always ask the students to check • their answer. They need to check if the answer makes sense and is reasonable.
- 2. Work with them the 3 steps in solving the word problems.

- 1. Write 650 x 340 = 221,000 on the board.
- 2. Guide them to create a word problem based on the equation. Use the example to explain further.
- 3. Invite some students to create other word problems based on the same equation.
- Repeat the same to guide the students to create a division word problem based on the example.
- Guide the students to refer to Starting Point on page 49. Ask them to answer the question. Have a discussion to conclude the lesson.

	lication word problem based on the equation below.
	650 × 340 = 221,000
 Understand There and 	the equation. re 650 groups of things. Each group has 340 things.
Section Section Secti	ame of a thing to tell the amount the number represents. res, 340 pen drives
 Lastly, writ How ma 	e a multiplication question for the things. any pen drives are there altogether?
Ansv	There are 650 boxes of pen drives. There are 340 pen drives in each box. How many pen drives are there altogether?
Create a divisio	m word problem based on the equation below. $23,400 \div 65 = 360$ I the equation.
A There a	e 23,400 things. There are 65 groups of things. ame of a thing to tell the amount the number represents.
S Write the n	lowering pots, 65 weeks
 Write the n 23,400 f Lastly, write How mathematical 	e a division question for the things. any flowering pots are made in a week?



Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 44 to 47 in Go Get Maths Workbook P4.

Lesson 5 Number patterns

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Make number patterns.
- 2. Find missing numbers in number patterns.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- Inform the students that in any number patterns, the numbers might be multiplied or divided by a fixed number.
- Based on the given number pattern, ask them these questions to start the discussion:
 - Are the numbers increasing or decreasing? How do you know?
 - Is the difference between any two consecutive numbers the same?







- When the numbers are not increasing with a fixed number, they might be multiplied by a fixed number.
- 4. Guide the students to find the fixed number.
- 5. Repeat with other examples so that the students understand more.

- 6. Ask the students to analyze the given number pattern.
 - Are the numbers increasing or decreasing?
 - Are the differences between any consecutive number the same?
- When the numbers are not decreasing with a fixed number, they might be divided by a fixed number.
- 8. Guide the students to find the fixed number.
- 9. Repeat with other examples so that the students understand more.





Each number is obtained by dividing the previous number by 2.





- 10. Guide the students to make a number pattern which increases by multiplication of 8 starting with 7. Write 7 on the board. Ask them these questions to start the discussion:
 - What does a number pattern which increases by multiplication of 8 mean?
 - How do we find the second number? Should we add, subtract, multiply or divide?
 - How do we find the third number? Should we multiply the second number by 8?
- Use the example to explain further on making a number pattern that decreases by division of 7, starting with 285,719.

- Tell the students that they need to find the missing numbers in a number pattern.
- 2. Here are some steps to do so:
 - Identify if the numbers are increasing or decreasing.
 - Find if the differences between any 2 consecutive numbers are the same.
 - If the number pattern is increasing and the differences between any 2 consecutive numbers are not the same, try multiplication to find out the fixed number that is multiplied with each number to get the next number in the number sequence.
 - If the number pattern is decreasing and the differences between any 2 consecutive numbers are not the same, try division to find out the fixed number that each number is divided by to get the next number in the number sequence.
 - To find the missing number, multiply or divide the previous number by the fixed number.
- 3. Use the examples to explain further.
- 4. Ask the students to always check their answers.

Learning f	b know Finding missing numbers in number patterns
Same .	1 15 P 3,375 50,625 759,375
Firstly, we $15 - 1 = 14$ The number consecutive	teed to study the number pattern. 50,625 - 3,375 = 47,250 759,375 - 50,625 = 708,750 rs are arranged in ascending order but the differences between any two numbers are not the same.
$1 \times 15 = 15$ 3,375 × 15 The numbe	or $15 + 1 = 15$ 50,625 or $50,625 + 3,375 = 15s are obtained by multiplying the previous number by 15.3 375 + 15 = 225$
Find the mi	
Firstly, we firstl	2.430 810 270 R 30 30 eed to study the number pattern. 30 = 4,860 $2,430 - 810 = 1,620$ $810 - 270 = 540is are arranged in descending order but the differences between any twonumbers are not the same.$
810 ÷ 270 = 2,430 ÷ 810	3 or $270 \times 3 = 810$ = 3 or $810 \times 3 = 2,430$ s are obtained by dividing the previous number by 3.
The numbe	

A	52 2	08 B	3,328 13,3	12
The numbers are consecutive numb	arranged in ascen pers are not the sa	ding order but the ne.	differences betwe	en any two
$52 \times 4 = 208$	or	$208 \div 52 = 4$		
$3,328 \times 4 = 13,31$	2 or	13,312 + 3,328 =	= 4	
The numbers are	obtained by multi	olying the previous	s number by 4.	
$A \times 4 = 52$	$B = 208 \times 4$	13 × 4 =	52	
$A = 52 \div 4$	= 832	So, A is	correct.	
= 13		3,328 ÷	4 = 832	
		So, B is	correct.	
What are the miss	sing numbers in the	e number pattern b	below?	Ĩ
What are the miss	sing numbers in the design of	e number pattern b	Y I	
What are the miss	sing numbers in the second sec	e number pattern b 12 X nding order but the ne.	Y 1	een any two
What are the miss 32,768 The numbers are a consecutive numb 4.096 + 512 = 8	sing numbers in the second service of the servi	e number pattern b 12 X adding order but the $512 \times 8 = 4.096$	e differences betwee	een any two
What are the miss 32,768 The numbers are a consecutive numb 4,096 + 512 = 8 32,768 + 4,096 =	arranged in desce or a or	e number pattern b 12 X adding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$	e differences betwe	een any two
What are the miss The numbers are a consecutive number 4,096 + 512 = 8 $32,768 \div 4,096 =$ The numbers are a	arranged in desce or a or obtained by divid	e number pattern b 12 X adding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$ ng the previous nu	Pelow? Y 1 e differences betwee 68 umber by 8.	sen any two
What are the miss The numbers are a consecutive number 4,096 + 512 = 8 32,768 + 4,096 = The numbers are a X = 512 + 8	sing numbers in the formula $4,096$ 5 arranged in desceptions are not the same or 8 or 6 or 7 obtained by divide $Y = 64 + 8$	e number pattern b 12 X adding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$ ng the previous nu	Y 1 e differences betwee 68 mber by 8.	een any two
What are the miss The numbers are a consecutive number 4,096 + 512 = 8 32,768 + 4,096 = The numbers are a X = 512 + 8 = 64	sing numbers in the formula of the same sing and the same single set of the same single se	e number pattern b 12 X adding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$ ng the previous nu $8 \times 8 = 6$ So, \times is	e differences betwee 68 mber by 8.	een any two
What are the miss The numbers are a consecutive number 4,096 + 512 = 8 32,768 + 4,096 = The numbers are a X = 512 + 8 = 64	sing numbers in the formula $4,096$ arranged in descent error are not the same or 8 or 8 or 1000 obtained by divide $Y = 64 + 8$ $= 8$	e number pattern b 12 X adding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$ ng the previous nu $8 \times 8 = 6$ So, \times is $1 \times 8 = 8$	e differences betwee 68 mber by 8.	een any two
What are the miss $\begin{array}{c} 32,768 \\ \hline 32,768 \\ \hline 32,768 \\ \hline 32,768 \\ \hline 4,096 \\ + 512 \\ = 8 \\ 32,768 \\ + 4,096 \\ \hline 12 \\ \hline 12 \\ \hline 23 \\ \hline 23 \\ \hline 24 \\ \hline 25 \\ \hline 24 \\ \hline 25 \\ \hline 24 \\ \hline 25 \\ \hline 25 \\ \hline 24 \\ \hline 25 \\ \hline 2$	sing numbers in the set of the s	e number pattern b 12 X hding order but the me. $512 \times 8 = 4,096$ $4,096 \times 8 = 32,7$ ng the previous nu $8 \times 8 = 6$ 50, X = 1 $1 \times 8 = 8$ 50, X = 1 $1 \times 8 = 8$ $1 \times 8 = 1$ $1 \times 1 \times 1$ $1 \times 1 \times 1$ $1 \times 1 \times 1$ $1 \times 1 \times 1 \times 1$ $1 \times 1 \times 1 \times 1$ $1 \times 1 \times 1 \times 1 \times 1 \times 1 \times 1$ $1 \times 1 \times$	e differences betwee 68 imber by 8. 64 correct. 69	sen any two

- 5. Use the examples to explain further.
- 6. Ask the students to always check their answers.
- Guide the students to refer to Starting Point on page 53. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 7 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 48 to 51 in Go Get Maths Workbook P4.





Chapter 4 Mixed operations

The big idea

- 1. Ask the students to look at the picture carefully.
- 2. Ask them these questions to start a discussion:
 - If the kid answers a question correctly, how many points will he get?
 - How many questions did Mike answer correctly?
 - How many questions did Mali answer correctly?
 - How many questions did Kanda answer correctly?
 - How many points did Mike get?
 - How many points did Mali get?
 - How many points did Kanda get?
 - How many points did all the three kids get in total?

Strand 1: Numbers and algebra

Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/10 Find the answers of mixed addition, subtraction, multiplication and division of cardinal numbers and 0.

M 1.1 Gr4/11 Show mathematical methods to solve 2-step word problems of cardinal numbers exceeding 100,000 and 0.

M 1.1 Gr4/12 Create 2- step word problems of cardinal numbers and 0 and find the answers.

Lesson 1 Order of operations

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Explain the order of operations.
- 2. Apply the correct order of operations on problems.

Suggested teaching time

2 periods (2 x 50 minutes)

Vocabulary Oder of operations

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- Ask the students these questions to start a discussion about following orders.
 - What do you do first when you are about to bathe? Then, what do you do next? Name the order or sequence.
 - Can you jumble up the order, such as doing the last step first and the first step last?
 - What will happen if you do not follow the necessary order? Will your body be clean?
- Inform the students that we need to follow some orders when solving mathematical problems.







- Help the students to recall the terms of mathematical operations. Inform them the basic mathematical operations are addition, subtraction, multiplication and division.
- Tell the students that any operations in brackets are the most prioritized. They must do the operations in the brackets first, then followed by multiplication/ division and lastly addition/ subtraction.
- Inform them that multiplication and division have the same priority. When they have both multiplication and division in the same problem, they should solve them from left to right.
- 6. This goes the same for addition and subtraction.
- 7. Use the examples to explain further.
- Guide the students to refer to Starting Point on page 61. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

If the students answered wrongly, guide them to identify their mistakes.

Further practices

Get the students to complete the practices on pages 52 to 55 in Go Get Maths Workbook P4.

Lesson 2 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Solve word problems involving mixed operations.
- 2. Create 2-step word problems.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- Inform the students that these word problems involve 2 steps. They need to understand the number story and the question well.
- 2. For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a) What do I know?
 - Number of original packets of biscuits
 - Number of biscuits in each original packets
 - Number of biscuits in each small packet after repacking
 - b) What do I need to find at the end?
 - Number of small packets after repacking
 - c) What do I need to find out first?
 - Number of biscuits in total
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Box	Number of marbles
А	25,600 more than box B
В	126,640
С	10,349 fewer than box A

How many marbles are there in box C?

The first step

Box B has 126,640 marbles. Box A has 25,600 more marbles than box B. How many marbles are there in box A?



126,640 + 25,600 = 152,240 So, there are 152,240 marbles in box A.

The second step

Box A has 152,240 marbles. Box C has 10,349 fewer marbles than box A. How many marbles are there in box C?



152,240 - 10,349 = 141,891 Therefore, there are 141,891 marbles in box C.

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- For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a) What do I know?
 - Number of marbles in box B
 - b) What do I need to find at the end?
 - Number of marbles in box C
 - c) What do I need to find out first?
 - Number of marbles in box A

- For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a. What do I know?
 - Number of pairs of shoes the factory has at first
 - Number of boxes of shoes the factory sent to some shops
 - Number of pairs of shoes in each box sent to some shops
 - b. What do I need to find at the end?
 - Number of pairs of shoes left in the factory
 - c. What do I need to find out first?
 - Number of pairs of shoes sent to some shops

The factory has 254,785 pairs of sport shoes. It sends 8,680 boxes which contain 12 pairs of sport shoes each to some shops. How many pairs of sport shoes does the factory have now?



The first step

The factory sends 8,680 boxes which contain 12 pairs of sport shoes each to some shops. How many pairs of sport shoes does it send to the shops?



 $12 \times 8,680 = 104,160$ The factory sends 104,160 pairs of sport shoes to the shops.

The second step

The factory has 254,785 pairs of sport shoes. It sends 104,160 pairs of sport shoes to some shops. How many pairs of sport shoes does the factory have now?



254,785 - 104,160 = 150,625 Therefore, the factory has 150,625 pairs of sport shoes now.

TRY THIS!	
 The ice crean ice cream. Th the same. If 1 of vanilla ice 	factory sold 378,570 cartons of chocolate, vanilla and strawberry e numbers of cartons of chocolate and vanilla ice cream sold are 50,740 cartons of strawberry ice cream are sold, how many cartons cream are sold?
The first st	ep
The total num	ber of cartons of chocolate and vanilla ice cream sold is
The second	step
	cartons of vanilla ice cream are sold.
	cartons of vanilla ice cream are sold.
 There are 2,4 of the calcula are there in e 	cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators ich smaller box? How many calculators are left?
2. There are 2,4 of the calcula are there in e The first st	cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators ich smaller box? How many calculators are left?
2. There are 2,4 of the calcula are there in e The first st	cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators ich smaller box? How many calculators are left? ep
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2. There are 2,4 of the calcula are there in e The first st	cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators ich smaller box? How many calculators are left? ep calculators are placed into 15 smaller boxes. step
2. There are 2,4 of the calcula are there in e The first st The second	cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators ich smaller box? How many calculators are left? ep calculators are placed into 15 smaller boxes. step =
2. There are 2,4 of the calcula are there in e The first st The second	<pre>cartons of vanilla ice cream are sold. 58 calculators. 1,248 calculators are placed in the big box. The rest tors are placed evenly in 15 smaller boxes. How many calculators tch smaller box? How many calculators are left? p</pre>

Try This!

Get 2 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 56 to 62 in Go Get Maths Workbook P4.

- Write 428 x 175 25,400 = 49,500 on the board.
- 2. Guide them to create a 2-step word problem based on the equation. Use the example to explain further.
- Invite some students to create other word problems based on the same equation.
- Guide the students to refer to Starting Point on page 63. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 2 students to answer it. Ask the rest to verify the answers.



Further practices

Get the students to complete the practices on pages 62 and 63 in Go Get Maths Workbook P4.



Chapter 5 Fractions

The big idea

- 1. Ask them these questions to start a discussion:
 - a) Have you cut a pizza before?
 - b) How many pieces do you usually cut a pizza into?
 - c) Are the pieces of a pizza that you usually cut similar in size?
- 2. Ask the students to analyze the picture and ask them these questions to start a discussion:
 - a) How many pieces is each pizza cut into?
 - b) Which pizzas are still a whole?
 - c) Which pizza is not a whole? What fraction of the pizza is left?
 - d) What fraction of a pizza is there in total?

Strand 1: Numbers and Algebra Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/3 Tell, read and write fractions and mixed numbers that show the quantities of objects, and show objects as given fractions and mixed numbers.

M 1.1 Gr4/4 Compare and arrange sequence of fractions and mixed numbers which one denominator is a multiple of the other.

M 1.1 Gr4/13 Find positive and negative results of fractions and mixed numbers which one denominator is a multiple of the other.

M 1.1 Gr4/14 Show mathematical methods of finding the answers of word problems involving addition and subtraction of fractions and mixed numbers which one denominator is a multiple of the other.

Lesson 1 Types of fractions

Lesson objectives

By the end of the lesson, the students should be able to:

- Understand what proper fractions, improper fractions and mixed numbers are and their relations are.
- 2. Convert between mixed numbers and improper fractions, and vice versa.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Proper fraction, improper fraction, mixed number

Materials needed

Cards

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

1. Guide the students to understand what proper fractions are.

Thinking Corner!

Ask the students if the numerators of the fractions are greater than their denominators.



Extra notes

A proper fraction is a fraction where the numerator (the top number) is less than the denominator (the bottom number). The value of a proper fraction is always less than 1.



Extra notes

An improper fraction is a fraction where the numerator (the top number) is equal to or greater than the denominator (the bottom number). The value of an improper fraction is always equal to 1 or greater than 1.

- 2. Guide the students to understand what improper fractions are.
- 3. Use the examples to explain further.

- 4. Guide the students to understand what mixed numbers are.
- 5. Use the examples to explain further.

Extra notes

A mixed number has a whole number and a proper fraction combined. The value of a mixed number is always greater than 1. It generally represents a number between any two whole numbers.



Activity for Reinforcement

Carry out this activity to reinforce the students' understanding about the 3 types of fractions.

1. Write these on the board.



- Ask a few students to read them and categorize them into proper fractions, improper fractions and mixed numbers.
- 3. Get others to verify the answers.


- Tell the students that we can convert between mixed numbers and improper fractions, and vice versa.
- 7. Help the students to recall that $\frac{2}{2}$, $\frac{3}{3}$, $\frac{5}{5}$ and $\frac{9}{9}$ are equal to 1.
- 8. Referring to the first example, we are finding out how many wholes we can get from $\frac{3}{2}$. We can get 1 whole and $\frac{1}{2}$ from $\frac{3}{2}$.
- 9. In this part, we can draw the fractions for students to understand better.
- 10. Inform students that we can also convert a mixed number into an improper fraction by division:
 - a) Divide the numerator by the denominator.
 - b) Write down the whole number answer.
 - c) Then write down any remainder above the denominator.
- 11. Use $\frac{9}{5}$ as an example.



12. Ask the students to convert the improper fractions in the examples into mixed numbers by division.

- 13. Use the line number to show the relation between the mixed numbers and improper fractions.
- 14. Draw other number lines to let the students to fill up the missing improper fractions and mixed numbers.
- 15. Guide them to convert a mixed number into an improper fraction, by turning the whole number into an improper fraction first before adding it to the proper fraction part of the mixed number.
- 16. Use the examples to explain further.
- 17. Tell the students that we can also convert the mixed numbers into improper fractions by multiplication.
 - a) Multiply the whole number by the denominator.
 - b) Add that number to the numerator.
 - c) Write that sum on top of the original denominator.
- 18. Use $3\frac{2}{3}$ as an example.



- 19. Ask the students to convert the mixed numbers in the examples into improper fractions by multiplication.
- 20. Guide the students to refer to **Starting Point** on page 69. Ask them to answer the questions. Have a discussion to conclude the lesson.



Activity for Reinforcement

The students need time to practice converting between mixed numbers and improper fractions.

Ask the students to convert these into mixed numbers.

4	5	10	18	25	32
—					
3	2	4	7	8	5

Ask the students to convert these into improper fractions.

$$2\frac{1}{3}$$
 $1\frac{1}{2}$ $2\frac{3}{4}$ $3\frac{2}{5}$ $1\frac{7}{9}$ $5\frac{6}{11}$

Fun with Maths!

Materials required: Cards Objective of the activity: Converting mixed numbers and improper fractions This activity helps the students to do the conversion in their minds.

Try This!

Get 9 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 64 to 69 in Go Get Maths Workbook P4.

3. Make 10 sets of such cards. 4. Ask your partner to check the cards to ensure the improper fractions and their mixed numbers are written correctly. 5. Shuffle the cards and place them face down in rows. 6. Turn over any two cards. 7. If the cards match, keep the cards. Repeat step 6. 8. If the cards do not match, it is your partner's turn. 9. The person with more cards wins. TRY THIS! 1. Circle the improper fractions. Cross the mixed numbers $\frac{7}{2}$ $\frac{4}{10}$ $4\frac{1}{3}$

2. Write an improper fraction on a card and its equivalent mixed number on another

Fun Mathel

1. Work in pairs.

card.

2. Convert each improper fraction to a mixed number. (a) $\frac{4}{3} =$ (b) $\frac{9}{4} =$ (c) $\frac{15}{2} =$ (d) $\frac{23}{7} =$ 3. Convert each mixed number to an improper fraction. (a) $1\frac{2}{3} =$ (b) $1\frac{3}{5} =$ (c) $2\frac{3}{6} =$ (d) $4\frac{4}{9} =$

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Lesson 2 Equivalent fractions

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Understand what equivalent fractions are.
- 2. Find equivalent fractions.
- 3. Simplify fractions.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Equivalent fractions, simplify fraction

Materials needed

Paper

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- 1. Guide them to understand what equivalent fractions are.
- 2. Using the diagrams, guide the students to understand that 1, $\frac{2}{2}$ and $\frac{4}{4}$ have the same value or are equivalent. Ask the students to give other examples of fractions that are equivalent to 1.
- 3. Use the other example to explain further.







 $\frac{2}{2}$ of the pizza and $\frac{4}{4}$ of the pizza are still 1 whole pizza.

They have the same value although they have different numbers.

Equivalent fractions are fractions that have the same value.



Look at the size of the shaded parts of each rectangle. They are the same. $\frac{1}{3}$, $\frac{2}{6}$ and $\frac{4}{12}$ are equivalent fractions.

Extra notes

Equivalent fractions are the fractions that have different numerators and denominators but are equal to the same value.



Fun with Maths!

Materials required: Strips of paper Objective of the activity: Understanding equivalent fractions of $\frac{1}{2}$

Ask the students if the strips of paper can be of different lengths. Why?

- Tell the students that equivalent fractions of 1 are easy to determine as the denominators are the same as the numerators.
- Ask the students to analyze the fraction strips that they did in Fun with Maths! Ask them these questions to start a discussion:
 - a) What are the fractions that are equivalent to $\frac{1}{2}$? $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10}$
 - b) Are there other equivalent fractions of $\frac{1}{2}$?
 - c) What do you notice from these? $\frac{1}{2} = \frac{2}{4}$ $\frac{1}{2} = \frac{3}{6}$ $\frac{2}{4} = \frac{4}{8}$ $\frac{1}{2} = \frac{5}{10}$
- Tell the students that to find equivalent fractions, we can multiply both the numerator and denominator with the same whole number.
- 4. Use the examples to explain further.

- 5. Reiterate that to find equivalent fractions both the numerator and denominator have to be multiplied by the same whole number.
- 6. Use the examples to explain further.
- 7. Using the example of finding the equivalent fractions of $\frac{1}{3'}$ tell the students that there are many other equivalent fractions of $\frac{1}{2}$ as the numerator and denominator can be multiplied by many different whole numbers.
- 8. Tell the students that to find equivalent fractions, we can also divide both the numerator and denominator with the same whole number.
- 9. Use the examples to explain further.







Extra notes

Simplifying a fraction means to reduce it to its simplest form. A fraction is in its simplest form if its numerator and denominator have no common factors other than 1.

The value of the fraction remains unchanged. This means the simplified fraction and the actual fraction form a pair of equivalent fractions.

Teaching ideas

- Reiterate that to find equivalent fractions both the numerator and denominator have to be multiplied or divided by the same whole number.
- 11. Use the examples to explain further.

Thinking Corner!



Ask the students if the pair of fractions above are equivalent. How do they know?



Ask the students if the pairs of fractions above are equivalent. How do they know?

Teaching ideas

 Tell the students that some fractions can be divided until its numerator and denominator cannot be divided exactly anymore by any whole number except
 The result gives the fraction in its simplest form.

1	1	2	1	3	1	2	
2	3	3	4	4	5	5	

2. Tell the students that the fractions above are in their simplest form and cannot be simplified anymore.

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- 3. Use the examples to further guide the students to simplify fractions.
- Guide the students to refer to Starting Point on page 75. Ask them to answer the questions. Have a discussion to conclude the lesson.

Get 8 students to answer it. Ask the rest to

Simplify $\frac{4}{16}$.

Both the numerator and denominator of $\frac{1}{4}$ cannot be divided further by any whole number except 1. So, $\frac{1}{4}$ is the simplest form of $\frac{4}{16}$.

Simplify $\frac{108}{84}$



So, $\frac{9}{7}$ or $1\frac{2}{7}$ is the simplest form of $\frac{108}{84}$





So, $1\frac{4}{5}$ is the simplest form of $1\frac{24}{30}$.



Further practices

verify the answers.

Try This!

Get the students to complete the practices on pages 70 to 72 in Go Get Maths Workbook P4.



Extra notes

It is easy to compare fractions with the same denominator. We only have to focus on the numerators.

The fraction is greater if the numerator is a greater number. That is because you are talking about more parts of the whole.

Lesson 3 Comparing and ordering fractions

Lesson objectives

By the end of the lesson, the students should be able to:

- Compare fractions which one denominator is a multiple of the other.
- 2. Order fractions which one denominator is a multiple of the other.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary



Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

 Help the students to recall how to compare fractions with similar denominators. Ask them to compare these pairs of fractions.



- Tell the students to always convert fractions of different denominators into equivalent fractions with similar denominator. When comparing fractions with similar denominator, we can just compare the numerators.
- 3. Use the examples to explain further.

- When comparing 2 improper fractions with different denominators, ask the students to always change them into equivalent fractions with the same denominator.
- 5. Use the example to explain further. Ask them if they can think of other method to compare.
- 6. Give the students some time to think when comparing $1\frac{1}{5}$ and $2\frac{3}{10}$. Guide the students to realize the whole numbers of the mixed numbers are different. Tell the students that they can just compare the whole numbers of the mixed numbers since they are different.
- Ask the students what they should do if the mixed numbers have the similar whole number. Guide them to proceed to compare the fractional parts. They need to convert them into equivalent fractions with similar denominator.
- 8. Use the example to explain further.





- When comparing an improper fraction and a mixed number, tell the students that they can either
 - a) convert the improper fraction into a mixed number first, or
 - b) convert the mixed number into an improper fraction first.
- 10. Emphasize that either method gives the similar result.
- 11. Use the examples to explain further.



- When ordering fractions with different denominators, it is best to convert them into equivalent fractions with similar denominator. We can just compare and order them based on their numerators.
- 2. If the fractions are of different types, change them into either all mixed numbers or improper fractions.
- 3. Use the examples to explain further.





- 4. Use the example to explain further.
- 5. Guide the students to refer to **Starting Point** on page 80. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 73 to 78 in Go Get Maths Workbook P4.

Lesson 4 Addition and subtraction of fractions

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Add fractions which one denominator is a multiple of the other.
- 2. Subtract fractions which one denominator is a multiple of the other.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- When adding fractions, ask the students to observe if their denominators are similar. Tell them that they can add the numerators if their denominators are the same.
- Ask the students if they can add fractions with different denominators directly and what they should do.
- 3. Use the examples to explain further.





- 4. Write $\frac{11}{6} + \frac{2}{3}$ on the board. Ask them these questions to start the discussion:
 - a. Can we add them up directly? Why?
 - b. What should we do?
 - c. Should we convert $\frac{11}{6}$ into its equivalent fraction with 3 as the denominator, or $\frac{2}{3}$ into its equivalent fraction with 6 as the denominator? Why?
- 5. Ask the students to simplify all the results wherever can.
- Inform the students that for addition, we do not need to convert a mixed number into its equivalent improper fraction. This will make the addition easier to manage.
- 7. Use the example to explain further.

- Inform the students that for addition of mixed numbers, we can add the whole numbers of the mixed numbers separately from the fractional parts.
- 9. Use the example to explain further.

- Inform the students that we can only subtract fractions with similar denominators.
- 2. Ask the students what they should do if the denominators are not the same.
- 3. Use the example to explain.







- 4. Write $2 \frac{1}{2}$ on the board. Draw 2 circles on the board. Divide 1 circle into 2 equal parts. Help the students to recall that $\frac{2}{2}$ equals to 1. Guide them to realize that $1 - \frac{1}{2}$ equals to $\frac{1}{2}$. Next, add 1 to $\frac{1}{2}$ to give $1\frac{1}{2}$
- 5. Write $1\frac{9}{10} \frac{4}{5}$ on the board. Guide them to break the mixed number into a whole number and its fractional part as a proper number. Ask them if they can subtract $\frac{4}{5}$ from $\frac{9}{10}$. What should they do? Guide them to convert $\frac{4}{5}$ into its equivalent fraction with 10 as its denominator.
- 6. Write $1\frac{11}{12} \frac{5}{4}$ on the board. Guide them to break the mixed number into a whole number and its fractional part as a proper number. Ask them if they can subtract $\frac{5}{4}$ from $\frac{11}{12}$. What should they do? Guide them to convert $\frac{5}{4}$ into its equivalent fraction with 12 as its denominator. Can they subtract? Guide them to understand that they need to convert 1 into $\frac{12}{12}$ first.
- 7. Remind the students to simplify their answers whenever can.

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- 8. Use the examples to explain further.
- Guide the students to refer to Starting Point on page 80. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 79 and 82 in Go Get Maths Workbook P4.





Lesson 5 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

 Solve word problems involving fractions which one denominator is a multiple of the other.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

-

Materials needed

-

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

1. Reiterate the 3 simple steps to solve a word problem.

Step 1: Understand the problem

- Ask the students to read the number story and the question silently. Then, read them together with the students. Explain further the number story and the question if the students do not understand.
- Ask the students these questions to ensure they understand:
 - What information is given?
 - What do you need to find?
 - Are you comparing the items?

Step 2: Plan and execute

- Ask the students to draw the suitable bar model including the knowns and unknowns.
- Ask them to find the keyword in the problem that indicates the operation whether to add, to subtract, to multiply or to divide.
- Analyze the bar model drawn.
- Then, write the number equation and solve it.

Step 3: Check the answer

- Always ask the students to check their answer. They need to check if the answer makes sense and is reasonable.
- 2. Work with them the 3 steps in solving the word problems.
- Guide the students to refer to Starting Point on page 90. Ask them to answer the question. Have a discussion to conclude the lesson.

Chai brought $1\frac{1}{4}l$ of drinking water to school. Ying brought $1\frac{1}{8}l$ of drinking water to school. How much water did they bring to school altogether?





They brought $2\frac{3}{8}l$ of water to school altogether.

The red cloth is $4\frac{2}{3}$ m long. The blue cloth is $1\frac{5}{9}$ m longer than the red cloth. How long is the blue cloth?

 $1\frac{1}{8}$ /



TRY THIS!
1. The baker used $1\frac{2}{3}$ kg of butter to make the cookies. He used $\frac{5}{6}$ kg less butter to
make the cakes than the cookies. How much butter did he use to make the cakes?
He used kg of butter to make the cakes.
2. Mother made some fruit punch with $1\frac{6}{8}$ / of orange juice and $3\frac{1}{2}$ / of mango
juice. How much fruit punch did she make? Give your answer as an improper fraction.
She made / of fruit punch.

3. The bag weighs $5\frac{2}{5}$ kg. The water bottle weighs $1\frac{7}{15}$ kg. How much heavier is the bag than the bottle?



4. The library is 8 km away from the school. Suda was at the school and wanted to go to the library. She traveled $5\frac{3}{7}$ km by bus. Then, she walked to reach the library. How far did she walk?

		=	
She walked	km.		
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Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 83 to 86 in Go Get Maths Workbook P4.

Chapter 6 Time

The big idea

Ask the students to look at the flight schedules carefully. Ask them these questions to start a discussion:

- a) Have you traveled in aeroplanes before?
- b) Where did you take the flight and where did you travel to?
- c) Have you seen a flight schedule before?
- d) What is the first flight schedule about?
- e) Where do flights HR884 and HR886 depart from and where are they heading?
- f) Where is flight HR457 heading?
- g) What time is flight HR885 leaving the airport?
- h) What time is flight HR458 landing?

me				
(Flight schedule	Bangkok (DMK) - Trang (TS	г)
Flight	Route	Departure	Arrival	Frequency
HR884	DMK - TST	08.50 hours	10.20 hours	Daily
HR886	DMK - TST	15.30 hours	17.00 hours	Daily
HR885	TST - DMK	13.10 hours	14.40 hours	Daily
HR887	TST - DMK	18.40 hours	20.10 hours	Daily
Flight	Route	Departure	Arrival	Frequency
Flight	Route	Departure	Arrival	Frequency
HR457	CNX - URT	09.20 hours	11.30 hours	Daily
HR458	URT - CNX	19.55 hours	22.05 hours	Daily
A?			*Starts 10 F	ebruary 2021
			Do you und the flight sc	erstand hedule?
330m 1 U 130m 2 C 130m 3 W	nits of time omparing durati /ord problems	on of events		

Strand 2: Measurement and geometry

Standard M.2.1

Indicators:

M 2.1 Gr4/1 Demonstrate how to solve word problems involving time.



Lesson 1 Units of time

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Tell the relation between units of time.
- 2. Convert units of time.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed Analog clocks, calendars

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- Show an analog clock to the students. Get a student to show what happens when the second hand makes 1 complete round. How long was that in seconds and in minutes?
- Get a student to show what happens when the minute hand makes 1 complete round. How long was that in minutes and in hours?

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- Ask the students to calculate the duration from 8.00 a.m. now to 8.00 a.m. the next day. How many hours are there in 1 day?
- 4. Show the students a calendar. Help them to recall these by using the calendar:
 - a) the number of days in a week
 - b) the number of weeks in a month
 - c) the numbers of month in a year





or visit http://tiny.cc/0jlsuz

lore

- 1. Guide the students to convert between units of time.
- 2. Ask the students to memorize the relation between units of time.

- 1. For calculating the duration in hours and minutes, encourage the students to use the time line.
- 2. For calculating the duration in days and months, encourage the students to use a table to tabulate the days in a month or the months in a year.
- 3. Tell students that they need to know the number of days in each month too.
- 4. Use the examples to explain each situation.

Learning to know Duration of time

Mimi jogged from 7.05 a.m. to 8.25 a.m. How long did she jog?

1 h 20 min 7.05 a.m. 8.05 a.m 8.25 a.m

She jogged for 1 h 20 min.

Father went for a business trip from 26th March to 7th April. How long was his trip in days?

MARCH						
s	м	т	w	т	F	s
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

There are 13 days between the 2 dates. So, his trip was 13 days long.



Amy went overseas on 1st October 2019.	She returned to Thailand on 30th June
2020. How many months was she away?	

1st Oct 2019 to 31st Dec 2019	3 months
1st Jan 2020 to 30 June 2020	6 months
Total = 9 months	- -

She was away for 9 months.

The shopping mall organized a sale from 16th April 2021 to 10th June 2021. How many days did the sale last?

16th April 2021 to 30th April 2021	15 days
1st May 2021 to 31st May 2021	31 days
1st June 2021 to 10th June 2021	10 days
Total = 56 days	

The sale lasted for 56 days.





Teaching ideas

- 5. Use the examples to explain each situation.
- Guide the students to refer to Starting Point on page 94. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 9 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 87 to 92 in Go Get Maths Workbook P4.

Lesson 2 Comparing duration of events

Lesson objectives

By the end of the lesson, the students should be able to:

1. Compare duration of events of different units of time.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Inform the students that when we are comparing duration of events in different units, it is important to convert them into similar units.
- Write 3 min 10 sec and 200 sec on the board. To compare them, tell the students that they can either convert 3 min 10 sec into sec, or the 200 sec into min and sec. Then, only they can compare.
- 3. Use the examples to explain further.

Thinking Corner!

It is always easier to multiply than to divide.



Construction of project A took 2 years 5 months to complete. Construction of project B took 32 months to complete. Which project was slower?

2 years 5 months = (2 × 12) months + 5 months = 24 months + 5 months = 29 months	or	32 months = $32 + 12$ = 2 years 8 months 2 years 5 months
= 29 months 32 > 29		2 years 8 months > 2 years 5 months

Construction of project B took a longer time than construction of project A to complete. So, construction of project B was slower.

The vaccination program in Town A is scheduled to finish in 3 weeks 4 days. However, in Town C it is scheduled to finish in 18 days. Which town has a shorter period of the vaccination program?

3 weeks 4 days		18 days
$= (3 \times 7) \text{ days} + 4 \text{ days}$		$= 18 \div 7$
= 21 days + 4 days	or	= 2 weeks 4 days
= 25 days		2 weeks 4 days < 3 weeks 4 days
18 < 25		2 weeks + duys < 5 weeks + duys

So, Town C has a shorter period of the vaccination program.

TRY THIS!

- **1.** Fill in the blanks with > or <.
 - (a) 478 sec 9 min
 (c) 100 h 4 days 15 h
 - (c) 100 h 4 days 15 h (e) 50 days 10 weeks



- 2. Rick took 1 hour and 10 minutes to cycle to the next town. Sanit took 62 minutes to do the same. Who cycled slower?
- 3. The exhibition was held for 3 weeks and 5 days in Bangkok. However, it was held for 45 days in Chiangmai. In which town was the exhibition held longer?

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Teaching ideas

- 4. Use the examples to explain further.
- Guide the students to refer to Starting Point on page 99. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 93 to 95 in Go Get Maths Workbook P4.



Lesson 3 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

 Solve word problems involving duration of events of different of units of time.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

_

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- 1. Guide them to understand the word problems.
- Work through the first example with the students to find the total time team A took to plan and make the models in days.
- 3. Work through the second example with the students.
- Remind them to convert the units of time.
- 101 | Go Get Maths Teacher's Guide P4



Sak took 1 h 55 min to finish assembling the jigsaw puzzle. Ying took 35 min lesser than Sak to do the same. How much time did Ying take to finish assembling the puzzle in min?

1 h 55 min = 115 min



115 - 35 = 80Ying took 80 min to finish assembling the puzzle.

The company needs 2 years 5 months to build a residential area. How many months does it need to build 5 similar residential areas consecutively? 2 years 5 months = 29 months



 $29 \times 5 = 145$

It needs 145 months to build 5 similar residential areas consecutively.

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- 5. Work through the first example with the students to find the difference in time taken by Sak and Ying.
- 6. Work through the second example with the students to multiply the time.
- Guide the students to refer to Starting Point on page 101. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 96 to 98 in Go Get Maths Workbook P4.

TRY THIS!

 Venus takes 225 days to go around the Sun once. Mercury takes only 88 days to do so. How many fewer weeks and days does Mercury take to go around the Sun once than Venus?





2. The air conditioner was turned on from 08.00 hours on 29th May to 18.00 hours on 2nd June. How many hours was the air conditioner turned on in days and hours?

	08.00 hours on 29th May to 08.00 hours on 2nd June
	08.00 hours on 2nd June to 18.00 hours on 2nd June
[Total
1	The air conditioner was turned on for adays h.
3. 1 t	The workers take 1 year 2 months to build a bridge. How many months will they ake to build 3 similar bridges consecutively?
(
1	They will take months to build 3 similar bridges consecutively.
4. J	lack takes 57 min 45 sec to wrap 7 similar presents consecutively. How many sec does he take to wrap a present?
(

He takes	sec to wrap a present.
----------	------------------------



(g) he wears his Scout uniform every Friday.

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Lesson 4 Schedules

Lesson objectives

By the end of the lesson, the students should be able to:

1. Read schedules.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Schedule, timetable

Materials needed

School timetable

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- 1. Ask the students to analyze the timetable shown.
- 2. Guide them to read it in order to extract information from the timetable.
- Draw or show your school timetable. Guide them to analyze their own timetable and answer the following questions about their school timetable:
 - a) What time does your class start every day?
 - b) When is your recess?
 - c) How long is your recess?
 - d) How many periods are there in each day?
 - e) What days do you have Mathematics classes?
 - f) How many periods of Arts do you have in a week?

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- 4. Ask the students to analyze the schedule of activities shown.
- 5. Guide them to read it in order to extract information from the schedule.
- 6. Go through each activity and ask for its duration, start time and end time.

The schedule below shows the activities on the first day of a summer camp.

+	08.00 - 09.00	Registration	*
	09.00 - 10.00	Dancing	
×	10.00 - 11.00	Snacks and rest	
	11.00 - 12.30	Arts	
* .	12.30 - 14.30	Lunch and rest	
	14.30 - 16.00	Board games	
-7	16.00 - 18.00	Swimming in the sea	
	18.00 - 21.00	Dinner and campfire	7 1
7	21.00	Rest	
Based or a) the r b) the f	n the schedule, we know the egistration starts at 08.00 h first activity is the dancing c	ours. Jass that lasts for 1 h.	K
c) snac	ks are given at 10.00 hours.		
	arts class starts at 11.00 hour	rs and ends at 12.30 hours.	
d) the a			
d) the a e) lunc	h is served at 12.30 hours.		
d) the a e) lunc f) the p	h is served at 12.30 hours. participants get to have som	e rest after lunch.	
d) the ae) luncf) the pg) the b	h is served at 12.30 hours. participants get to have som poard games last for 1 h 30 p	e rest after lunch. min.	
 d) the a e) lunc f) the p g) the b h) the p 	h is served at 12.30 hours. participants get to have som poard games last for 1 h 30 participants get to swim in t	e rest after lunch. min. he sea at 16.00 hours.	
 d) the a e) lunc f) the p g) the b h) the p i) dinn 	h is served at 12.30 hours. participants get to have som poard games last for 1 h 30 r participants get to swim in the er is served during a campfi	e rest after lunch. min. he sea at 16.00 hours. ire.	

The schedule of a free bus service in an area is shown below.

Bus stop	Bus A	Bus B	Bus C
Siam Paragon	08.45	10.05	12.30
Krung Thai Art Gallery	09.10	10.30	12.55
Sanam Luang	09.35	10.55	13.20
Golden Mountain	10.15	11.35	14.00
Silom	10.45	12.05	14.30

ALL.	The times shown in the timetable indicate the time each bus leaves the bus stop.	
æ	ý	2002
-11		-0 0-

Based on the timetable above, we know that

- (a) the buses start their journey from Siam Paragon and end at Silom.
- (b) Bus A leaves Siam Paragon at 08.45 hours and reaches the next station, Krung Thai Art Gallery at 09.10 hours.
- (c) Bus B ends its journey at 12.05 hours.
- (d) Bus C leaves Sanam Luang at 13.20 hours and reaches Silom at 14.30 hours.
- (e) each journey lasts for 2 hours.
- (f) the journey from Siam Paragon to Golden Mountain takes 1 h 30 min.
- (g) if Mimi wants to reach Golden Mountain by 10.20 hours by bus, she should be at Sanam Luang before 09.35 hours.
- (h) if Jum wants to have lunch in Silom, she should take Bus B.

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Teaching ideas

- 7. Ask the students to analyze the schedule of a free bus service shown.
- 8. Guide them to read it in order to extract information from the schedule.
- Go through with them the route of each bus, its departure times and the time taken to travel from one bus stop to the next.

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- 10. Ask the students to analyze the schedule of a ferry service shown.
- 11. Guide them to read it in order to extract information from the schedule.
- 12. Go through with them the departure and arrival times for each trip and other information.
- Guide the students to refer to Starting Point on page 104. Ask them to answer the question. Have a discussion to conclude the lesson.

The schedule below shows the journeys a ferry made between Port A and Island B.

Departure time 9.30 a.m. 12.30 p.m.	Arrival time 10.15 a.m. 1.15 p.m.	Departure time 11.00 a.m.	Arrival time 11.45 a.m.
9.30 a.m. 12.30 p.m.	10.15 a.m. 1.15 p.m.	11.00 a.m.	11.45 a.m.
12.30 p.m.	1.15 p.m.	0.00	
4.16		2.30 p.m.	3.15 p.m.
4.15 p.m.	5.00 p.m.	5.30 p.m.	6.15 p.m.
4.13 p.m.	5.00 p.m. departure time time the ferry lea e. The arrival time time the ferry reach	5.30 p.m.	6.15 p.m.

Based on the schedule, we know that

(a) there are 3 trips from the port to the island every day.

(b) there are 3 trips from the island to the port every day.

(c) each trip takes 45 min.

- (d) the earliest ferry to the island leaves the port at 9.30 a.m.
- (e) if Jum wants to be on the island before 2.00 p.m., she can take either the 9.30 a.m. or 12.30 p.m. ferry.
- (f) if Gerry wants to reach the port before noon time, he should take the earliest ferry out of the island.
- (g) if there is only 1 ferry operating for the whole day, the ferry makes 3 round trips on that day.

A round trip means a trip to a place and back usually over the same route.


|--|

	08.30 - 09.20	09.20 - 10.10	10.10 - 11.00	11.00 - 11.50	11.50 - 13.00	13.00 - 13.50	13.50 - 14.40	14.40 - 15.30
Mon	Physical education	Maths	Ar	rts		Thai	Gymnastic	
Tue	Thai	Health education	Maths	Science		Computer studies	English	Music
Wed	Physical education	Science		Thai	Lunch	Social studies	Drama	
Thu	Physical education	Health education	English	Social studies		Thai	Maths	Music
Fri	Maths	Thai	Computer studies	Thai		Science	Extra cu acti	rriculum vity

1. Answer the questions based on Aroon's timetable above.

(a) How long is Aroon's lunch?

(b) Which days does Aroon have Science lessons?

- (c) How long does Aroon stay in the school each day?
- (d) How many periods of Maths are there in a week?

2. Fill in the blanks based on the schedule below of a drawing competition in Mimi's school.

	09.00 - 09.10	Welcome speech by Principal
	09.10 - 09.15	Rules and regulations by Mr. Tim
	09.15 - 10.45	Competition starts
	10.45 - 11.15	Refreshment
	11.15 - 11.30	Prize giving
a) The a	activity began with a	speech from the
(a) The a (b) Mr. 7	activity began with a	speech from the
(a) The a (b) Mr. 7 (c) Mim	activity began with a fim gave a speech ab i had only	speech from the yout at min to draw in the competition.

Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 99 to 103 in Go Get Maths Workbook P4.

To find out if the students have mastered the first half of the year's content, ask them to complete the **Revision 1** on pages 104 to 111 in Go Get Maths Workbook P4.

Chapter 7 Decimals

The big idea

- 1. Ask the students to look at the picture carefully.
- 2. Ask them these questions to start a discussion:
 - Have you taken part in sprinting during your sport day?
 - What do you do when you sprint?
 - How does a sprinter claim as a winner in this sport?
 - What is used to time their run?
 - Have you seen a stopwatch before?
 - What does a stopwatch do?
 - Can you read the duration shown on a stopwatch?



Strand 1: Numbers and algebra Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/5 Read and write decimals with not more than 3 places that show the quantities of objects and show objects as given decimals.

M 1.1 Gr4/6 Compare and arrange sequence of decimals with not more than 3 places from various situations.



Extra notes

A decimal is a way of writing a number that is not whole. Decimals are 'in between' numbers. For example, 24.4 is in between the numbers 24 and 25. It is more than 24, but less than 25.

Lesson 1 Understanding decimals

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Read and write decimals with not more than 3 decimal places.
- 2. Tell the place value of each digit in the decimals.
- 3. Write decimals in expanded form.
- 4. Understand equivalent decimals.

Suggested teaching time

6 periods (6 x 50 minutes)

Vocabulary

Tenth, hundredth, thousandth, decimal

Materials needed

Paper, number discs, wall height chart or a measuring tape, weighing scale, school bag, Mathematics books, dictionaries, bottles of water

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- 1. Show a strip of paper. Tell the students that it represents a whole.
- Fold it into 10 equal parts. Shade 1 part. Ask them for the fraction that represents the shaded part.
- 3. Tell the students that we can use decimals to represent fractions too.
- 4. Introduce $\frac{1}{10}$ as 1 tenth or 0.1. Draw their attention to the decimal point and guide them to read the decimal.
- 5. Repeat with more shaded parts on the strip of paper.

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- 6. Using the strip of paper, shade all the parts and ask students how many tenths are there. Draw their attention that 10 tenths make 1 one.
- 7. Guide them to realize that 1.7 is made up of the whole number part and the fractional part. Guide them to write it in an expanded form.
- Using 10 decimal discs of 0.1, ask the students to count them aloud (0.1, 0.2, 0.3,...). Then, guide the students to regroup them to make 1 one. Repeat with 20 decimal discs of 0.1.
- 9. Guide the students to convert the improper fraction of $\frac{25}{10}$ into a decimal.
- 10. Draw their attention that all the fractions in this section have a denominator of 10.





- 11. Write 23.6 on the board. Ask the students these questions:
 - a) How many digits are there?
 - b) Where is the decimal point?
 - c) How do we read this number?
 - d) How do we write this number in words?
- 12. Guide them to understand that each digit in the decimal represents a value depending on its position in the number.
- 13. Draw a place-value chart and guide the students to fill the chart by asking these questions:
 - a) Where is the digit 6 in the number?
 - b) What is the place value of the digit 6?
 - c) What is the value of the digit 6?
- 14. Repeat with other digits in the number.
- 15. Write the number in expended form.
- 16. Repeat with 314.2.

- 17. Tell the students that decimals are like fractions and they can be represented on a number line.
- Draw a number line from 0 to 1 with 10 evenly-spaced segments on the board. Guide the students to identify the decimal and the fraction represented by each segment.
- Repeat with a number line from 12 to 13 too.
- 20. For the measurement of mass in the next example, guide them to focus on the reading on the scales to see that between any 2 consecutive numbers, there are 10 equal segments. Then, help them to relate the reading on the scales to the line number. Guide them to read the measurements.
- 21. The next 2 measurements show more examples of uses of decimals in real life. Guide them to read the measurements too.





- Ask the students to refer to the 2 sets of diagrams in the book. Ask these questions to start a discussion:
 - a) When we divide a paper into 10 equal parts, what do we call each part in decimal and also in fraction?
 - b) Then, when we divide every part into another 10 equal parts,
 - how many parts in total do we get?
 - how do we call each small part in decimal and also in fraction?
- 2. Introduce $\frac{1}{100}$ as 1 hundredth or 0.01. Draw their attention to the decimal point and guide them to read the decimal.
- 3. Repeat with other decimals such as 0.93, 0.07 and 0.35.
- 4. Using the last set of diagrams, help the students to realize that 10 hundredths equal to 1 tenth.

- 5. Using the first set of diagrams, help the students to realize that 100 hundredths equal 10 tenths which equal to 1 one. Guide them to write 1.47 in the expanded form.
- Using 10 decimal discs of 0.01, ask the students to count them aloud (0.01, 0.02, 0.03,...). Then, guide the students to regroup them to make 1 tenth. Repeat with 20 decimal discs of 0.01. Guide them to write 0.18 in the expanded form.
- 7. Guide the students to convert the $37\frac{64}{100}$ into a decimal. Guide them to write it in the expanded form.
- 8. Draw their attention that all the fractions in this section have a denominator of 100.





- 9. Write 24.13 on the board. Ask the students these questions:
 - a) How many digits are there?
 - b) Where is the decimal point?
 - c) How do we read this number?
 - d) How do we write this number in words?
- 10. Guide them to understand that each digit in the decimal represents a value depending on its position in the number.
- 11. Draw a place-value chart and guide the students to fill the chart by asking these questions:
 - a) Where is the digit 3 in the number?
 - b) What is the place value of the digit 3?
 - c) What is the value of the digit 3?
- 12. Repeat with other digits in the number.
- 13. Write the number in expanded form.
- 14. Repeat with 123.45.

- 15. Draw a number line from 0.5 to 0.6 with 10 evenly-spaced segments on the board. Guide the students to identify the decimal and the fraction represented by each segment.
- 16. Repeat with a number line from 4.8 to 4.9 too.



Materials required: Wall height chart or a

Fun with Maths!

measuring tape, weighing scale, Mathematics books, dictionaries, bottles of water, school bag

Objective of the activity: Reading measurements in 1-place and 2-place decimals

The students will record decimals in real life context when measuring their friends' height and the masses of some items.

to 1 decimal place.

Thing	Mass (kg)
2 Mathematics books	
3 dictionaries	
A bottle of water	
A school bag	





- Review with the students the concepts of tenths and hundredths. Ask these questions to start a discussion:
 - a) When we divide a strip of paper into 10 parts, what do we call each part in decimal?
 - b) Then, when we divide every part into another 10 equal parts, how do we call each small part in decimal?
 - c) Then, when we divide again every part into another 10 equal parts, how do we call each small part in decimal?
- 2. Introduce $\frac{1}{1,000}$ as 1 thousandth or 0.001. Draw their attention to the decimal point and guide them to read the decimal.
- 3. Repeat with other decimals such as 0.008.

- Using the diagrams in the book, help the students to realize that 1,000 thousandths equal 1 one, 100 thousandths equal to 1 tenth and 10 thousandths equal to 1 hundredth.
- 5. Guide the students to write 1.135 in expanded form.
- Using 10 decimal discs of 0.001, ask the students to count them aloud (0.001, 0.002, 0.003,...). Then, guide the students to regroup them to make 1 hundredth. Repeat with 20 decimal discs of 0.001. Guide them to write 0.014 in the expanded form.







- 7. Write 31.245 on the board. Ask the students these questions:
 - a) How many digits are there?
 - b) Where is the decimal point?
 - c) How do we read this number?
 - d) How do we write this number in words?
- Guide them to understand that each digit in the decimal represents a value depending on its position in the number.
- 9. Draw a place-value chart and guide the students to fill the chart by asking these questions:
 - a) Where is the digit 5 in the number?
 - b) What is the place value of the digit 5?
 - c) What is the value of the digit 5?
- 10. Repeat with other digits in the number.
- 11. Write the number in expanded form.
- 12. Draw a number line from 2.31 to 2.32 with 10 evenly-spaced segments on the board. Guide the students to identify the decimal and the fraction represented by each segment.
- 13. Repeat with a number line from 16.78 to 16.79 too.

Thinking Corner!

Ask these questions to start a discussion:

- a) Does each number have the same value for the ones?
- b) Where is the digit 7 located in each number?
- c) Does every digit 7 have the same place value due to its position?
- d) Does each digit 7 have the same value?

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- 1. Inform the students that equivalent decimals have the same value.
- 2. Use the diagrams in the book to show that 0.1, 0.10 and 0.100 are equivalent decimals. They have the same value as the shaded areas of the 3 diagrams are the same.
- When you place zeros to the right of a decimal, its value stays the same. They do not change the value of the number.
 0.8 = 0.80 = 0.800
- Guide the students to refer to Starting Point on page 110. Ask them to answer the questions. Have a discussion to conclude the lesson.

Learning to know E	quivalent decimals
0.1 or 1 tenth	0.10 or 10 hundredths
Compare the shaded areas of the three figures.	0.100 or 100 thousandths
The shaded areas of the fig	gures above are the same.
	0.1 = 0.10 = 0.100
0.1, 0.10 and 0.100 are eq	aivalent decimals. They have the same value.
Wi	nen you place zeros to the right of ecimal, its value stays the same. So, 14.8 = 14.80 = 14.800.

Thinking Corner!

Ask the students these questions to start a discussion:

- a) Where is the 0 added in 2.0 compared to 2?
- b) Where is the 0 added in 2.00 compared to 2.0?
- c) Where is the 0 added in 2.000 compared to 2.00?
- d) Does adding zero to the right of the decimals change the values of the decimals?

	RY THIS!
1	Express each of the following as a decimal. (a) $\frac{2}{10} =$ (b) $3\frac{16}{100} =$ (c) $10\frac{37}{1,000} =$
2	. Write the decimals represented below in numerals and words.
	(a) 10 10 1 1 1 01 01 01 01 0.1 0.1
	In numerals:
	In words:
	In numerals:
	In words:
	(c) 1 1 01 0.1 0.1 0.01 0.001 0.001
	In numerals:
	In words:
3	. Fill in the blanks.
	(a) In 2.4, the digit 4 is in the place.
	(b) In 54.16, the digit 6 has a value of
	(c) In 47.382, the value of digit 8 is
	(d) In 8.637, the digit 7 is in the place.
4	. Fill in the blanks.
	(a) 734.5 = 700 + 30 + 4 +
	(b) $47.65 = 40 + 7 + 0.05$
	(c) $615.798 = 600 + 10 + 5 + 0.7 + 0.09 + 10 + 5 + 0.7 + 0.09 + 10 + 5 + 0.7 + 0.09 + 10 + 0.09 + 0.00 + $

Try This!

Get 13 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 112 to 123 in Go Get Maths Workbook P4.

Lesson 2 Comparing and ordering decimals

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Comparing decimals with not more than 3 decimal places.
- Ordering decimals with not more than 3 decimal places.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Decimal discs

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

- Tell the students that to compare decimals, it is better to use the placevalue charts. Guide the students to fill the chart for 2.4 and 3.6. Compare the digits starting from the one with the greatest place value, that is the ones.
- 2. Repeat with 12.5 and 12.9.





- Guide the students to fill the placevalue chart for 35.47 and 39.43.
 Compare the digits starting from the one with the greatest place value, that is the tens.
- 4. Repeat with 6.471 and 6.478.
- Using the next example, reiterate that by putting a zero on the right of a decimal does not change its value.
 0.15 = 0.150



6. Tell the students that we can compare decimals with a number line too. Draw a number line from 21.34 to 21.36 to guide the students to compare 21.347 and 21.356.



- 1. Tell the students that we can order decimals using the place-value charts.
- Use the example to guide the students to fill up the table and then demonstrate the comparison and ordering.
- 3. Reiterate that by adding zeros to the right of a decimal will not change its value.



 Use the example to guide the students to fill up the table and then demonstrate the comparison and ordering.

 Use the example to guide the students to fill up the table and then demonstrate the comparison and ordering.

Arrange 7.158, 7.587, 9.47, 7.588 and 9.74 starting with smallest.

		Ones	Tenths	Hundredths	Thousandths
7.158	•	7	1	5	8
7.587	•	7	5	8	7
9.47	•	9	4	7	0
7.588	•	7	5	8	8
9.74	•	9	7	4	0

Compare the ones. 9 is greater than 7. So, 9.47 and 9.74 are greater than 7.158, 7.587 and 7.588.

Compare the tenths of 9.47 and 9.74. 7 is greater than 4. So, 9.74 is the greatest.

Compare the tenths of 7.158, 7.587 and 7.588. 1 is smaller than 5. So, 7.158 is the smallest.

Compare the hundredths of 7.587 and 7.588. They are the same.

Compare the thousandths of 7.587 and 7.588. 7 is smaller than 8. So, 7.587 is smaller than 7.588.

7.158	7.587	7.588	9.47	9.74 graataat	
smanest				greatest	Chapter 7 127



- Draw a number line from 4.13 to 4.16 to compare 4.155, 4.133, 4.139, 4.144 and 4.15.
- Guide the students to refer to Starting Point on page 123. Ask them to answer the questions. Have a discussion to conclude the lesson.

Try This!

Get 10 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 124 to 130 in Go Get Maths Workbook P4.

Chapter 8 Addition and subtraction of decimals

The big idea

- 1. Ask the students to look at the picture carefully.
- 2. Ask them these questions to start a discussion:
 - a) How much green liquid is there in the test tube?
 - b) How much purple liquid is there in the conical flask?
 - c) What is the total volume of the mixture if the 2 liquids are mixed together?



Strand 1: Numbers and algebra

Standard M.1.1 Numbers

Indicators:

M 1.1 Gr4/15 Find positive and negative results of decimals with not more than 3 places.

M 1.1 Gr4/16 Show mathematical methods to solve 2-step word problems of adding and subtracting decimals with not more than 3 places.



Thinking Corner!

Ask the students these questions to start the discussion:

- a) What is the value of the digit 2 in 2?
- b) What are the values of each digit in 1.5?
- c) Is 2 equal to 2.0?
- d) How do you align the numbers when rewrite them vertically?
- e) Do you align the decimal points too?
- f) How do you add them up?

Lesson 1 Addition of decimals

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Add the decimals with not more than 3 decimal places without regrouping.
- 2. Add the decimals with not more than 3 decimal places with regrouping.
- 3. Add 3 decimals with not more than 3 decimal places.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Number discs, decimal discs

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- 1. Write 1.2 + 2.5 vertically on the board.
- 2. Use the discs to guide them to add.
- Guide them to add the tenths and then the ones. Ask them for the answer of the addition.
- 4. Guide them to write the addition vertically and perform the addition.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 6. Use the example to explain further.

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- 7. Write 3.23 + 2.31 vertically on the board.
- 8. Guide them to add the hundredths, then the tenths and finally the ones.
- 9. Guide them to write the addition vertically and perform the addition.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 11. Use the example to explain further.
- 12. Repeat with 23.843 + 34.024 and also the example in the book.



Thinking Corner!

Ask the students to add 14.614 and 52.362 vertically beginning with the digit with greatest place value. Then, ask them these questions to start the discussion:

- a) Do you get the answer as 66.976?
- b) Is there any regrouping done while adding?
- c) What do you have to do when there is regrouping while adding?
- d) Why are we always advised to add beginning with the digit with the smallest place value?

Thinking corner!

Why should we not add beginning with the digit with the greatest place value instead of the smallest place value? Can you explain?

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Activity for Reinforcement

The students need to practice more in order to add correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



- 13. Write 7.371 + 0.42 vertically on the board.
- 14. Reiterate that by adding a zero to the right of a decimal will not change its value.
- 15. Guide them to add the thousandths, the hundredths, then the tenths and finally the ones.
- 16. Guide them to write the addition vertically and perform the addition.
- 17. Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 18. Use the example to explain further.
- 19. Repeat with 4.856 + 5 and also the example in the book.

- 1. Write 3.5 + 2.7 vertically on the board.
- Use the discs to guide them to add. Guide them to regroup as 10 tenths is equal 1 one. The sum of 5 tenths and 7 tenths is 12 tenths which is equal to 1 one 2 tenths after regrouping.
- 3. Guide them to add the tenths and then the ones. Ask them for the answer of the addition.
- 4. Guide them to write the addition vertically and perform the addition.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 6. Use the example to explain further.
- 7. Repeat with 4.78 + 3.64 and the example in the book.





Activity for Reinforcement

The students need to practice more in order to add correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



Teaching ideas

- 8. Write 13.567 + 37.864 vertically on the board.
- Guide them to add the thousandths, then the hundredths, the tenths and finally the whole numbers. Ask them for the answer of the addition.
- 10. Guide them to write the addition vertically and perform the addition.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 12. Use the example to explain further.
- Repeat with 4.563 + 3.7 and the example in the book. Remind the students about equivalent decimals.

3.7 = 3.700

- 14. Help students to recall how to add 3 numbers by asking them these questions:
 - a) What are the ways to add 3 numbers?
 - b) How do you perform this?
 - c) 23 + 19 + 46 =?
 - d) Do both ways give the same answer?
- 15. Write 2.343 + 4.62 + 7.5 vertically on the board.
- 16. Guide them to the first 2 decimals before adding the sum to the third decimal.
- 17. Guide them to add all the decimals at the same time by adding all the thousandths first, then the hundredths, the tenths and finally the whole numbers.
- 18. Remind the students about equivalent decimals.
- 19. Repeat with the example in the book.
- 20. Guide the students to refer to **Starting Point** on page 130. Ask them to answer the questions. Have a discussion to conclude the lesson.





Activity for Reinforcement

The students need to practice more in order to add correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.





Thinking Corner!

Ask the students to try all these methods to add the 4 decimals:

- 1. Add all the 4 decimals at the same time.
- Add the first and second decimals, and add the third and fourth decimals. Then, add both sums together.
- Add the first and second decimals. Then, add this sum to the third decimal. Finally add this sum to the fourth decimal.
- Add the first and third decimals. Then, add this sum to the second decimal. Finally add this sum to the fourth decimal.
- Add the first and fourth decimals. Then, add this sum to the third decimal.
 Finally add this sum to the second decimal.

Ask the students if there are other methods to add them. Will the answers be the same?

Try This!

Get 12 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 131 to 135 in Go Get Maths Workbook P4.

Lesson 2 Subtraction of decimals

Lesson objectives

By the end of the lesson, the students should be able to:

- Subtract the decimals with not more than 3 decimal places without regrouping.
- 2. Subtract the decimals with not more than 3 decimal places with regrouping.
- 3. Subtract 3 decimals.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Materials needed

Number discs, decimal discs

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

- 1. Write 6.8 3.5 vertically on the board.
- 2. Use the discs to guide them to subtract.
- 3. Guide them to subtract the tenths and then the ones.
- 4. Guide them to write the subtraction vertically and perform the subtraction.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 6. Use the example to explain further.

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- 7. Write 27.83 4.51 vertically on the board.
- Guide them to subtract the hundredths, then the tenths and finally the whole numbers.
- 9. Guide them to write the subtraction vertically and perform the subtraction
- 10. Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 11. Use the example to explain further.
- 12. Repeat with 59.378 24.234 and also the example in the book.

- 13. Write 28.53 4.4 vertically on the board.
- 14. Reiterate that by adding a zero to the right of a decimal will not change its value.
- 15. Guide them to subtract the hundredths, then the tenths and finally the ones.
- 16. Guide them to write the subtraction vertically and perform the subtraction.
- 17. Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 18. Use the example to explain further.

Teaching ideas

- 1. Write 5.2 3.8 vertically on the board.
- Use the discs to guide them to add. Guide them to regroup as 8 tenths cannot be subtracted from 2 tenths. 1 one is equal 10 tenths.
- 3. Guide them to subtract the tenths and then the ones.
- 4. Guide them to write the subtraction vertically and perform the subtraction.
- Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 6. Use the example to explain further.



Activity for Reinforcement

The students need to practice more in order to subtract correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.





Activity for Reinforcement

The students need to practice more in order to subtract correctly. Get a few students to write these questions on the board and answer them. Get others to verify the answers.



Teaching ideas

- 7. Write 35.36 8.79 vertically on the board.
- Guide them to subtract the hundredths, the tenths and finally the whole numbers. Remind them to regroup when needed.
- 9. Guide them to write the subtraction vertically and perform the subtraction.
- 10. Reiterate that the alignment of the numbers based on the place value of each digit and the decimal point is important.
- 11. Use the example to explain further.
- Repeat with 32 17.636 and the example in the book. Remind the students about equivalent decimals.

32 = 32.000



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- 13. Write 13.234 2.34 8.527 vertically on the board.
- 14. Guide them to subtract the second decimal from the first decimal. Then, subtract the third decimal from the difference.
- 15. Remind the students about equivalent decimals.
- 16. Repeat with the example in the book.
- 17. Use the example to explain further.
- Guide the students to refer to Starting Point on page 137. Ask them to answer the questions. Have a discussion to conclude the lesson.



Try This!

Get 12 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 136 to 140 in Go Get Maths Workbook P4.



Lesson 3 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

 Solve word problems involving decimals with not more than 2 steps.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

-

Materials needed

-

Starting point

Help the students to understand the questions. Ask them if they know the answers and what they will learn today.

Teaching ideas

 Introduce the 3 simple steps to solve a word problem.

Step 1: Understand the problem

- Ask the students to read the number story and the question silently. Then, read them together with the students. Explain further the number story and the question if the students do not understand.
- Ask the students these questions to ensure they understand:
 - a. What information is given?
 - b. What do you need to find?
 - c. Are you comparing the items?

Step 2: Plan and execute

- Ask the students to draw the suitable bar model including the knowns and unknowns.
- Ask them to find the keyword in the problem that indicates the operation whether to add or to subtract.
- Analyze the bar model drawn.
- Then, write the number equation and solve it.

Step 3: Check the answer

- Always ask the students to check their answer. They need to check if the answer makes sense and is reasonable.
- 2. Work with them the 3 steps in solving the word problems. Ask them to always check their answers.

Teaching ideas

- Inform the students that these word problems involve 2 steps. They need to understand the number story and the question well.
- For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a) What do I know?
 - Mass of the durian
 - Difference in mass of the durian and the pineapple
 - b) What do I need to find at the end?
 - Total mass of the 2 fruits
 - c) What do I need to find out first?
 - Mass of the pineapple

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Solving 2-step word problems

A durian weighs 3.6 kg. A pineapple weighs 1.9 kg lighter than the durian. What is the total mass of the two fruits?



The first step

A durian weighs 3.6 kg. A pineapple weighs 1.9 kg lighter than the durian. What is the mass of the pineapple?





3.6 - 1.9 = 1.7

So, the mass of the pineapple is 1.7 kg.

The second step

A durian weighs 3.6 kg. A pineapple weighs 1.7 kg. What is the total mass of the two fruits?





3.6 + 1.7 = 5.3So, the total mass of the two fruits is 5.3 kg.


The total length of 3 ropes is 14.68 m. The lengths of the red and yellow ropes are 6.477 m and 3.89 m respectively. Find the length of the blue rope.

The first step

The lengths of the red and yellow ropes are 6.477 m and 3.89 m respectively. What is the total length of the red and yellow ropes?



6.477 + 3.890 = 10.367

The total length of the red and yellow ropes is 10.367 m.

The second step

The total length of 3 ropes is 14.68 m. The total length of the red and yellow ropes is 10.367 m. Find the length of the blue rope.



- For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a) What do I know?
 - Total length of the 3 ropes
 - Length of the red rope
 - Length of the yellow rope
 - b) What do I need to find at the end?
 - Length of the blue rope
 - c) What do I need to find out first?
 - Total length of the red and yellow ropes

- For this example, guide the students to use the 3 steps. Set them thinking about these questions:
 - a) What do I know?
 - Som's height
 - The difference in height between Som and Ahtit
 - The difference in height between Ahtit and Aom
 - b) What do I need to find at the end?
 - Aom's height
 - c) What do I need to find out first?Ahtit's height
- 5. Guide the students to refer to **Starting Point** on page 142. Ask them to answer the questions. Have a discussion to conclude the lesson.



TRY THIS!
1. The baker mixes 1.85 kg of flour and 0.455 kg of butter to make a dough. What is the mass of the dough?
The mass of the dough is kg.
 Mike weighs 32.68 kg. His father weighs 53.07 kg more than him. Find the total mass of Mike and his father.
The first step
The mass of his father is kg.
The second step
The total mass of Mike and his father is kg.
3. Mary brought two bottles of water that contain 1.57 <i>l</i> and 2.67 <i>l</i> of water respectively. She used 1.89 <i>l</i> of the water to make some drink. How much water was left?
The first step
Mary brought / of water.
The second step
<i>I</i> of water was left.
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Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 141 to 149 in Go Get Maths Workbook P4.

4. The library is located 15.325 km from the school. The bank is located 8.657 km from the school. How much longer is the distance between the library and the school than the distance between the bank and the school? = The distance between the library and the school is km longer than the distance between the bank and the school. 5. Chariya has 157.50 Baht in her bank account. She banks in 199.25 Baht. Find the balance in her bank account. $\left| \right\rangle$ == The balance in her bank account is Baht. 6. Lisa was 1.15 m tall in 2020. The following year she grew 0.16 m taller. However, she was still 0.37 m shorter than Aroon. How tall was Aroon? The first step The following year she was m tall. The second step Aroon was m tall. Chapter 8 | 147



Chapter 9 Geometry

The big idea

- Ask the students to analyze the picture and ask them these questions to start a discussion:
 - a) Are the hands of the clock straight lines?
 - b) Do they meet at a point?
- Tell them that an angle is formed when two straight lines meet at a common point. Ask them these questions to continue the discussion:
 - a) Where is the angle formed on the clock?
 - b) When the minute hand moved to one, has the angle become smaller?
 - c) When the minute hand moved to six, has the angle become bigger?

Strand 2: Measurement and geometry

Standard M.2.1

Indicators:

M 2.1 Gr4/2 Measure and create angles using a protractor.

Standard M.2.2

Indicators:

M 2.2 Gr4/1 Distinguish types of angles, names and components of angles and write symbols for angles.

Lesson 1 Geometric terms

Lesson objectives

By the end of the lesson, the students should be able to:

- Differentiate between points, lines, line segments, rays, intersections and planes.
- 2. Draw points, lines, line segments, rays, intersections and planes.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Point, line, line segment, ray, intersection, plane

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- Introduce *point* to the students. Tell them that a point is a location. It has no size, no length and no depth. A point is shown by a dot.
- Use the picture to guide the students to understand where points A, B and C are.
- Introduce *line* to the students. Tell them that a line has no thickness. It can be extended indefinitely only in two directions and has infinite number of points lying on it.
- 4. Guide them to draw points and lines.





A line is a collection of points that goes endlessly in both directions along a straight path.

B

The line above is known as line AB. The two arrows show that the line goes on forever. Its symbol is \overline{AB} .

Thinking corner!

How many points are there on a line? Explain your answer.

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A line segment is part of a line. It has 2 endpoints. It does not go on forever. We read			
a line segment based on its endpoints.			
Endpoint A	B - Endpoint		

Endpoint ---- A

The line segment above is known as line segment AB. It has point A and point B as its endpoints. Its symbol is AB.

A ray is part of a line too. It starts at one endpoint and goes on indefinitely in the other direction along a straight path.

> Endpoint ---- A B

The ray above is known as ray AB. It has point A as its endpoint. Its symbol is \overrightarrow{AB} .



When any two rays, lines or line segments cross each other, they share a common point. We say that they intersect at that point.



What are the differences between the symbols of a line, a ray and a line segment? Can you explain them?

atics Prathomsuksa 4

Extra notes

Use the table below to help the students to differentiate lines, line segments and rays.

Line	There are no end points. Can be extended in opposite directions indefinitely.	$\begin{array}{c} \overset{A}{\longleftrightarrow} \overset{B}{\bullet} \\ \overset{B}{\overleftarrow{AB}} \end{array}$
Line	Has two end points.	A B
segment	Cannot be extended.	A B B A B A B A B A B A B A B A B A B A
Ray	Has one end point.	A B
	Can be extended in one	\leftarrow
	direction indefinitely.	AB

Teaching ideas

- 5. Introduce *line segment* to the students. Tell them that a line segment is a part of a line that is bounded by two distinct end points on that line.
- 6. Introduce *ray* to the students. Tell them that a ray starts from one fixed point and always progress in one direction only away from that starting point. It can be extended indefinitely only in one direction and has one end point.
- 7. Help the students to differentiate between lines, line segments and rays. Ask 3 students to draw line PQ, ray PQ and line segment PQ, and their symbols. Get another 3 to describe the properties of each diagram. Ask others to verify.
- 8. Introduce *intersection* to the students. Tell them that when any 2 lines, line segments or ray intersect or cross over each other, they meet at a common point.
- 9. Draw a few interactions of a few lines, line segments or rays and guide them to name the intersection.

Thinking Corner!

Ask 3 student to draw line ST, line segment ST and ray ST. Also ask another 3 to draw their symbols. Ask others to verify.

- 10. Introduce *plane* to the students. Tell them that a plane is a flat and smooth surface. It has length and width. It has no thickness. A plane can be extended indefinitely in all directions.
- 11. Use the diagram to explain further.
- Guide the students to refer to Starting Point on page 149. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 5 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 150 to 153 in Go Get Maths Workbook P4. A plane is a flat surface that extends in all directions.





A plane is named by 3 points on it that are not on the same line. For example, this plane is called plane EFG.

The figure above shows 2 planes. They are plane GOB and plane AIC.

TRY THIS! Draw and write the symbols.

1. Point G	2. Line PQ
3. Ray RT	4. Line segment XY
5. Plane ABC	



Lesson 2 Angles

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Name an angle and its parts, and write the symbol of the angle.
- 2. Know the types of angles.
- 3. Measure angles using a protractor.
- 4. Create angles using a protractor.

Suggested teaching time

8 periods (8 x 50 minutes)

Vocabulary

Angle, right angle, reflex angle, obtuse angle, acute angle, straight angle, full angle, protractor

Materials needed

Protractor, paper

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- 1. Tell the students that an angle is formed when 2 lines, rays or line segments intersect.
- Ask them to make a V with their arms. Show them the angle they made with their arms. Ask them to think of other ways to make angles with their body parts.
- Point to the corner of a window and guide them to realize the angle made by the 2 edges of the window. Ask them to look around them for any angles formed.

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- 4. Draw an angle formed by 2 line segments on the board.
- 5. Ask a student to show the angle formed. Ask the rest to verify.
- 6. Introduce them the vertex and the arms of the angles.
- Guide them to name an angle based on either the vertex and a point from each arm (the vertex must be in the middle) or the letter given to the angle.
- 8. Use the examples to explain further.

<text><image><text><text><text><text><text><text><image><image><image>

Activity for Reinforcement

Ask the students to give all the names of these angles.





- 1. Tell the students that there are 6 types of angles based on their sizes.
- Since they have not learned how to measure the sizes of angles, introduce them the types of angles using a piece of paper to show 90° and 180°.
- Fold a piece of paper twice to make a right angle. Introduce the right angle to the students.
- Ask the students to make a right angle with a piece of paper and look for other right angles around them by comparing with the right angle on the folded paper.

Thinking Corner!

Ask the students to draw all the 2-D shapes that they have learnt. Using the right angle on the folded paper, ask them to identify which shapes have right angles and their numbers.

- 5. Tell the students that an acute angle is smaller than a right angle.
- 6. Tell the students that an obtuse angle is greater than a right angle.
- 7. Tell the students that a straight angle is made up of 2 right angles.
- Show some examples of things that have acute angles (piece of cake), obtuse angles (a hand fan) or straight angles (a closed door with the wall).

We make a right angle with the paper. We can use it to check for a right angle. Angles that are smaller than a right angle are known as **acute angles**.



Activity for Reinforcement

Ask the students to draw all the 2D shapes that they have learnt. Using the right angle on the folded paper, ask them to identify which shapes have acute angles and obtuse angles.



- 9. Tell the students that a reflex angle is greater than a straight angle.
- 10. Tell them that a thing that has either an acute or obtuse angle usually have a reflex angle that lies opposite of it. Use a right-angled triangle and show them the right angle, reflex angle and the acute angle.
- Tell the students that a full angle is made up of 2 straight angles or 4 right angles. Prove this using the folded paper.

Fun with Maths!

Materials required: Paper Objective of the activity: Identifying angles on letters

Ask the students which capital letter do not have any angles at all.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 154 and 155 in Go Get Maths Workbook P4.

- Show a protractor to the students and tell that they can measure angles using it.
- Project a protractor on the screen. Introduce the parts of the protractor such as the outer scale, base line, inner scale and center mark.
- 3. Ask them to identify the parts on their own protractor.
- 4. Introduce *degree* and its symbol (°) to the students. Explain that angles are measured in degrees.
- 5. To measure ∠PQR, ask the students to put the base line of the protractor on arm QR and the center mark of the protractor on the vertex Q. For this, we will use the inner scale as angle to be measured is on the right of the center mark. The number on the inner scale that arm PQ passes through is the measurement of ∠PQR.
- Ask the student to determine if ∠PQR is an acute angle or an obtuse angle. Ask for their reason.





- Ask the students to measure ∠ABC.
 Ask them to use the inner scale. Tell them ∠ABC is a right angle.
- Before asking them to measure ∠EFG, ask them to guess if it is an acute angle or an obtuse angle.
- To measure ∠EFG, we need to use the outer scale as the angle to be measured is on the left of the center mark.
- 10. Ask the students to measure ∠MNQ and ∠QNP, and add both angles up. ∠MNP is a straight angle (180°).

Thinking corner!

Using the \angle MNQ and \angle QNP, ask student

to take note where the angle is from the center mark of the protractor when measuring with the protractor.

- 11. Ask the students to measure ∠JKL. Ask them why they can use both scales.∠JKL is a straight angle.
- Ask the students to measure ∠RST. They need to measure ∠USR and ∠UST and add them up to get ∠RST. ∠RST is a full angle.
- Help the students to recall the types of angles. Ask them to remember that a right angle is 90°.







- Tell the students that ∠ABC is a reflex angle. It is more than 180° and the protractor can only measure up to 180°.
- 15. Therefore, they need to break ∠ABC into ∠CBD and ∠DBA by extending line
 BC. They need to measure ∠CBD and ∠DBA, before adding them up to get ∠ABC.
- Tell them that ∠ABC can be obtained too by subtracting the obtuse ∠ABC from 360°.

Fun with Maths!

Materials required: Paper, protractor Objective of the activity: Estimating and measuring angles Estimation is an important skill.



- 1. Tell the students that besides using the protractor to measure angles, we can use it to draw angles.
- 2. Before drawing any angles, remind the students to always estimate and sketch how the angle should look like.
- 3. Guide them through the steps to draw $\angle PQR$.







- Tell the students that ∠DEF is a reflex angle as it is more than 180°. They need to break it into 2 angles in order to draw ∠DEF.
- Guide the students to refer to Starting Point on page 152. Ask them to answer the question. Have a discussion to conclude the lesson.

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Try This!

Get 8 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 156 to 162 in Go Get Maths Workbook P4.





Chapter 10 Squares and rectangles

The big idea

- Help the students to recall the properties of squares and rectangles by asking them these questions:
 - a) Are squares and rectangles polygons?
 - b) How many sides do squares and rectangles each have?
 - c) How many angles do squares and rectangles each have?
 - d) What is the difference between a square and a rectangle?
- Ask the students to analyze the picture. Ask them if they can identify which are squares and which are rectangles.

Strand 2: Measurement and geometry

Standard M.2.1

Indicators:

M 2.1 Gr4/3 Demonstrate the methods of finding answers to word problems involving perimeter and the area of rectangles.

Standard M.2.2

Indicators:

M 2.2 Gr4/3 Demonstrate the methods of finding answers to word problems involving perimeter and the area of rectangles.

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Lesson 1 Properties of squares and rectangles

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Identify properties of squares and rectangles.
- 2. Find unknown sides and angles in squares and rectangles.

Suggested teaching time

3 periods (3 x 50 minutes)

Vocabulary

Square, rectangle, diagonal

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- 1. Ask the students these questions to start a discussion:
 - a) Are squares and rectangles 2D shapes or 3D shapes?
 - b) Are they polygons? Why?
 - c) Are they quadrilaterals? Why?
- 2. Guide them to realize the properties of squares.
 - a) All sides are equal and parallel to each other.
 - b) All angles are right angles.
 - c) The diagonals are equal.





Activity for Reinforcement

Use this activity to reinforce the students' understanding about squares and rectangles:

1. Prepare the comparison table as shown below on the board.

Properties	
All sides are equal.	
All sides are parallel to each other.	
All angles are 90°.	
All diagonals are equal.	

- 2. Ask a few students to tick and cross the relevant columns.
- 3. Guide them to summarize the similarities and differences between a square and a rectangle.

Teaching ideas

- 1. Guide them to realize the properties of rectangles
 - a) The opposite sides are equal.
 - b) All angles are right angles.
 - c) The diagonals are equal.

Try This!

Get 5 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on page 163 in Go Get Maths Workbook P4.

- Tell the students that since a square has equal sides, we can find the length of other sides if we know the length of just 1 side.
- 2. Use the example to explain further.
- Tell the students that since a rectangle has equal opposite sides, we can find the length of other sides if we know the length of 1 set of sides.
- 4. Use the example to explain further.
- 5. Use the next example to guide the students to find the length of a figure made up of a rectangle and a square.







- 6. Reiterate that all angles in a square and a rectangle are right angles (90°).
- 7. Guide the students to find the unknown angles in a square and a rectangle.
- Guide the students to refer to Starting Point on page 165. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 164 to 166 in Go Get Maths Workbook P4.

Lesson 2 Drawing squares and rectangles

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Draw squares and rectangles using a square grid.
- 2. Draw squares and rectangles using a square set and a ruler.
- 3. Draw squares and rectangles using a protractor and a ruler.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Square grid, square set, protractor

Materials needed

Square grid, square set, protractor

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- Show the students a square grid of 1 cm. Ask them to measure
 - a) the length of the sides of the small boxes
 - b) the angles of the small boxes
- Guide the students to draw square PQRS on their square grid step by step as shown.





- Guide the students to complete square ABCD on their square grid step by step as shown.
- Since side AB is not drawn on the horizontal or vertical lines on the grid, it is better to use a protractor or a folded paper to ensure the angles in the square we draw are right angles.
- Ask the students to count the squares on the square grid to ensure the sides we are drawing are of the same length.

6. Guide the students to complete rectangle WXYZ on their square grid step by step as shown.





- Show a set square to the students. Tell them that it is a triangular ruler. Ask them to measure the angles of the set square. Help them to realize that there are 2 types of set squares depending on the sizes of their angles, but both have a right angle each.
- Inform them that we can use a set square to draw squares and rectangles as it has a right angle.
- 3. Guide them to draw square GHIJ using a set square and a ruler, step by step.

- Instead of the set square, we can also use a protractor to get a right angle when drawing a square or a rectangle.
- 2. Guide them to draw rectangle MNOP using a protractor and a ruler, step by step.
- Guide the students to refer to Starting Point on page 169. Ask them to answer the question. Have a discussion to conclude the lesson.





Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 167 to 170 in Go Get Maths Workbook P4.

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Lesson 3 Perimeter

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Understand what perimeter is.
- 2. Find the perimeter of squares and rectangles.
- 3. Find the unknown sides of squares and rectangles.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Perimeter

Materials needed

Wires, rulers

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Fun with Maths!

Materials required: Wires, rulers Objective of the activity: Studying the length of side by making a square or a rectangle from a wire

The students need to realize that the total length of the sides of the square or rectangle they made is equal to the length of the wire.





- Tell the students that perimeter is the distance along the boundary of a 2D shape.
- 2. Inform the students that for a rectangle or a square drawn on a square grid, we can easily calculate its perimeter by counting the number of unit lengths along its boundary.
- 3. Use the examples to explain further to the students.

- Reiterate that a square has equal sides, and a rectangle has equal opposite sides.
- 5. Ask the students to use this information to find the perimeter of the square and rectangle in the book.



- Tell the students that we can find the length of a side of a square if its perimeter is given.
- Since all the sides of a square are equal, therefore, the perimeter of square will be 4 times its side.
- 3. Use the example to guide them to understand better.
- 4. For rectangles, the opposite sides are equal. Therefore, if we know the perimeter of a rectangle and the length of a side, we will be able to find the lengths of all sides.
- 5. Use the example to explain further.





- 6. Use the example to explain further.
- Guide the students to refer to Starting Point on page 175. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 171 to 173 in Go Get Maths Workbook P4.

Lesson 4 Area

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Understand what area is.
- 2. Find the area of squares and rectangles.
- 3. Find the unknown sides of squares and rectangles.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Area

Materials needed

Square grid, leaf. square cards

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching idea

- 1. Tell the students that area is the space taken up by a 2D shape or a surface.
- Guide the students to understand the concept of area by counting the squares.

Fun with Maths!

Materials required: Leaf, square grid Objective of the activity: Estimate the area of a leaf with a square grid The number of the grids covered by the leaf provides the leaf area. It is important to remember that the square that is more than 50% covered by the leaf must be counted.



- Estimate the area of the leaf by counting the squares covered by the leaf.
- 3. A square covered half or more than half is considered as covered.


Get 10 pieces of s	uare cards	
. The length of the	ides of each card is 1 unit.	
. Arrange all the ca	ds into a figure.	
. Find the area and	perimeter of the figure. Fill in the	table.
		rea = 10 square units
. Repeat steps 4 and	5 for 3 times.	erimeter = 18 units
. Repeat steps 4 and	5 for 3 times.	erimeter = 18 units Perimeter
. Repeat steps 4 and Figure Figure 1	5 for 3 times. Area 10 square units	Perimeter = 18 units Perimeter 18 units
. Repeat steps 4 and Figure Figure 1 Figure 2	5 for 3 times. Area 10 square units	Perimeter = 18 units Perimeter 18 units
Repeat steps 4 and Figure Figure 1 Figure 2 Figure 3	5 for 3 times. Area 10 square units	Perimeter = 18 units Perimeter 18 units



Fun with Maths!

Materials required: Square cards Objective of the activity: Relate perimeter and area of a shape There is no relation between the perimeter and area of a shape.

Teaching idea

 Tell the students that the area of a square is measured in cm² (square centimeter) or m² (square meter).

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- Guide the students to realize that the area of a square or a rectangle is calculated by multiplying its length and width.
- 5. Use the examples to explain further.

- Tell the students that we can find the length of a side of a square if its area is given.
- Since all the sides of a square are equal, therefore, the area of square will be product of its sides.
- 3. Use the example to guide them to understand better.
- For rectangles, the opposite sides are equal. Therefore, if we know the area of a rectangle and the length of a side, we will be able to find the width.
- 5. Use the example to explain further.
- 6. Use the family facts of multiplication and division to solve them.

2 x 3 = 6	6 ÷ 2 = 3
3 x 2 = 6	6 ÷ 3 = 2







- 7. Use the example to explain further.
- Guide the students to refer to Starting Point on page 179. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 6 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 174 to 178 in Go Get Maths Workbook P4.



Lesson 5 Perimeter and area of composite figures

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Find the perimeter of composite figures.
- 2. Find the area of composite figures.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Composite figure

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching idea

- Tell the students that a composite figure is made up of basic twodimensional shapes such as squares and rectangles.
- 2. We can easily separate a composite figure into the basic shapes that it is made up of.
- 3. Use the example to explain further.

Thinking Corner!

There should be 5 sets.







- 4. Guide the students to find the perimeter of figure ABCDEF. Bring them to realize that $\overline{AF} = \overline{BC} + \overline{DE}$ and $\overline{EF} = \overline{AB} + \overline{CD}$. This is true as all the angles are right angles.
- 5. Guide the students to find the perimeter of figure OPQRSTUV. Bring them to realize that $\overline{RS} + \overline{TU} = \overline{PQ} + \overline{OV}$ and $\overline{PO} + \overline{UV} = \overline{QR} + \overline{ST}$. This is true as all the angles are right angles.

- Make the students realize that they can find the area of a composite shape by finding and adding the area of the rectangles or squares that make up the shape.
- 2. Guide the students to find the area of the figure. Sometimes a composite figure can be separated into a few sets of rectangles and squares. All the areas of these sets of rectangles and squares are the same.





- 3. Us this example to explain further.
- Guide the students to refer to Starting Point on page 183. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 4 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 179 to 182 in Go Get Maths Workbook P4.

Lesson 6 Word problems

Lesson objectives

By the end of the lesson, the students should be able to:

1. Solve word problems involving perimeter and area.

Suggested teaching time

5 periods (5 x 50 minutes)

Vocabulary

-

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- Reiterate the 3 simple steps to solve a word problem.
 Step 1: Understand the problem
 Step 2: Plan and execute
 Step 3: Check the answer
- 2. Work with them the 3 steps in solving the word problems. Ask them to always check their answers.

The photograph measuring 16 cm by 10 cm is placed in a photo frame. There is a gap of 3 cm along the photograph. How do we find the area of the photo frame? Learning to know Solving word problems My uncle has a square plot of land. The land has a length of 8 m. He wants to build a fence around it. (a) How long will the fence be? (b) What is the area of his land? (a) Perimeter = $8 + 8 + 8 + 8$ = 32 m So, the fence will be 32 m long. (b) Area = 8×8 $= 64 m^2$ The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ $= 900 \text{ cm}^2$ Area of remaining paper	Starting point	
How do we find the area of the photo frame? Learning to know Solving word problems My uncle has a square plot of land. The land has a length of 8 m. He wants to build a fence around it. (a) How long will the fence be? (b) What is the area of his land? (a) Perimeter = $8 + 8 + 8 + 8$ = 32 m So, the fence will be 32 m long. (b) Area = 8×8 $= 64 m^2$ The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ $= 900 cm^2$ Area of remaining paper	The photograph measuring 16 cm by 10 cm is placed in a photo frame. There is a gap of 3 cm along the photograph.	0.2
Learning to know Solving word problems My uncle has a square plot of land. The land has a length of 8 m. He wants to build a fence around it. (a) How long will the fence be? (b) What is the area of his land? (a) Perimeter = $8 + 8 + 8 + 8 = 32 \text{ m}$ So, the fence will be 32 m long. (b) Area = $8 \times 8 = 64 \text{ m}^2$ The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ³ . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30 = 900 \text{ cm}^3$ Area of remaining paper	How do we find the area of the photo frame?	
Solving word problems My uncle has a square plot of land. The land has a length of 8 m. He wants to build a fence around it. (a) How long will the fence be? (b) What is the area of his land? (a) Perimeter = $8 + 8 + 8 + 8$ = 32 m So, the fence will be 32 m long. (b) Area = 8×8 $= 64 m^2$ The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ = 900 cm2 Area of remaining paper		
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 (b) What is the area of his land? (a) Perimeter = 8 + 8 + 8 + 8 = 32 m So, the fence will be 32 m long. (b) Area = 8 × 8 = 64 m² The area of his land is 64 m². Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm². What is the area of the remaining piece of paper before cutting = 30 × 30 = 900 cm² Area of remaining paper 	(a) How long will the fence be?	8 m
 (a) Perimeter = 8 + 8 + 8 + 8 = 32 m So, the fence will be 32 m long. (b) Area = 8 × 8 = 64 m² The area of his land is 64 m². Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm². What is the area of the remaining piece of paper? Area of paper before cutting = 30 × 30 = 900 cm² Area of remaining paper 	(b) What is the area of his land?	
= 32 m So, the fence will be 32 m long. (b) Area = 8×8 $= 64 \text{ m}^2$ The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ $= 900 \text{ cm}^2$ Area of remaining paper	(a) Perimeter = $8 + 8 + 8 + 8$	
(b) Area = 8×8 = 64 m^2 The area of his land is 64 m^2 . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting = 30×30 = 900 cm^2 Area of remaining paper	= 32 m So, the fence will be 32 m long.	
= 64 m ² The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper before cutting = 30 \times 30 = 900 cm ² Area of remaining paper	(b) Area = 8×8	
The area of his land is 64 m ² . Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ $= 900 \text{ cm}^2$ Area of remaining paper	$= 64 \text{ m}^2$	
Ying has a square piece of paper of 30 cm long. She cuts out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting = 30×30 = 900 cm ² Area of remaining paper	The area of his land is 64 m ² .	
out a rectangle from the piece of paper. The area of the rectangle is 200 cm ² . What is the area of the remaining piece of paper? Area of paper before cutting $= 30 \times 30$ $= 900$ cm ² Area of remaining paper	Ying has a square piece of paper of 30 cm long. She cuts	30 cm
area of paper? Area of paper before cutting $= 30 \times 30$ $= 900 \text{ cm}^3$ Area of remaining paper	out a rectangle from the piece of paper. The area of the	
Area of paper before cutting = 30×30 = 900 cm^2 Area of remaining paper	piece of paper?	30 cm
= 30 × 30 = 900 cm ² Area of remaining paper	Area of paper before cutting	
= 900 cm ²	$= 30 \times 30$	·
Area of remaining paper	= 900 cm-	
= 900 - 200	Area of remaining paper $= 900 - 200$	
1 2 2 7444	Th	





Area of table = 60×90 = 5,400 cm² Length of cloth = 90 - 10 - 10= 70 cm Width of cloth = 60 - 10 - 10= 40 cm Area of cloth = 70×40 = 2,800 cm²

Area of uncovered table = 5,400 - 2,800= $2,600 \text{ cm}^2$

So, the area of the table not covered by the cloth is $2,600 \text{ cm}^2$.

All the angles in the figure below are right angles. Find the area of the shaded region.



Area of unshaded rectangle = 8×2 = 16 cm² Area of unshaded square = 6×6 = 36 cm² Area of big rectangle = 14×12 = 168 cm² Area of shaded region = 168 - 16 - 36= 116 cm²

So, the area of the shaded region is 116 cm².

- 3. Work with them the 3 steps in solving the word problems. Ask them to always check their answers.
- Guide the students to refer to Starting Point on page 187. Ask them to answer the question. Have a discussion to conclude the lesson.

Try This!

Get 3 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 183 to 188 in Go Get Maths Workbook P4.

TRY THIS!

 Niran has 9 similar square cards. He arranges them into a figure. If the area of the figure is 144 cm², what is the length of the cards?



2. Kasem has a plot of land as shown below. It can be divided into a rectangle and a square. He wants to enclose it with a fence.





Chapter 11 Two-way tables and bar graphs

The big idea

Ask the students to look at the chart carefully. Ask them these questions to start a discussion:

- a) Do you know what chart is this?
- b) Why do the bars have different heights?
- c) What information can you get from this chart?

Strand 3: Statistics and probability

Standard M.3.1

Indicators:

M 3.1 Gr4/1 Use data from bar charts, two-way table to find the answers of word problems.

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Lesson 1 Two-way tables

Lesson objectives

By the end of the lesson, the students should be able to: 1. Read two-way tables.

Suggested teaching time

4 periods (4 x 50 minutes)

Vocabulary

Two-way table

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

Teaching ideas

- 1. Tell the students that two-way tables show information for 2 groups of data.
- 2. Ask them to analyze the table in the book. The table shows a group of data of number of boys, girls and their total, and another group of data of the levels in the school.
- Guide them to read the table. Ask a few students about the table to have an idea if they can read the table.
 - a) What does 90 mean in the table?
 - b) How many girls are there in P6?
 - c) How many students are there in P2?

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Starting point	Level	Number of girls	Number of boys
The table shows the number of	P1	82	78
	P2	88	95
students in 6 levels.	P3	92	94
	P4	105	83
How do we find the number of	P5	77	90
students in each level?	P6	82	78

arning to know Reading two-way tables

The table below shows the number of girls and boys in each level of a school.

Level	Number of girls	Number of boys	Total
P1	82	78	160
P2	88	95	183
P3	92	94	186
P4	105	83	188
P5	77	90	167
P6	82	78	160

• How many girls are there in P2?

So, there are 88 girls in P2.

Look for the 'Number of girls' column and the 'P2' row. The intersection gives the number of girls in

Level	Number of girls
P1	82
P2	88

• How many students are there in P3?

Look	for	the
column	and	the
The inte	ersec	tion
number	of st	uden
So, ther	e are	: 186
in P3.		

P2.

the lotal	Level	Number of girls	Number of boys	Total
the 'P3' row.	P1	82	78	160
udents in P3	P2	88	95	183
106 . 1 .	P3	92	94	186

The table below shows the number of some colored shapes.

Red	4	6	10
Blue	8	1	?
Yellow	5	2	7
Green	3	4	7
Total	?	13	?

- How many red circles are there? There are 4 red circles.
- How many yellow and green polygons are there? Number of yellow polygons = 2; Number of green polygons = 4 2 + 4 = 6
- There are 6 yellow and green polygons.
- How many blue shapes are there altogether?
 Number of blue circles = 8; Number of blue polygons = 1 8 + 1 = 9
 There are 9 blue shapes altogether.
- How many circles are there altogether?
 Number of red circles = 4; Number of blue circles = 8
 Number of yellow circles = 5; Number of green circles = 3
 4 + 8 + 5 + 3 = 20
 There are 20 circles altogether.
- How many shapes are there altogether?
 Number of circles = 20; Number of polygons = 13
 20 + 13 = 33
 There are 33 shapes altogether.

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- 4. Work with them on the table.
- 5. Ask them these questions to gage their understanding:
 - a) How many red shapes are there?
 - b) How many blue and green circles are there?
 - c) How many polygons are there?
 - d) How many yellow and blue shapes are there?
 - e) How many circles that are not green are there?

- 6. Work with them on the table.
- 7. Ask them these questions to gage their understanding:
 - a) How heavy is Nan?
 - b) How is taller, Anong or Jamie?
 - c) Who is lighter, Ice or Nan?
 - d) Who is the heaviest?
 - e) Arrange them starting with the tallest.
 - f) Who are taller than Niran?
- Guide the students to refer to Starting Point on page 191. Ask them to answer the question. Have a discussion to conclude the lesson.

The table below shows the heights and masses of some students.

Students	Ice	Niran	Jamie	Anong	Nan
Height (cm)	155	150	145	160	148
Mass (kg)	45	47	43	52	50

 How heavy and tall is Niran? Niran is 47 kg and 150 cm tall.

- What is the total mass of Ice and Jamie? Mass of Ice = 45 kg Mass of Jamie = 43 kg 45 + 43 = 88
- The total mass of Ice and Jamie is 88 kg.
- How much heavier is Anong than Niran? Mass of Anong = 52 kg
- Mass of Niran = 47 kg52 - 47 = 5
- Anong is 5 kg heavier than Niran.
- Who is taller, Nan or Ice? What is the difference in height?
- Nan's height = 148 cm Ice's height = 155 cm
- 155 148 = 7
- Ice is taller than Nan. The difference in height is 7 cm.
- They go to an amusement park. One ride allows only participants with the heights of 150 cm and above. Who are not allowed on the ride? Jamie and Nan are respectively 145 cm and 148 cm tall. Their heights are less than 150 cm. Jamie and Nan are not allowed on the ride.
- Arrange the students starting with the lightest. Jamie is the lightest. Anong is the heaviest.
- Among Ice, Niran and Nan, Ice is the lightest and Nan is the heaviest.

Jamie, lightest	Ice,	Niran,	Nan,	Anong heaviest
				Ch

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 The table below shows the number of cups of beverages sold by 3 stalls. Answer the questions.



Fried rice	50	67	64	70	66
(a)	packets of f	ried noodles	s sold were or	n Monday an	d Tuesday.
(b)	packets of f	ood were so	ld on Thursd	ay.	
(c)	more packet	ts of fried no	odles than frie	ed rice were s	old on Friday.
(d)	packets of f	ried rice we	re sold on tha	nt week altog	ether.
(e) If each page	cket of food	was sold at 2	20 Baht, the	stall received	
Baht that v	veek.				

Try This!

Get 10 students to answer it. Ask the rest to verify the answers.

Further practices

Get the students to complete the practices on pages 189 to 192 in Go Get Maths Workbook P4.

Lesson 2 Bar graphs

Lesson objectives

By the end of the lesson, the students should be able to:

- 1. Read bar graphs.
- 2. Draw bar graphs.

Suggested teaching time

6 periods (6 x 50 minutes)

Vocabulary

Bar graph

Materials needed

Starting point

Help the students to understand the question. Ask them if they know the answer and what they will learn today.

- Inform the students that bar graphs are another type of data representation that use rectangular bars to show how big the values are.
- 2. Tell them that bar graphs can be drawn either vertically or horizontally.





- 3. Inform the students that height of the bars represents the values of data.
- For instance, when we match the height of the red bar to the scale on the left, it gives 5. This means there are 5 red buttons.
- 5. Repeat with other bars.

- 6. Work with them on the graph.
- 7. Ask them these questions to gage their understanding:
 - a) How many fruits were sold altogether?
 - b) How many fewer oranges were sold than pears?
 - c) How many more oranges were sold than apples?
 - d) If 3 apples and 4 pears were rotten, how many fruits were there that were in good condition?





- 8. Work with them on the graph.
- 9. Ask them these questions to gage their understanding:
 - a) Which team scored the highest?
 - b) How many marks did team Delta score?
 - c) How many fewer marks did team Beta score than team Alpha?
 - d) How many more score did team Epsilon score than team Delta?
 - e) How many marks did teams
 Epsilon, Gamma, and Beta score altogether?

- Ask the students to read the instructions carefully. Are they going to draw a vertical or a horizontal bar graph?
- 2. Guide them to draw the bar graph through the seven steps in the example.





We can also draw a horizontal bar graph for the similar information.





- 3. Guide them to draw the bar graphs through the seven steps they learnt earlier.
- Guide the students to refer to Starting Point on page 195. Ask them to answer the question. Have a discussion to conclude the lesson.

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Try This!

Get 10 students to answer it. Ask the rest to verify the answers.

TRY THIS!

1. The bar graph below shows the number of books borrowed from the library by four students. Answer the questions. Books borrowed Pher Aor Stuc Ahtit Si Number of books borrowed 12 16 20 (a) How many books did Ahtit borrow? (b) How many books did Pheng and Aom borrow altogether? (c) Who borrowed the most books? (d) How many more books did Siri borrow than Pheng? (e) How many fewer book did Ahtit borrow than Siri? (f) Who borrowed the fewest books? (g) How many books did the students borrow in total? (h) Arrange the students starting with the one who borrowed the fewest books. (i) Arrange the students starting with the one who borrowed the most books.

2. The table below shows the favorite fruits among a group of students. Draw a vertical bar graph based on the information given in the table.

Fruits	Mango	Apple	Orange	Plum	
Number of students	150	250	300	250	

Further practices

Get the students to complete the practices on pages 193 to 199 in Go Get Maths Workbook P4.

To find out if the students have mastered the second half of the year's content, ask them to complete the **Revision 2** on pages 200 to 206 in Go Get Maths Workbook P4.

Computational Thinking

The big idea

- Tell the students that computational thinking is a way to solve a problem through a set of systematic approaches.
- 2. Explain briefly the 4 skills in computational thinking.
- 3. Give examples of how each skill is used.
- Decomposition: For example, to tidy up your room, you need break this task into smaller tasks like making your bed, tidying your table, organizing your clothes, sweeping the floor and more.
- Pattern recognition: For example, to tidy up your table, you may realize you need to sort out your books according their genres.
- Algorithms: For example, to tidy up your room, you need to plan which task to do first and which task follows. Should you mop the floor first and then sweep the floor?
- Abstraction: For example, when you are tasked to tidy up your room, you should ignore what online games your siblings are playing.



Computational thinking is not about programming a computer or thinking like a computer. It is rather a set of systematic approaches to solving problems. Then, we can present the solutions in a way a computer or a human or both can understand.

There are four skills or elements in computational thinking.



EXAMPLE

Sanit sells packets of food at his stall. He sells a packet of food for 28 Baht. The table below shows the number of packets of food he sold in 4 days.

Day	Sunday	Monday	Tuesday	Wednesday
Packets of food	12		23	24

If he collected 2,156 Baht in those 4 days, how many packets of food did he sell on Monday?.

Abstraction:

Irrelevant information - Sanit, sells packets of food at his stall, the table shows

Relevant information – sells a packet of food for 28 Baht, he collected 2,156 Baht in those 4 days

Decomposition:

Part 1: How many packets of food were sold altogether?

He collected 2,156 Baht. 1 packet of food is sold for 28 Baht.

Part 2: How many packets of food were sold on Monday?

Algorithms:

Part 1: Find the total number of packets of food sold.

 $2,156 \div 28 = 77$ The total packets of food sold is 77.

Part 2: Find the number of packets of food sold on Monday.

77 - 12 - 23 - 24 = 18

He sold 18 packets of food on Monday.

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Example

- 1. Guide the students to read and understand the question.
- In this example, all the 4 skills are used abstraction, decomposition, pattern recognition and algorithms.
- 3. Not every problem requires all the 4 skills. Some may require 1 or 2 skills.