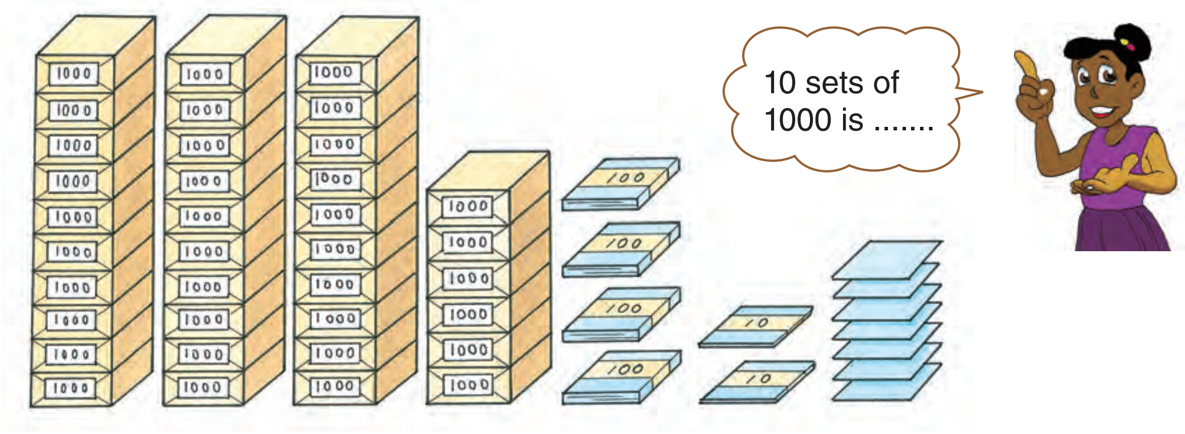
11 Large Numbers



1 Ten and Hundred Thousand Place

1 How many sheets of paper are there in the above figure?

① If we make bundles of ten thousand, how many can we make?

3 sets of ten thousand is written as 30000 and is read as **thirty thousand**. It is also written as 30 **thousand**.

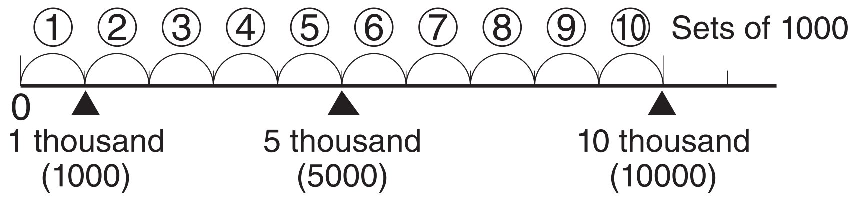
② How many sheets of paper are there altogether?

Ten thousands place	Thousands place	Hundreds place	Tens place	Ones place
3	0	0	0	0
	6	0	0	0
		4	0	0
			2	0
				7

Three ten thousand, six thousand, four hundred, two ten, and seven ones makes 36427 and it is read as thirty six thousand, four hundred and twenty seven.

Let's find the structure of numbers larger than 10000 and how to express them.

The number that is 10 sets of one thousand (1000) is written as **10000 or 10 thousand** and is read as ten thousand.



2 Write the following numbers in numerals while being careful about their place values.

① The number that is two sets of ten thousand, four sets of thousand, nine sets of hundred, a set of ten and eight ones.

② The number that is the sum of seven sets of ten thousand and 860.

③ The number that is the sum of eight sets of ten thousand and nine sets of ten.

④ The number that is four sets of ten thousand.

	Ten thousands place	Thousands place	Hundreds place	Tens place	Ones place
1					
2					
3					
4					

Exercise

1 Read the following numbers.

① 48219 ② 98056 ③ 28000 ④ 70006

2 Write the following numbers in numerals.

① Eighty six thousand two hundred and fifty nine

② Fifty thousand and thirty two

③ Twenty thousand and eight hundred

3 Write the following numbers in numerals.

① The number that is the sum of three sets of ten thousand, nine sets of thousand and five sets of ten.

3 In 2011, Papua New Guinea census statistic showed that the number of male living in Eastern Highlands Province was 311000. Let’s think about this number.

	Hundred thousands place	Ten thousands place	Thousands place	Hundreds place	Tens place	Ones place
Ten thousand		1	0	0	0	0
10 sets of ten thousand make a hundred thousand	1	0	0	0	0	0
	3	1	1	0	0	0

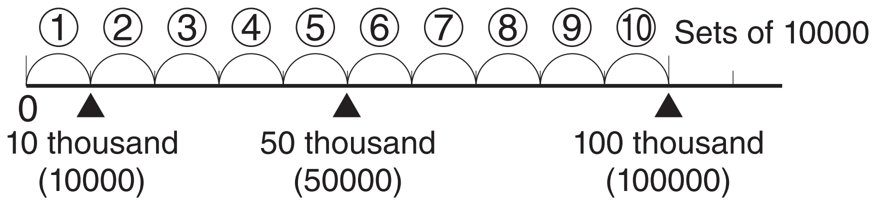
1. How many sets of the hundred thousand, ten thousand and thousand are combined to make this number?
2. Read the number 311000.

4 Let’s read the number of people in the Highlands Region in 2011 below.

1. Southern Highlands Province: 510 245
2. Western Highlands Province: 249 449
3. Enga Province: 432 045
4. Hela Province: 249 449
5. Jiwaka Province: 343 987
6. Simbu Province: 376 473

5 Let’s make the largest number and the second smallest number by arranging the number cards from 1 to 6.

The number that is 10 sets of ten thousand (10000) is written as **100000 or 100 thousand** and is read as **hundred thousand**.



Exercise

1 Read the following numbers.

① The number of babies born in Papua New Guinea in 2012 was 210181.

② The number of Papua New Guinea small holder coffee producers in 2008 was 397772.

2 Write the following numbers in numerals.

① The population of Lae city in 2000 was one hundred and nineteen thousand, one hundred and seventy four.

② The number of people living with HIV in Papua New Guinea in 2015 was two hundred, ten thousand, eight hundred and eleven.

How to Read and Write Large Numbers

Read after separating the third and fourth place by counting from the ones place. The number is read as Four hundred and sixty eight thousand, one hundred and forty nine. 468 149

For every 3-digit numbers, we include a space or comma.

Examples: ① Include **space** 468 149

② include **comma** 468, 149

2 The Structure of Large Numbers

1 Write the following numbers in numerals and read them.

1. The number that is the sum of 3 sets of ten thousand, 7 sets of thousand and 1 hundred.
2. The number that is the sum of 361 sets of thousand and 480.
3. The number that is the sum of 7 sets of a hundred thousand and 9 sets of a hundred.

	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones place
1						
2						
3						

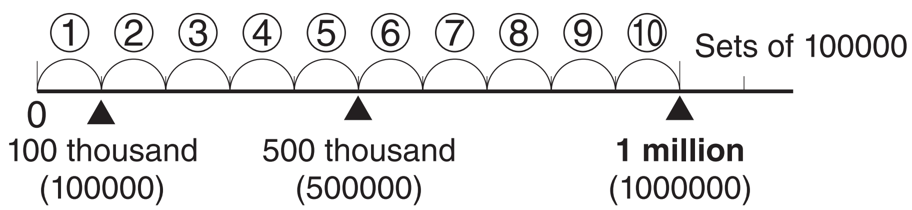
2 Let's think about 245000.

1. How many sets of hundred thousand, ten thousand and thousand are there in this number?
2. How many sets of 1000 are there to make this number?
3. How many sets of 100 are there to make this number?

245000 is also written as 245 thousand.

3 How many sets of hundred thousands are there to make 1000000?

The number that is 10 sets of hundred thousand is written as 1000000 and read as **one million**.



Exercise

Write the following numbers and read them.

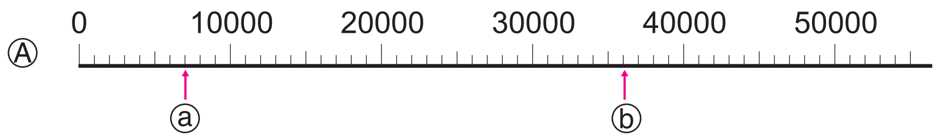
① The number that is the sum of 3 sets of ten thousand and 8 sets of thousand.

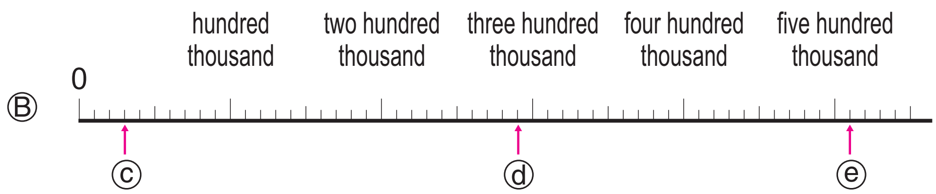
② The number that is the sum of 5 sets of hundred thousand, 2 sets of ten thousand and 9 sets of hundred.

4 Let's think about the following number lines.

What is expressed by each scale?

Which numbers are expressed by ⓐ, ⓑ, ⓒ, ⓓ and ⓔ ?





A straight line, with marked points that are equally spaced in every point on the line corresponds to a number, is called a **number line**.

On the number line, the number gets larger as you move towards the right.

5 Draw the number line with a (unit) Scale of 10 thousand, marked with ↑ on the line corresponding to the following numbers.

180 thousand　　250 thousand　　320 thousand

0

6 Fill in the ☐ with a number.

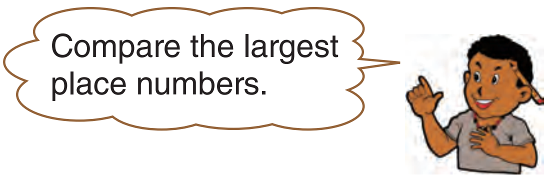
① 99998 — 99999 — ☐ — ☐ — 100002

② 750 thousand — 800 thousand — ☐ ----

---- 900 thousand — ☐

7 Arrange the following numbers in descending order and line them vertically in the table on the right.

① 386020　　② 378916　　③ 89000



	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones place
①						
②						
③						

8 Show the relationship between the two numbers using >, < and =.

45000 ☐ 140000

The symbols < and > are called **inequality signs**.
These symbols are used to compare two numbers, whether one number is larger or smaller than the another number.

Exercise

1 Fill in the ☐ with a number.

① 99900 — 99950 — ☐ — 100050

② 528 thousand — ☐ — 532 thousand ----

---- ☐ — 536 thousand — 538 thousand

2 Arrange the following numbers in ascending order.

① (30001, 190000, 210003, 99900)

② (400000, 94000, 170000, 240000)

3 Fill in the ☐ with a sign of inequality.

① 54300 ☐ 64100 ② 17300 ☐ 17030

4 Fill in the ☐ with a number.

① 99900 — 99850 — ☐ — ☐ — 99700

② 648 thousand — ☐ — 642 thousand ----

---- ☐ — 636 thousand — 633 thousand

5 Arrange the following numbers in ascending order.

① (200000, 190000, 215000, 190050)

② (400000, 500000, 40000, 3000)

6 Fill in the ☐ with the signs of inequality.

① 24900 ☐ 25900 ② 39000 ☐ 38000

3 10 Times, 100 Times and Divided by 10

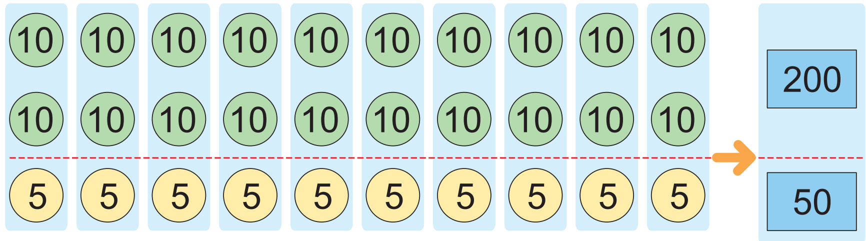
1 You buy tinned meat which costs 20 kina each. How much for 10 tinned meat?

20 × 10 = $\boxed{}$

Hundreds	Tens	Ones
	2	0
2	0	0

10 times

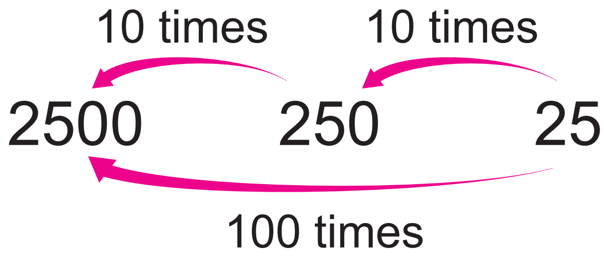
2 What is 10 times 25?



Hundreds	Tens	Ones
	2	5
2	5	0

10 times

3 What is 100 times 25?



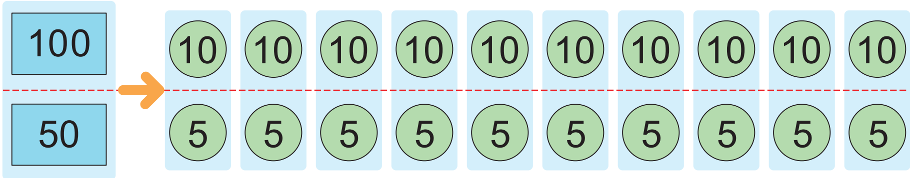
25 × 100 = $\boxed{}$?

Thousands	Hundreds	Tens	Ones
		2	5
	2	5	0
2	5	0	0

10 times
10 times
100 times

When any number is multiplied by 10, each digit of that number moves to the next higher place and then 0 is added at the end. Also, when any number is multiplied by 100, each digit of that number moves 2 places up and then 00 is added at the end.

4 What is 150 divided by 10?



Hundreds	Tens	Ones
1	5	0
	1	5

Divide by 10

150 ÷ 10 = ☐

If any number with a 0 in the ones place is divided by 10, each digit of that number moves to the next lower place and 0 in the ones place disappear.

5 Let's make 10 times 35. Then divide the answer by 10.

35 → 10 times ☐ → Divided by 10 ☐

10 times

350 35

Divide by10

10 times

Hundreds	Tens	Ones
	3	5
3	5	0

Divide by 10

If we multiply a number by 10, and then divide it by 10, the answer will be the original number.

6 Multiply 48 by 100. Then divide the number by 10.

The answer is the same number as 10 times 48.

100 times

Thousands	Hundreds	Tens	Ones
		4	8

Divide by 10

Exercise

Multiply the following numbers by 10 and 100, then divide them by 10.

① 70 ② 500 ③ 640 ④ 850

4 Addition and Subtraction

1 Let's add 7356 + 8421 in vertical form.

$$\begin{array}{ccccc} & 7 & 3 & 5 & 6 \\ + & 8 & 4 & 2 & 1 \\ \hline & & & & \end{array}$$

In the thousands place, the answer is carried up, so how should we write?

2 Let's use cards with numbers 1 , 2 , 3 , 4 , 5 , 6 , 7 and 8 , for making addition and subtraction problems of 4-digit numbers.

Naiko's problem

$$\begin{array}{ccccc} & 6 & 1 & 4 & 5 \\ + & 7 & 3 & 2 & 8 \\ \hline \end{array}$$

Ambai's problem

$$\begin{array}{ccccc} & 4 & 8 & 1 & 2 \\ - & 3 & 5 & 7 & 6 \\ \hline \end{array}$$

① Let's make an addition problem that has the largest answer.

In which case does the answer become largest?

It is largest when both thousands place are the largest!

② Let's make a subtraction problem that has the smallest answer.

3 In 2011, the number of people in West Sepik Province was 248000. The number of people in East Sepik Province was 450000. How many people are there in the provinces of West and East Sepik altogether?

① Write an expression.

☐ + ☐

248000 is written as 248 thousand.

② Let's think about how to calculate.

③ What is the difference in the number of people between the West Sepik Province and East Sepik Province?

☐ − ☐

Assume 1 thousand people as one set, and then calculate.
It is better to calculate by estimating sets of one thousand.

Exercise

① 4760 + 7071 ② 5634 + 6509

③ 8693 − 3587 ④ 8606 − 8198

⑤ 210000 + 370000 ⑥ 530000 − 180000

4 Let's add 187653 + 972784 in vertical form.

We use the same method even if there are more digits !

	1	8	7	6	5	3
+	9	7	2	7	8	4

This one calculation is the result of the following calculations.

$$\begin{array}{r}3\\+4\\\hline\end{array}\quad\begin{array}{r}5\\+8\\\hline\end{array}\quad\begin{array}{r}6\\+7\\\hline\end{array}$$

$$\begin{array}{r}7\\+2\\\hline\end{array}\quad\begin{array}{r}8\\+7\\\hline\end{array}\quad\begin{array}{r}1\\+9\\\hline\end{array}$$

Exercise

1 Write the following numbers in numerals. Page 109

① The number that is the sum of 2 sets of ten thousand and 180.

② The number that is the sum of 7 sets of hundred thousand, 6 sets of ten thousand and 3 sets of thousand.

③ The number that is the sum of 30 sets of ten thousand and 50 sets of hundred.

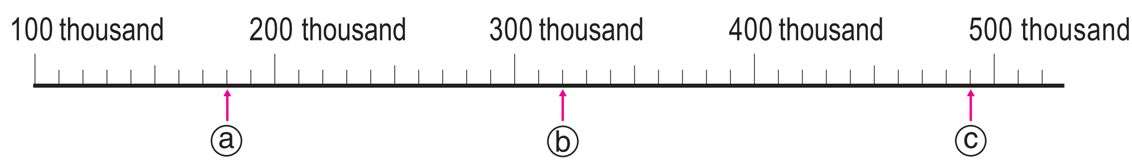
2 Fill in the $\square$ with an appropriate number. Page 115

① 11000 — $\square$ — 12000 — 12500 — $\square$ — $\square$

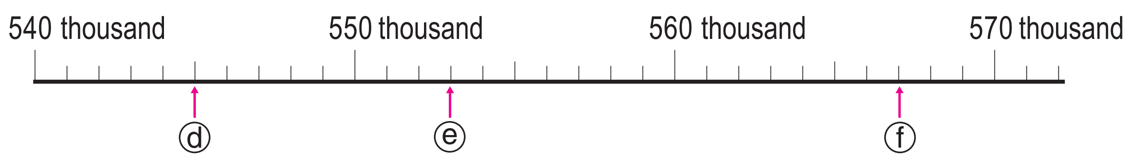
② 322 thousand — $\square$ thousand — $\square$ thousand — 328 thousand — $\square$ thousand — 332 thousand

3 Write the corresponding number in numerals to the one on the number line below. Pages 114~115

①



②



4 Fill in the $\square$ with the appropriate inequality sign. Page 115

① 333300 $\square$ 34330 ② 5482941 $\square$ 5482899

5 Multiply the following numbers by 100 and then divide by 10. Pages 117 ~ 118

① 23 ② 40 ③ 111 ④ 605

6 Let's calculate. Pages 119 ~ 120

① 3183 + 9897 ② 6102 + 7938 ③ 6997 − 5006

Problems

1 Write the following numbers in numerals, and read them.

● Understanding the structure of large numbers and how to read them.

① The number that is the sum of 48 sets of ten thousand and 270.

② The number that is the sum of 5 sets of hundred thousand, 9 set of thousand and 2 sets of hundred.

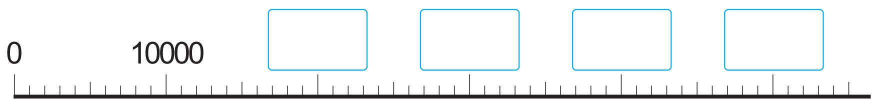
③ The number that is the sum of 2 sets of hundred thousand, 35 sets of thousand.

④ The number that is 10 sets of hundred thousand.

2 Draw an arrow to the number line that corresponds to the numbers.

● Represent numbers on the number line.

① 2000　② 18000　③ 30000　④ 45000



3 Fill in the □ with an appropriate number.

● Understanding how to arrange numbers in order.

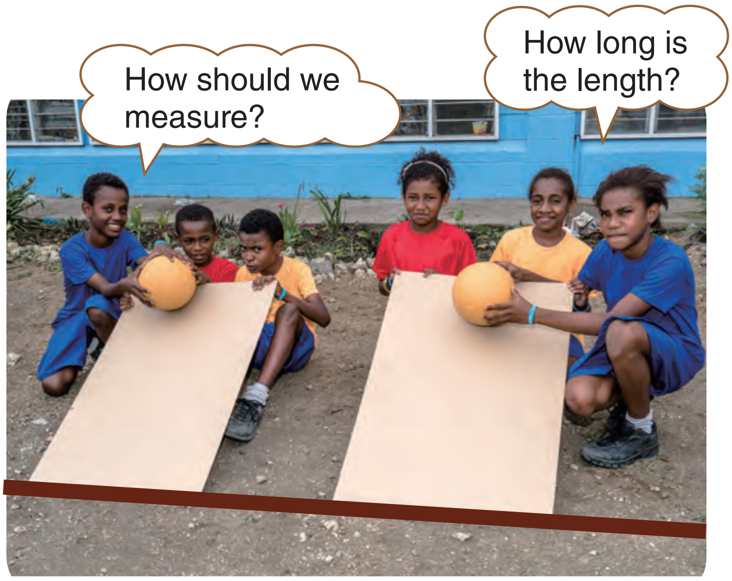
① 19850 — □ — 19950 — 20000

② 19800 — 19900 — □ — 20100

③ 250 thousand — □ — □ — 100 thousand—50 thousand

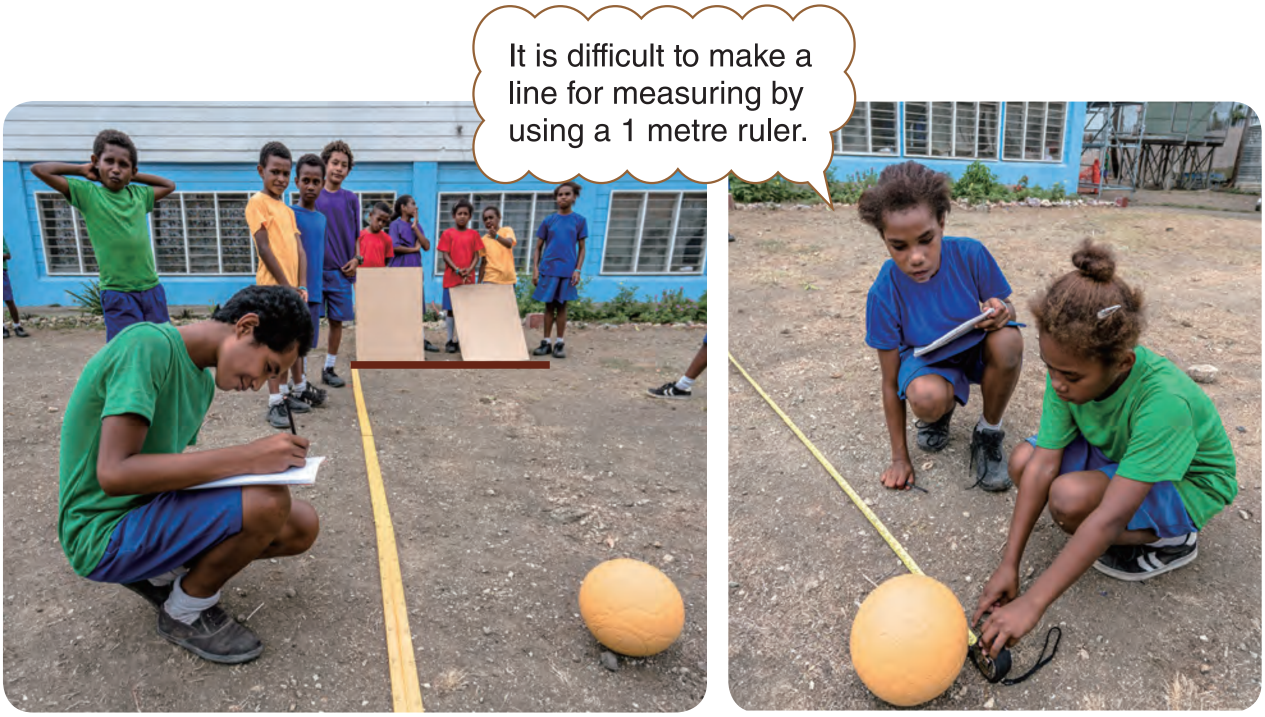
12 Length

Let's roll the balls using a cardboard!



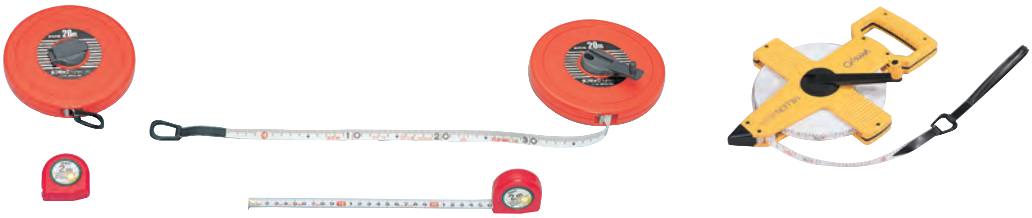
Investigate how far balls can move. How should we measure the length?

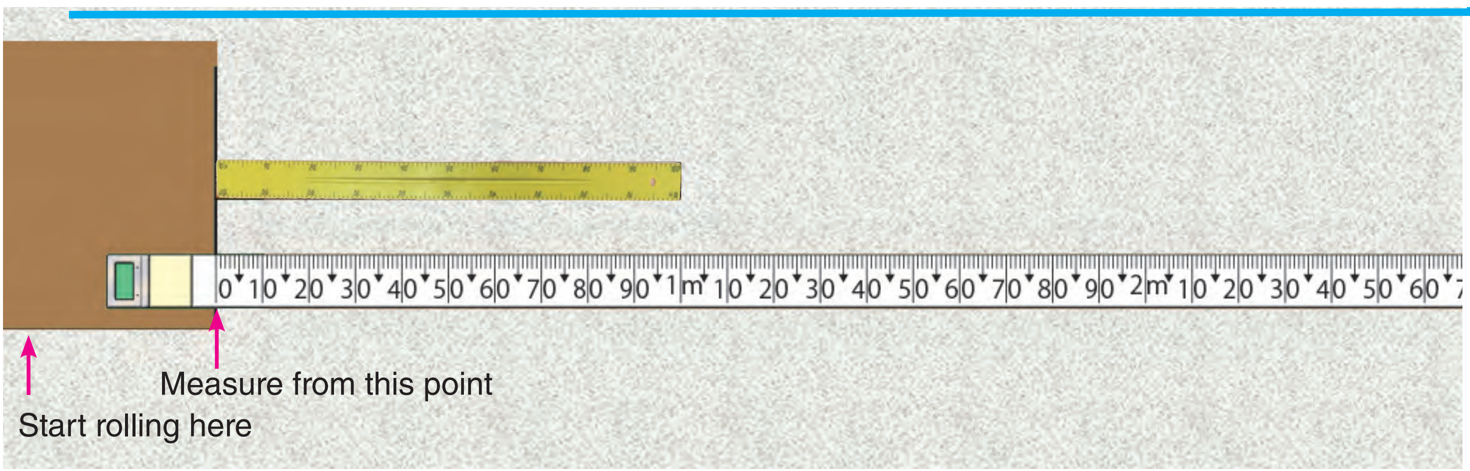
Let's investigate how to measure a longer length.



The length between 2 places along a straight line is called **distance**.

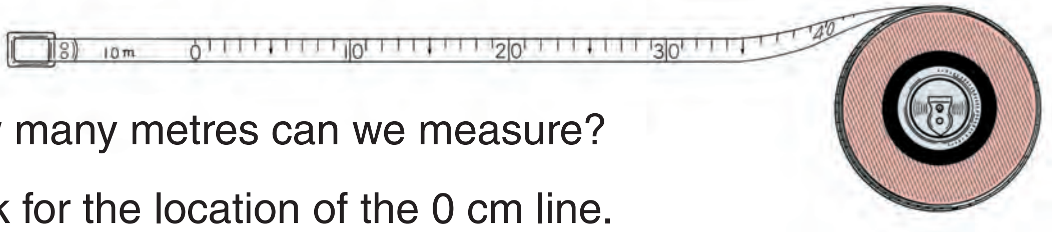
A tape measure is good to measure the run distance.



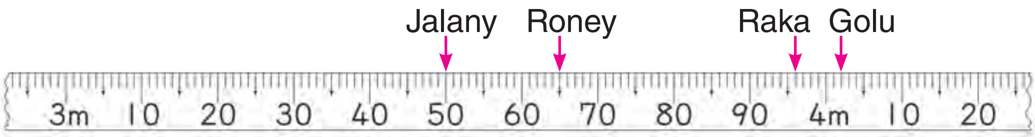


1 How to Measure

1 Let's investigate how to use a tape measure.



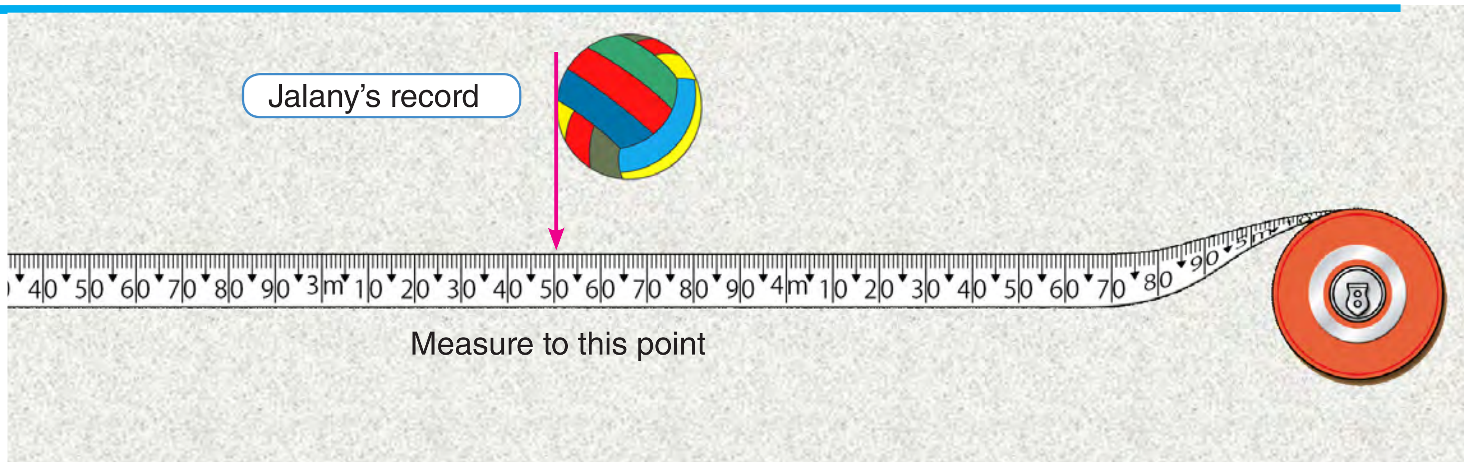
1. How many metres can we measure?
2. Look for the location of the 0 cm line.
3. Jalany and three other children rolled balls.
   Write the distances in which her friend's ball moved in the table below.



Distance that each ball rolled

Name	Jalany	Roney	Raka	Golu
Distance moved				

4. Arua's ball rolled 4 m 18 cm. Write an ↓ on the tape measure above.

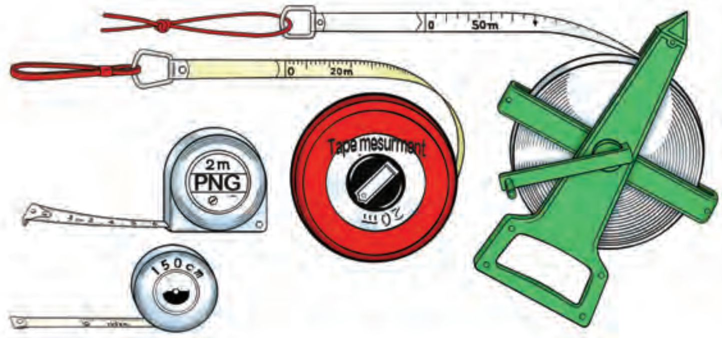


2 How can you estimate the length of 10 metres?

Walk to a point that you think is 10 metres away. Then, measure the real distance.

Activity

3 What can we use to measure with the following things?



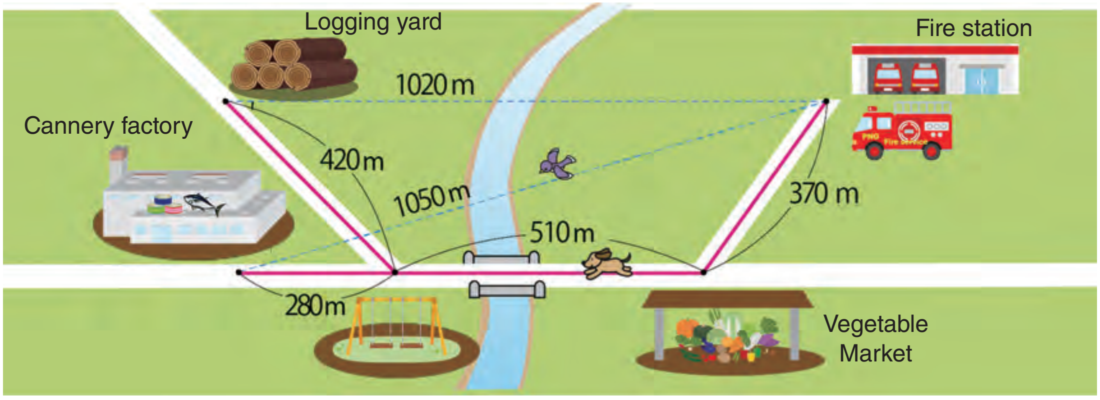
1. The length and width of a book
2. The length and width of a desk
3. The length and width of a blackboard
4. The height of a desk
5. The circumference of a can
6. The length of a classroom

4 Let's measure various things and find better ways.

Activity

2 Kilometre

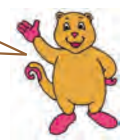
1 Look at the map below and solve the following problems.



The length measured along the road is called **road distance.**

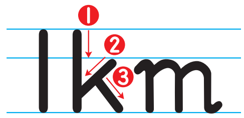
① How long is the road distance and the distance from the fire station to the Tuna cannery factory in metres, respectively?

Distance is the length measured in a straight line.



1000 m is called one kilometre and is written as 1 km.

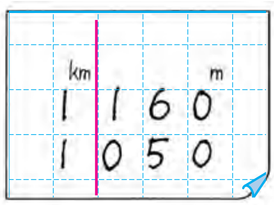
1 km = 1000 m



② How many kilometres and metres are the road distance and the distance from fire station to Tuna cannery factory respectively?

Road distance   1160 m = ☐ km ☐ m

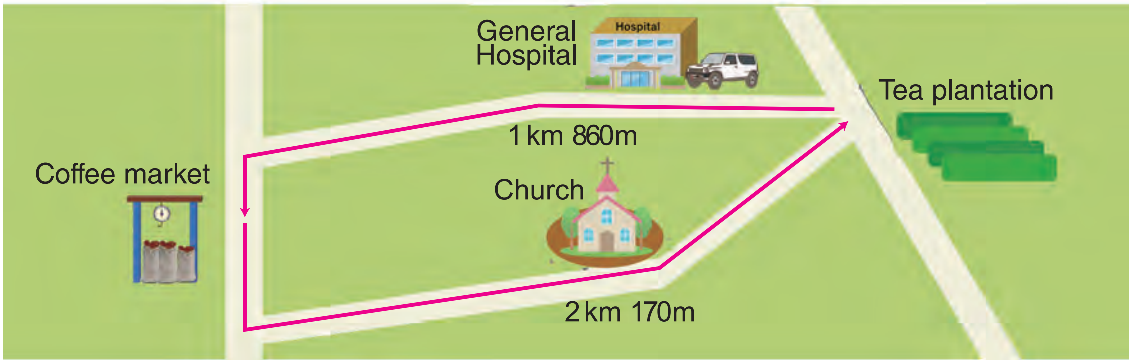
Distance   1050 m = ☐ km ☐ m



1 km 160 m is called **"one kilometre and one hundred sixty metres".**

③ How many kilometres and metres are the road distance and the distance from the fire station to logging yard, respectively?

2 Look at the map below and solve the following problems.



Students from Blue class visited town for the excursion.

Move from tea plantation to coffee market.

① How many kilometres and metres is the road distance from the tea plantation to the coffee market through the General hospital and return from the coffee market to the tea plantation through the church? Write an expression.

1 km 860 m $\square$ 2 km 170 m

Let's think about how to calculate.

Mero's idea

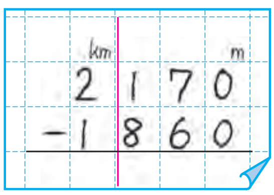
Kilometre
1 km + 2 km = 3 km
Metre
860 m + 170 m = 1030 m
1030 m = 1 km 30 m
Total, 4 km 30 m

Yamo's idea

1 km 860 m = 1860 m
2 km 170 m = 2170 m
So,
1860 m + 2170 m = 4030 m
4030 m = 4 km 30 m

② Between the tea plantation and the coffee market, which road distance is longer and by how many more?

Calculate the Length in Vertical Form



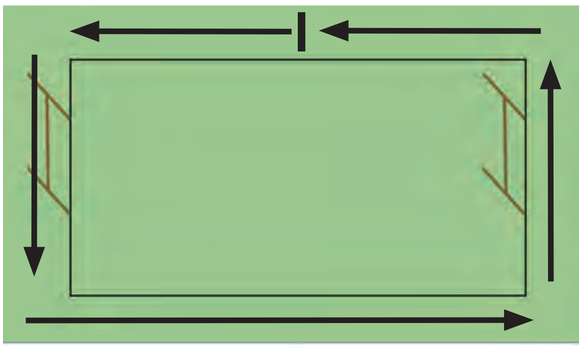
3 Let's explore the distance of 1 km around the sport field.

① Walk for 100 m and think about how far is 1 km.

- How many of your steps did you take to walk 100 m?
- How many steps for 1 km?

② Let's walk 1 km.

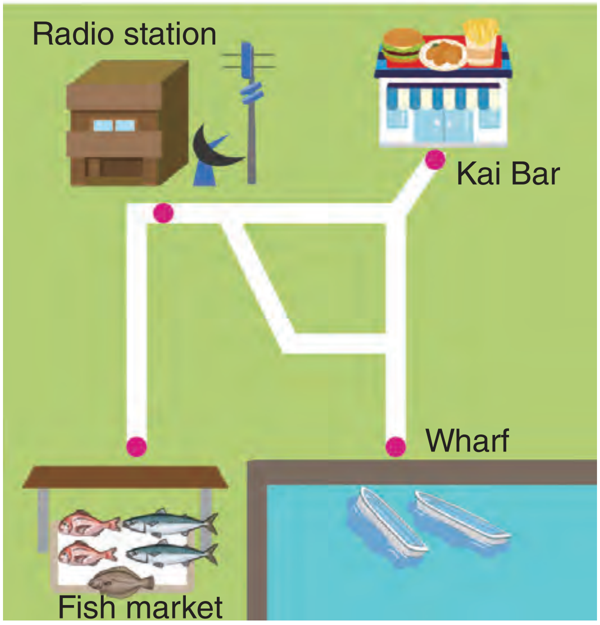
- How many minutes does it take?
- How do you feel?



③ Let's relate the distance of 1 km in our environment.

Travelling by bicycle

4 Tanya is touring a sea side town by bicycle. She departs from the Kai Bar, visits both the Radio station and the Wharf and finally arrives at the fish market.



Road Distance and Time

	Road distance	Time
Kai bar ↔ Radio station	2 km 400 m	16 minutes
Kai bar ↔Wharf	6 km 100 m	28 minutes
Radio station ↔ Wharf	6 km 200 m	31 minutes
Radio station ↔ Fish market	19 km 100 m	48 minutes

1. The table above shows the road distance and travel time between 2 places. Which is better to go first, is it the Radio station or the Wharf?
2. Which is the longest road distance, is it when she goes to the Radio station first or the wharf, and by how many?
3. Which takes a longer time by bicycle, and by how long?

Exercise

1 Let's fill in the ☐ with a number or a word. Pages 124, 127

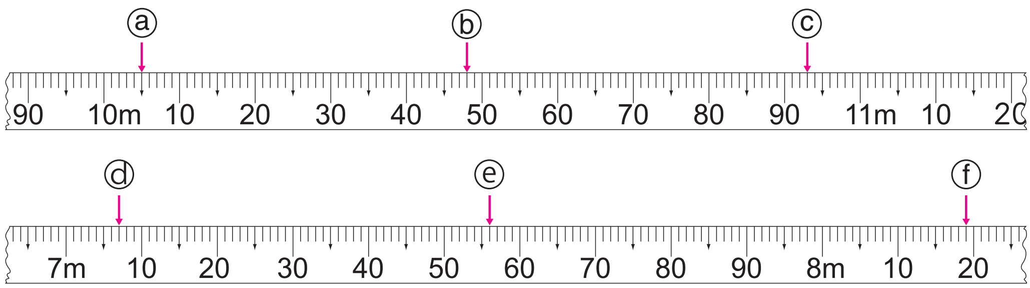
① Choose 2 places and measure the length in a straight line.

This is called ☐.

② The distance measured along the road is called ☐.

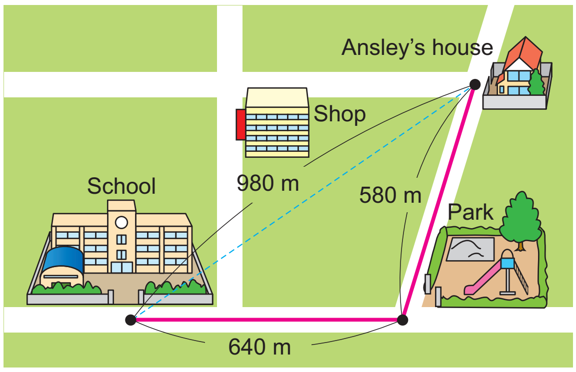
③ 1 km = ☐ m

2 How many metres and centimetres are shown by the arrows ↓ on the tape measures shown below. Page 125



3 The map below shows the road distance and the distance between Ansley's house and the school. Page 130

① How many kilometres and metres is the road distance from Ansley's house to the school through the park?



② What is the difference in metres between the road distance ① and the distance from Ansley's house to the school?

Let's find time and duration. Grade 3 Do you remember?

① What time is 45 minutes after 10:40 in the morning?

② What is the duration from 11 hours and 30 minutes in the morning to 1 hour and 30 minutes in the afternoon?

Problems

1 Fill in the ☐ with a correct unit.

● Using units of length correctly.

① The length of the classroom is 8 ☐.

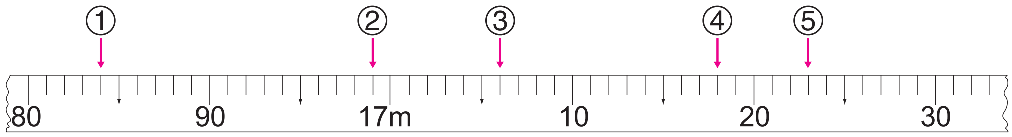
② The road distance that we walk in one hour is 4 ☐.

③ The height of the desk is 60 ☐.

④ The height of Mt. Wilhelm is 4509 ☐.

2 How many metres and centimetres are there at the arrows ↓ on the tape measure?

● Reading the scale of a tape measure.



3 Which is longer?

● Understanding relationship between different units of length.

① 2 km 50 m ; 2030 m

② 1580 m ; 1 km 59 m

③ 5 km ; 4980 m

4 Let's calculate.

● Specify in meter / km and meter.

① 700 m + 500 m

② 1 km 900 m + 200 m

③ 5 km 400 m + 680 m

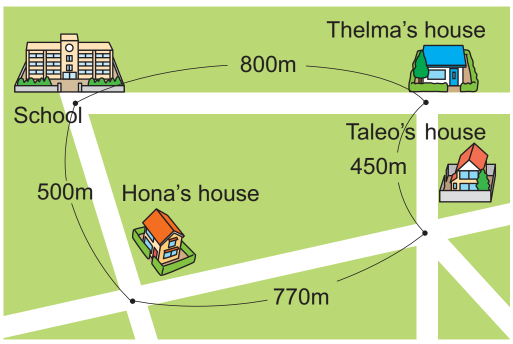
④ 1 km − 300 m

⑤ 2 km 500 m − 800 m

⑥ 3 km 530 m − 540 m

5 Taleo can go to school through Thelma's house or Hona's house. Which of the 2 has the longest road distance? And by how much?

● Understanding the relationship of road distances from the map.



13 Triangles

Let's prepare making triangles!

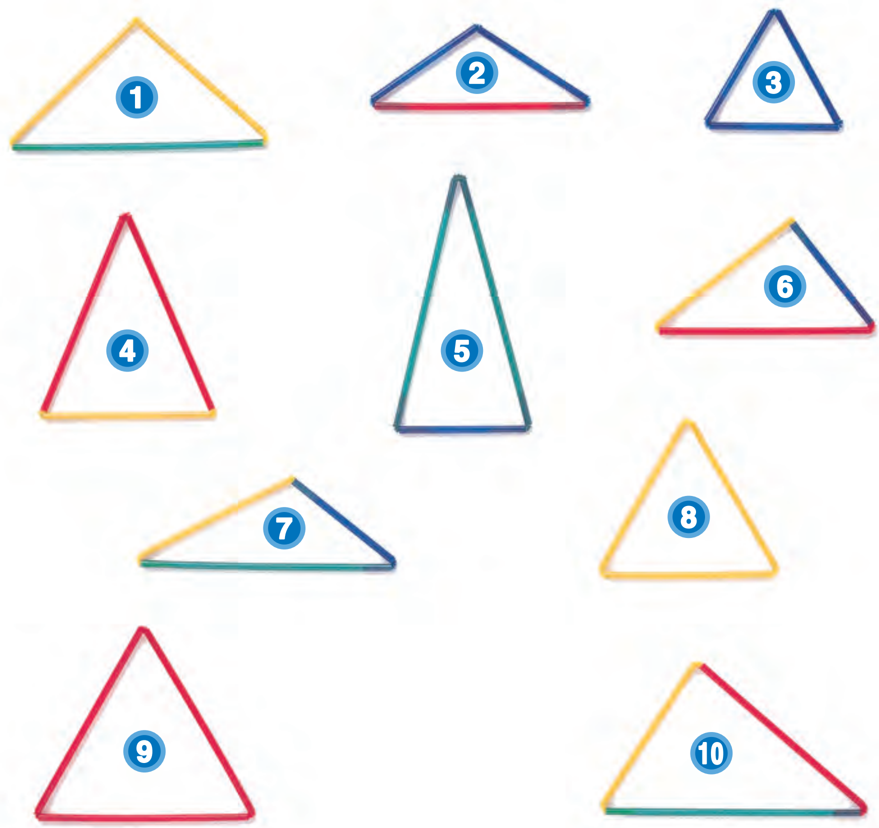
Blue 6 cm

Yellow 8 cm

Red 10 cm

Green 12 cm

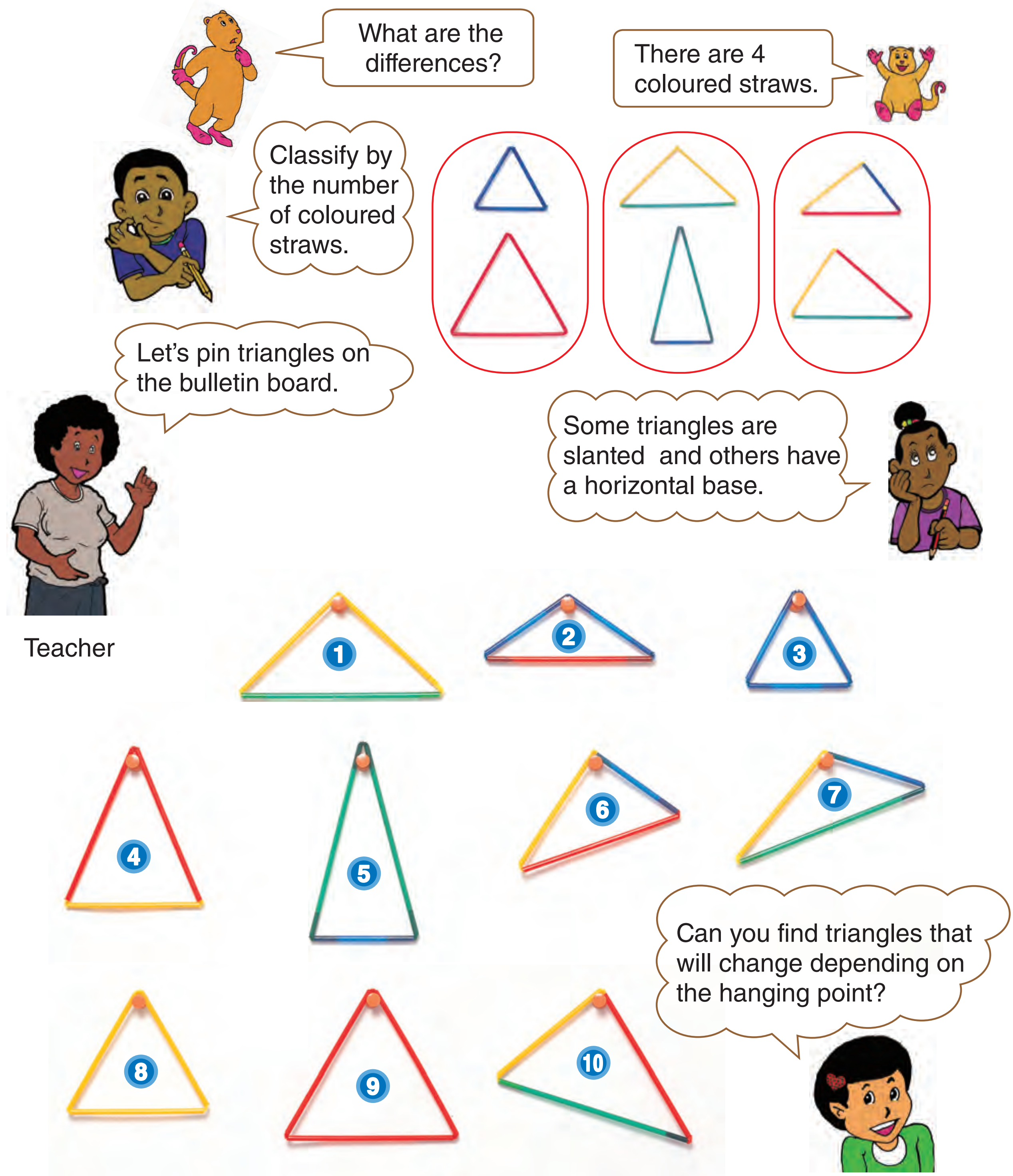
▶▶ Let's make triangles using straws of different lengths.



Activity

1 Isosceles and Equilateral Triangles

1 Group the same types of straw triangles.



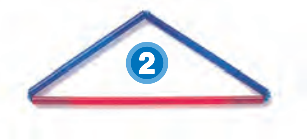
1. Let's classify triangles using Naiko and the teacher's methods.

Activity

Let's investigate various types of triangles and how to draw them.

Naiko's method

Trace, cut and paste triangles on the table below.

Ⓐ	Ⓑ	Ⓒ
Blue, Blue, Red 6 cm, 6 cm, 10 cm 	Blue, Blue, Blue 6 cm, 6 cm, 6 cm 	Yellow, Blue, Green 8 cm, 6 cm, 12 cm 
	The lengths of the 3 sides are equal.	

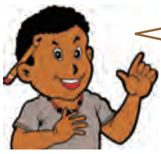
2 To classify triangles in Ⓐ, Ⓑ and Ⓒ, let's think about the lengths of the sides and write their properties in the bottom row.

The same colour shows the same length.

Trace triangles in Ⓐ and measure the lengths of their sides.

Draw a point at the vertex.

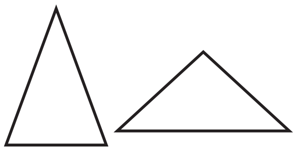
Draw a straight line connecting the 2 points.



Measure the lengths of sides by a ruler.

Cut a triangle and fold it so that the two sides overlap.

A triangle with two equal sides is called an **isosceles triangle**.

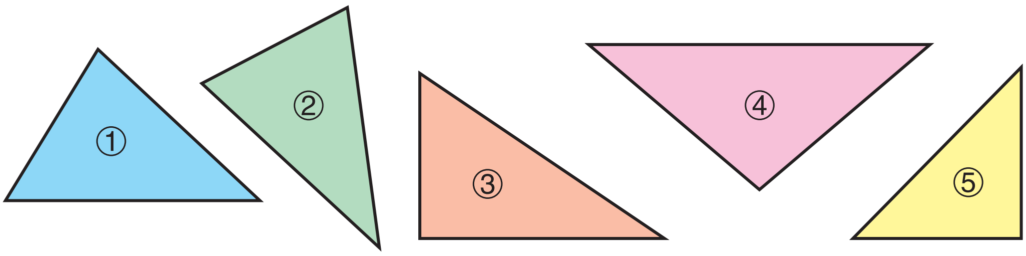


2 Let's look for isosceles triangles around us.

Activity

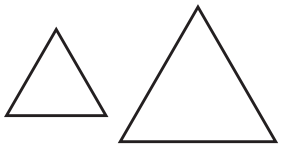
Exercise

Which of these triangles are isosceles triangles?



3 Trace triangles in Ⓑ on **1** and measure the lengths of their sides.

A triangle with three equal sides is called an **equilateral triangle**.

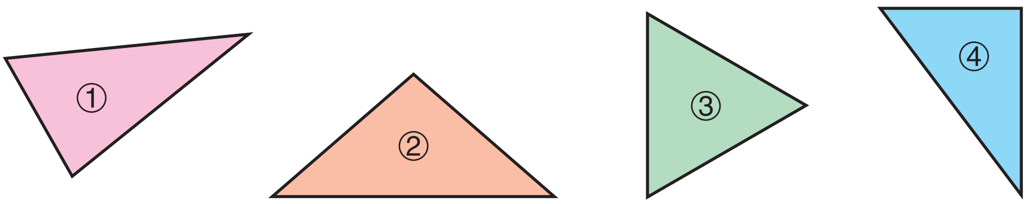


4 Let's look for equilateral triangles around you.

Triangle warning kit

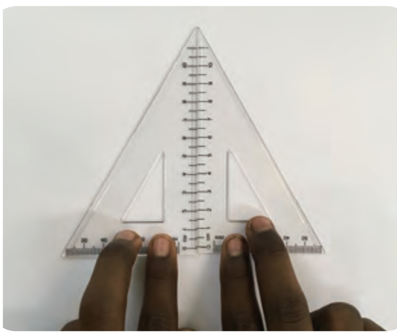
Activity

5 Which of these triangles are equilateral triangles?



Exercise

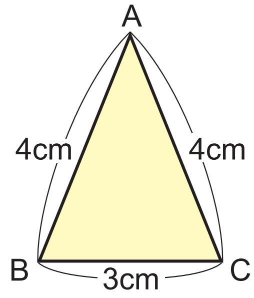
Let's make an isosceles triangle and an equilateral triangle by using two same set-squares.



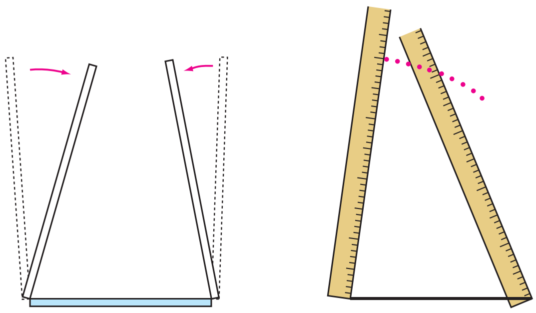
2 How to Draw Triangles

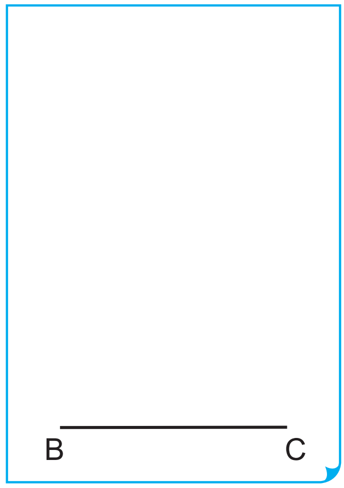
1 Let's think about how to draw an isosceles triangle where the sides are 3 cm, 4 cm and 4 cm.

Draw the side BC.

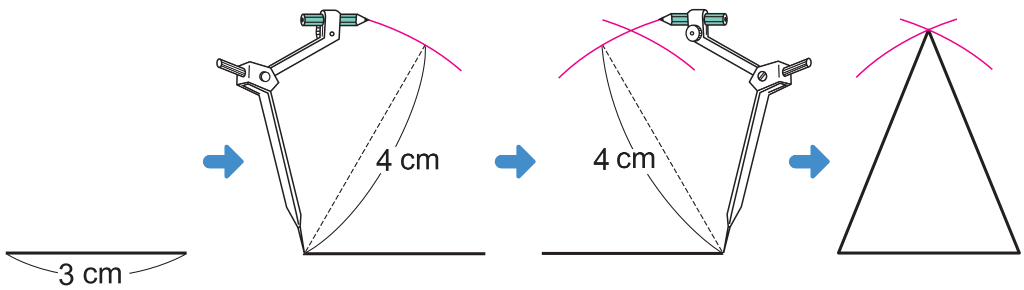


① Let's think about how to locate the vertex A from the drawing below.





② Let's use a compass for drawing it.



Exercise

Let's draw the following triangles.

① An isosceles triangle where the 3 sides are 4 cm, 6 cm and 6 cm

② An isosceles triangle where the 3 sides are 5 cm, 5 cm and 8 cm

2 One side of an equilateral triangle was drawn on the right. The length is 5 cm. Let's draw the other sides of the equilateral triangle. Also, explain how you drew it.

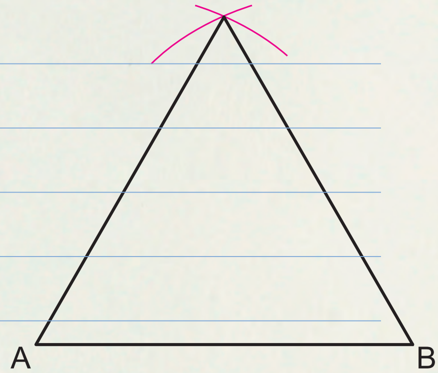
Can I draw it as I did for an isosceles triangle?

It is understandable to explain the reason using "first", "next", "moreover" and "finally".

First, let the end points of a line be A and B.

Next, draw a part of circle with centre A and radius 5cm, using a compass.

Moreover, draw a part of circle with centre B and radius 5cm in the same way.



Finally, connect from the intersected point of the two circles to points A and B, respectively.

Exercise

Let's draw the following triangles.

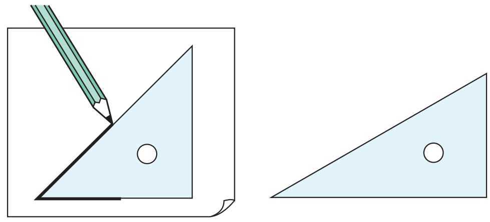
① An equilateral triangle where all sides are 4 cm.

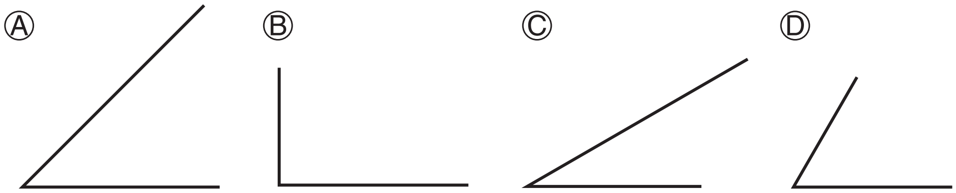
② An equilateral triangle where all sides are 7 cm.

③ An isosceles triangle where 3 sides are 8 cm, 8 cm and 6 cm.

3 Triangles and Angles

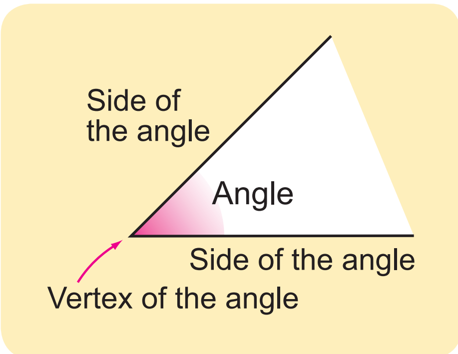
1 Trace each corner of the set-squares on the paper and investigate.





1. Which corner is a right angle?
2. Which corner is most acute?

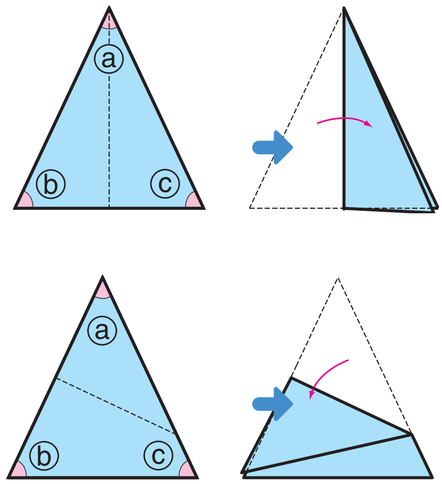
The figure formed by 2 straight lines from one point is called **angle**.
The point is called **vertex** of the angle and the 2 straight lines are called **sides** of the angle.
The amount of opening between both sides of an angle is called **size** of the angle.



2 Compare the sizes of the angles traced in 1 and say the order of the size of the angle.

The size of an angle is determined by the amount of opening between sides and not the length of the side.

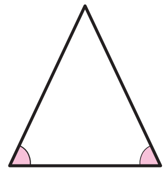
3 Let's draw an isosceles triangle on a sheet of paper and cut it.



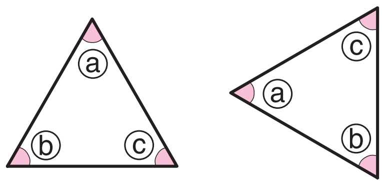
❶ Compare the sizes of angle ⓑ and ⓒ.

❷ Compare the sizes of angle ⓐ and ⓑ.

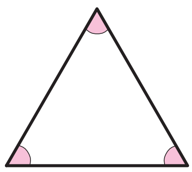
In an **isosceles triangle**, sizes of two angles are equal.



4 Let's draw an equilateral triangle on the paper and cut it, then compare the sizes of angles ⓑ and ⓒ, and ⓐ and ⓑ, respectively.



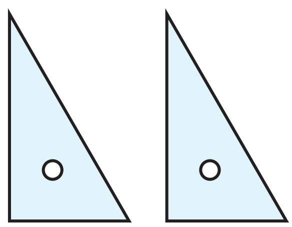
In an **equilateral triangle**, sizes of three angles are equal.



Exercise

Can we make the following figures using the set-squares as shown on the right?

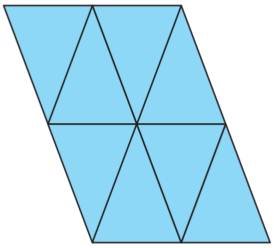
rectangle, square, right triangle equilateral triangle, isosceles triangle



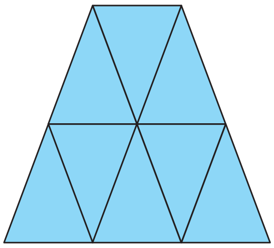
4 Designing Patterns

1 Let's make various shapes using the same isosceles triangles.

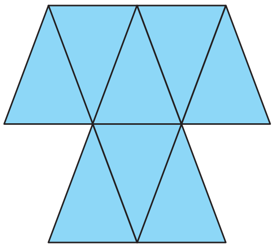
8 isosceles triangles



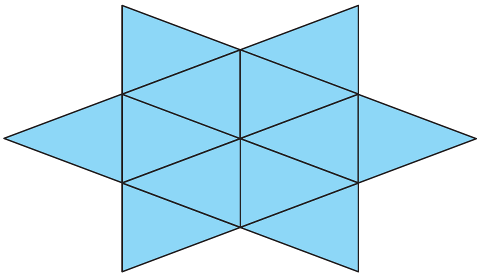
8 isosceles triangles



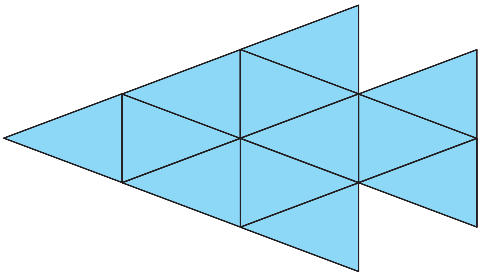
8 isosceles triangles



12 isosceles triangles

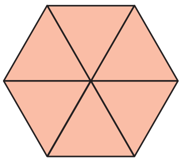


12 isosceles triangles

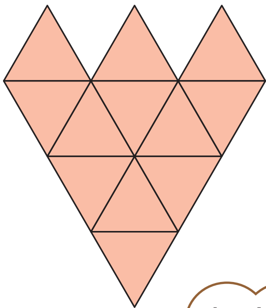


2 Let's make various shapes using the same equilateral triangles.

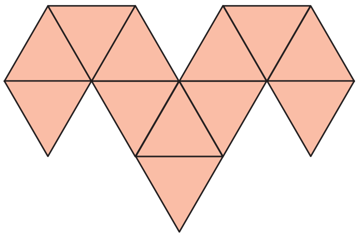
6 equilateral triangles

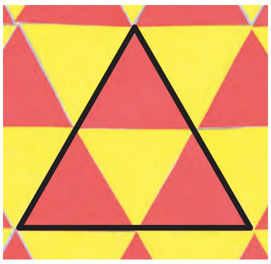


12 equilateral triangles



12 equilateral triangles





I made a larger equilateral triangle using small equilateral triangles.

Let's look for interesting shapes with triangles around us.

Activity

Exercise

1 What kinds of triangles are these?

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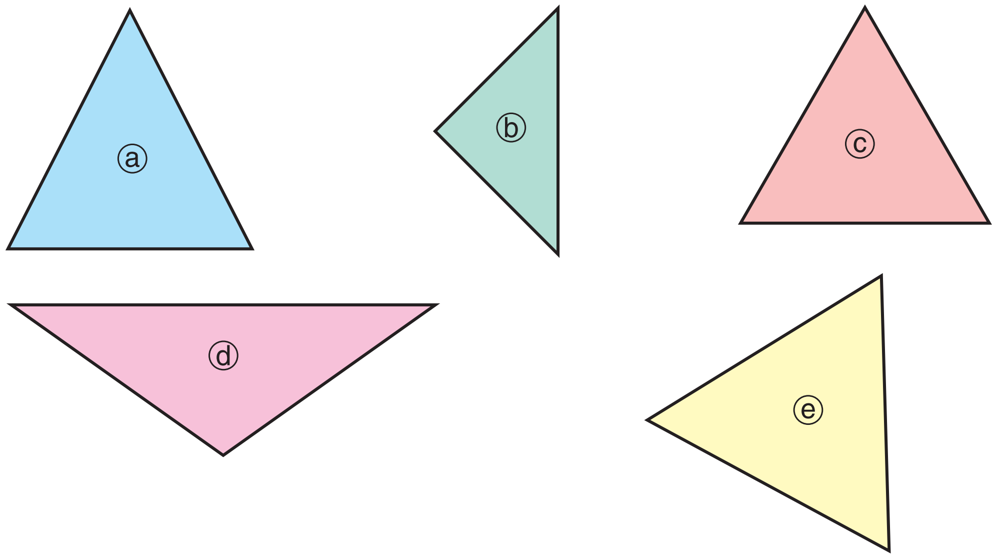

2 The radius of the circle on the right is 5 cm and its centre is point A.

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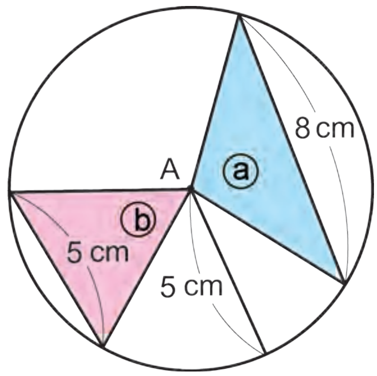
① What kind of triangle is triangle ⓐ?

② What kind of triangle is triangle ⓑ?



3 Let's draw the following triangles.

Pages 138 ~ 139

① An isosceles triangle where 3 sides are 7 cm, 5 cm and 5 cm.

② An equilateral triangle where all sides are 6 cm.

Grade 3 **Do you remember?**

Multiply the following numbers by 10 and 100 and divide them by 10.

① 20 ② 400 ③ 780 ④ 910

Problems

1 Let's fill in the □ with a number.

● Understanding special triangles.

① An isosceles triangle has □ sides of the same length and □ angles of the same size.

② An equilateral triangle has □ sides of the same length and □ angles of the same size.

2 Let's draw the following triangles. And what kinds of triangles are these?

● Drawing triangles from given three sides.

① A triangle with sides of the lengths 6 cm, 4 cm and 4 cm.

② A triangle with all sides of length 5 cm.

①	②

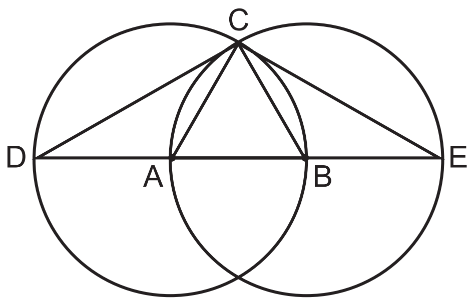
3 The radii of the 2 circles below are both 4 cm and their centres are A and B. BD and AE are diameter of each circle. Draw the same figure, and answer the following problems.

● Understanding properties of triangles and circle.

① Look for isosceles triangles.

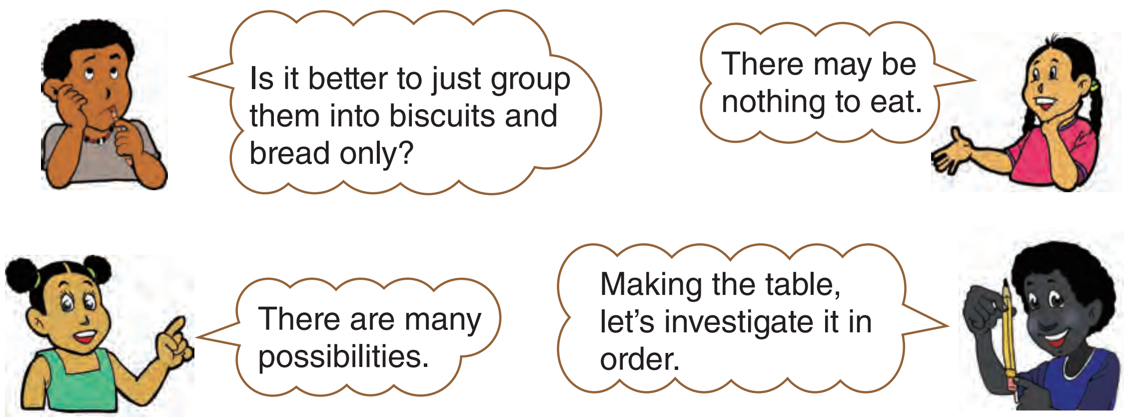
If you do not know the length of the sides, measure its length.

② A triangle CAB is an equilateral triangle. Explain its reason.



14 Tables and Graphs

▶▶ The children in Morea's class investigated the kind of food eaten for breakfast last Sunday in Kerema town.



Let's think about how to arrange the data and represent it.

1 Tables

1 The tables below are records of the kind of food children in Morea's class ate for breakfast last Sunday.

Morea's Table

Sunday's Breakfast

Kind	Number of children	
Biscuit	✓✓✓✓✓✓✓✓✓✓✓✓	
Scone	✓✓✓✓✓✓✓✓✓✓✓✓✓✓	
Bread	✓✓✓✓	
Others	✓✓✓✓✓✓	
Total		

Maia's Table

Sunday's Breakfast

Kind	Number of children	
Biscuit	卌 卌 ||	
Scone	卌 卌 ||||	
Bread	||||	
Others	卌 |	
Total		

① Let's change the number of " ✓ " and the tally " 卌 " to numbers.

| …1 || …2 ||| …3 |||| …4 卌 …5

② Discuss the different ways how the 2 children made their tables.

③ What kind of food is eaten the most and by how many children?

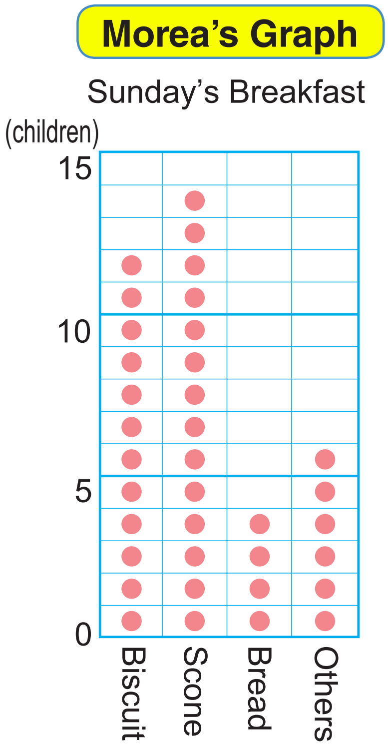
④ Write the total number of children surveyed.

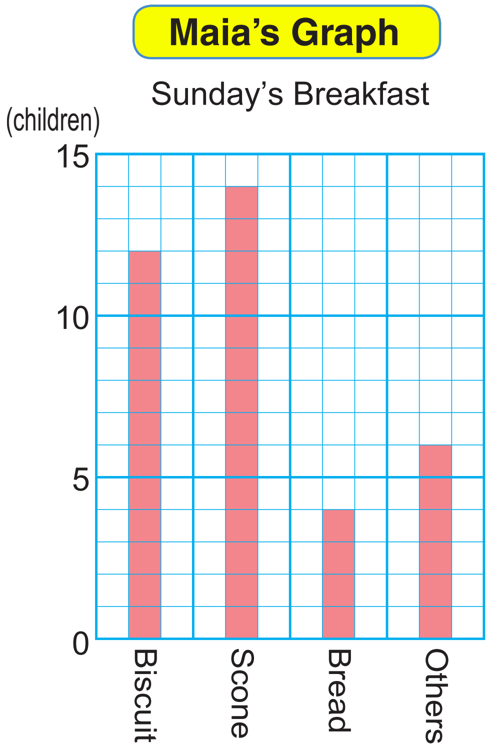
Various Counting Methods

When we count the number of things, we use the signs 卌 and ✓.

2 Bar Graphs

1 Morea and Maia made the following graphs from the tables in the previous page.

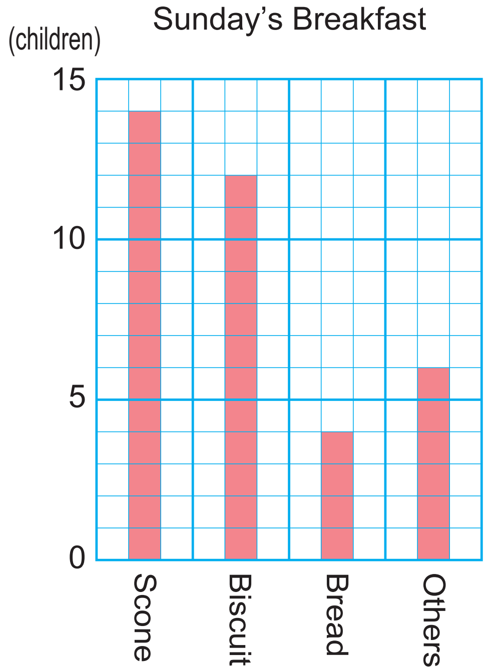




1. How did they represent the number of children?
2. Let's discuss the differences between Morea's graph and Maia's graph.
3. Compare the tables in the previous page with the graphs above. Which one makes it the easiest to compare the number of children? Which one makes it the easiest to see the number of children?

A graph which represents the various amounts by the length of bars is called **bar graph**.

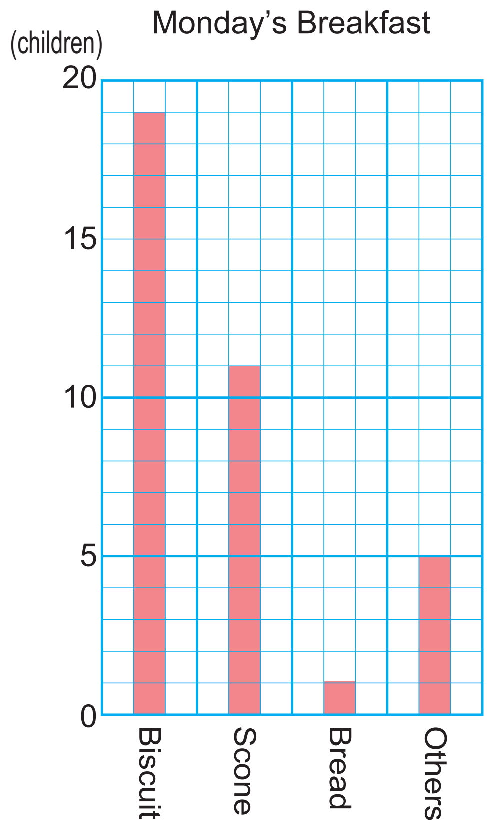
2 Keni changed Maia’s graph into this one on the right.



1. How many students ate biscuit, scone, bread and others, respectively?
2. Which kind of food has the largest number of children?
3. Let’s discuss about Keni’s graph and how it is different from Maia’s graph.

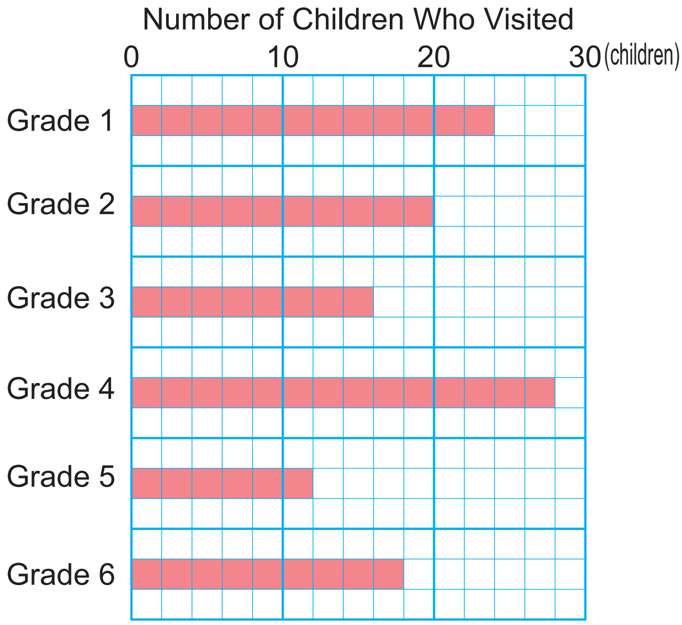
In the bar graph, the bars are usually drawn in order from longest to shortest. The “other” bar is usually drawn last.

3 This bar graph shows the number of children and the type of food children ate last Monday.



1. How is this different from the graph for last Sunday?

4 Dorah's group recorded the number of children who visited the school nurse.
They recorded the number of children in each grade and made a bar graph.

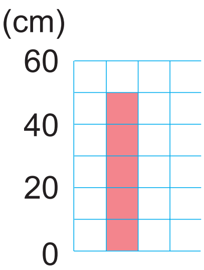


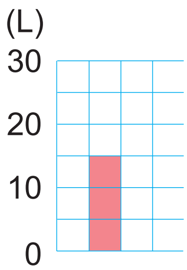
1. How many children are in 1 scale unit of the bar graph?
2. Let's read the number of children who visited school nurse in each grade.
3. What can we conclude from this bar graph?

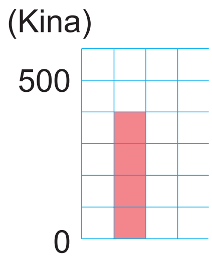
You can make a bar graph for large numbers by increasing the number that each scale in the graph represent.

When a bar graph shows amounts with given order like grades, the bars are drawn in that order.

5 In the graphs below, let's read how much is each unit.

1. 

2. 

3. 

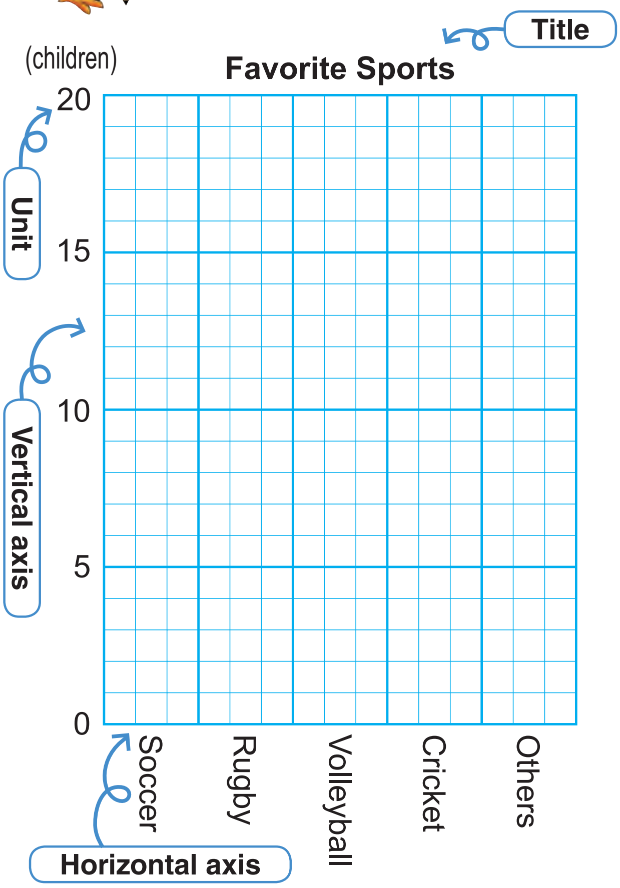
How to Draw a Bar Graph

6 The table on the right shows the favourite sports of 3rd grade children in class one. Let's draw a bar graph.

Favourite Sports

Sports	Number of children
Soccer	14
Rugby	10
Volleyball	7
Cricket	3
Others	2
Total	36

How to Draw a Bar Graph



① Write each sport on the **horizontal axis**.

② Write the number of children on the **vertical axis**.

③ Write the **title** and **unit** of the vertical axis.

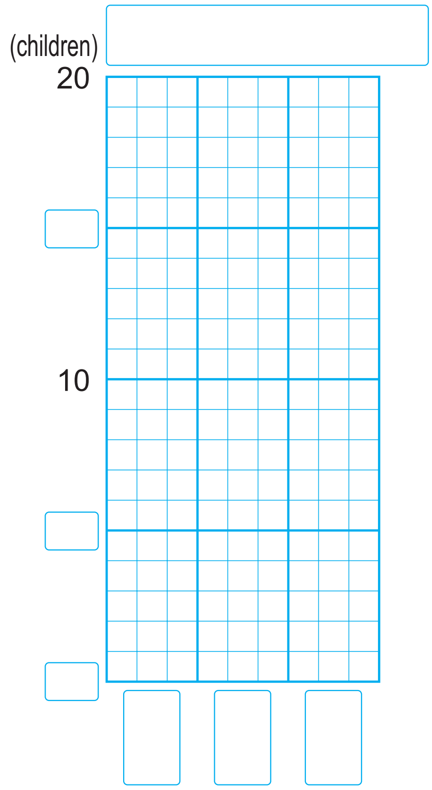
④ Draw bars according to the number of students.

7 We investigated the number of third graders in each class who said their favourite sport was soccer.

Let's draw a bar graph.

Number of Children Who Like Soccer

Class	Number of children
A	14
B	15
C	11
Total	40

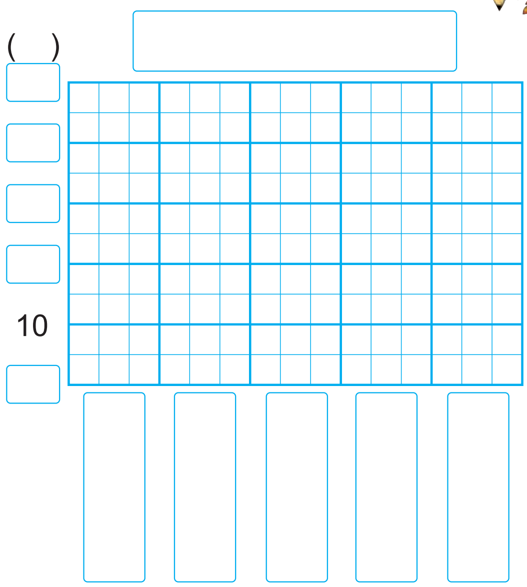


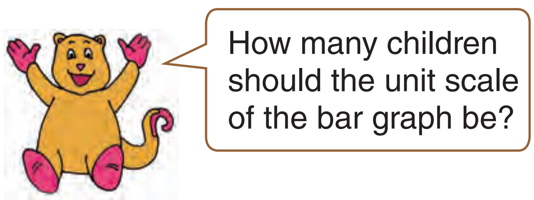
8 We investigated the favourite sports of all the third graders.

Let's draw a bar graph.

Favourite Sports

Sports	Number of children
Soccer	40
Rugby	35
Volleyball	15
Cricket	10
Others	5
Total	105





3 Combining Tables

1 The following tables show the types of tools and the number of tools that the grade 3 students borrowed in April, May and June.

Tools Borrowed in April

Type of tools	Number of tools
Rake	15
Knife	6
Spade	8
Others	5
Total	

Tools Borrowed in May

Type of tools	Number of tools
Rake	21
Knife	19
Spade	24
Others	8
Total	

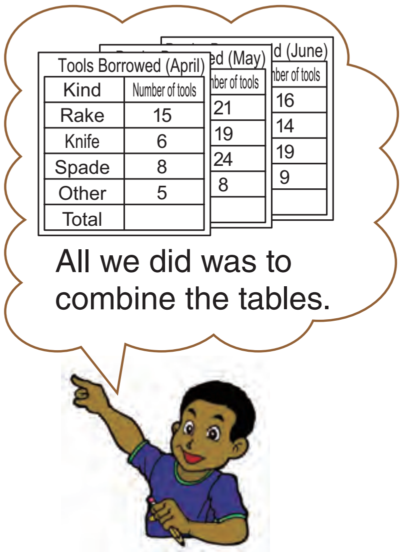
Tools Borrowed in June

Type of tools	Number of tools
Rake	16
Knife	14
Spade	19
Others	9
Total	

1. What is the total number of tools that were borrowed in each month?
2. Which type of tool was borrowed the most in April, May and June?
3. Combine the tables for each month together to make 1 table.

Number of tools Borrowed

Type \ Month	April	May	June	Total
Rake	15	21	16	52
Knife	6	19		Ⓓ
Spade	8			Ⓔ
Others	5			Ⓕ
Total	Ⓐ	Ⓑ	Ⓒ	Ⓖ



4. How many rakes were borrowed from April to June?
5. How many tools are in boxes Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ and Ⓕ?
6. What is the meaning of the number in Ⓖ?
7. Which kind of tools was borrowed the most from April to June?

Exercise

The following table is a record in hospital of the number of children who got sick in April, May and June, and the types of sickness.

① How many children were sick in each month?

② What type of illnesses happened the most from April to June?

Records of Sickness

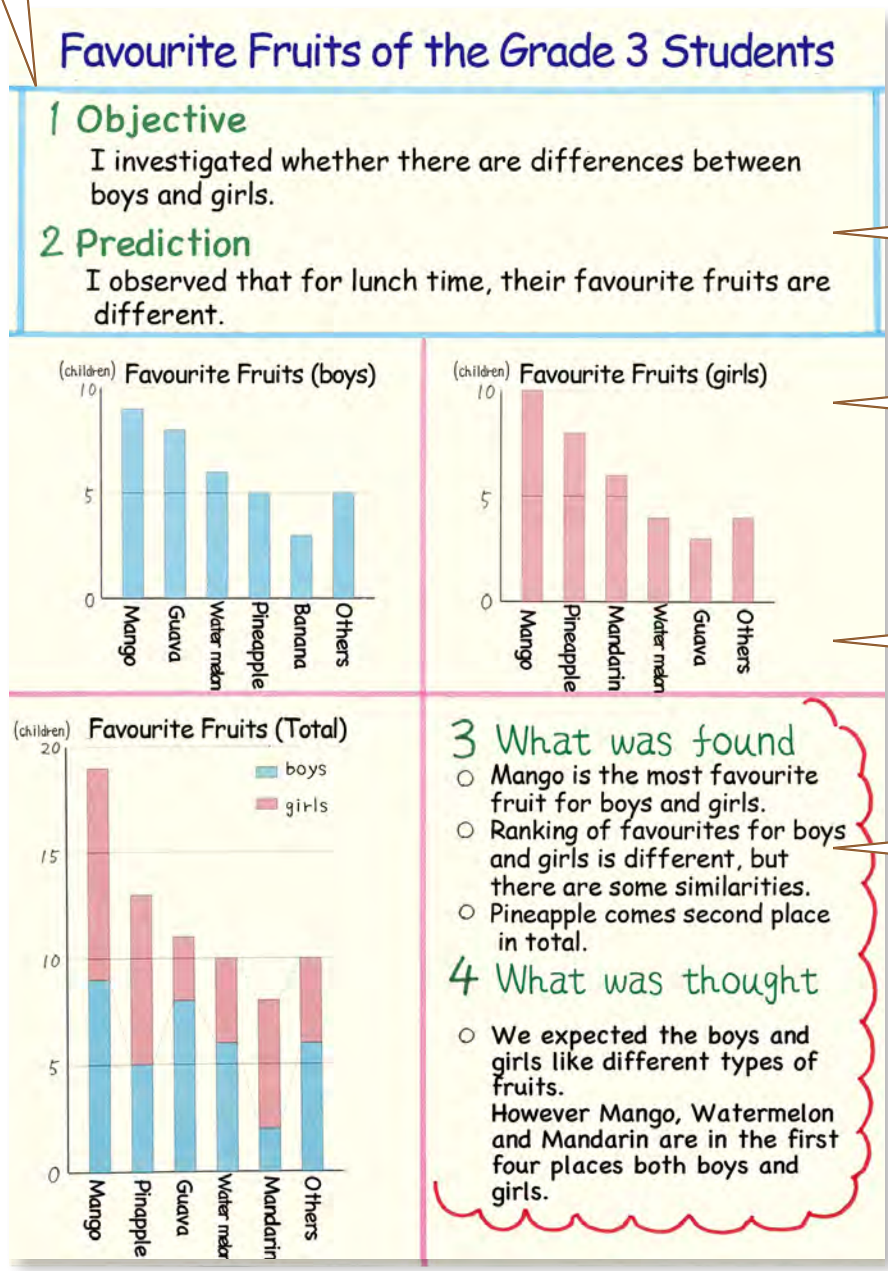
Type \ Month	April	May	June	Total
Malaria	29	27	13	
Pneumonia	21	46	30	
Diarrhoea	13	7	4	
Sore eyes	7	4	2	
Others	10	14	6	
Total				

Report and Present Your Discovery

Compile your report to present your ideas to your friends.

I investigated about favourite fruits.

Let's write what you investigated, and why?



Let's write what I expected.

Let's show the table and graph to understand what I investigated.

Let's write what I found from tables and graphs.

Let's write what I thought comparing the expect.

What did you investigate? Let's explain what you investigated using tables and graphs.

Activity

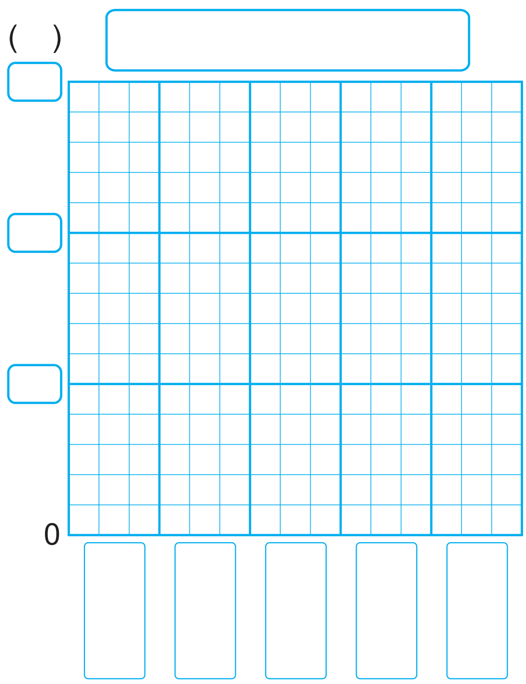
Exercise

1 The following table shows favourite colours of children in Miriam's class. Let's draw a bar graph.

Pages 150 ~ 154

Favourite Colours

Colour	Number of children
Blue	12
Red	9
Green	6
Pink	3
Other	6
Total	36



2 The following table shows the number of children who hurt themselves in June at Nathan's school and the type of injuries. Write the correct numbers in the boxes from Ⓐ to Ⓗ .

Pages 152 ~ 153

Records of Injuries (June)

Type \ Grade	1	2	3	4	5	6	Total
Scratch	3	Ⓑ	2	5	3	4	21
Cut	Ⓐ	2	2	3	Ⓔ	3	Ⓖ
Bruise	1	1	Ⓒ	2	2	Ⓕ	13
Other	2	3	1	1	0	2	9
Total	7	10	8	Ⓓ	9	13	Ⓗ

1 Children picked up empty cans at Kaia's school.

The following table shows the number of cans picked up by the children in each grade.

● Reading numbers from table and graph.

Number of Empty Cans Picked Up

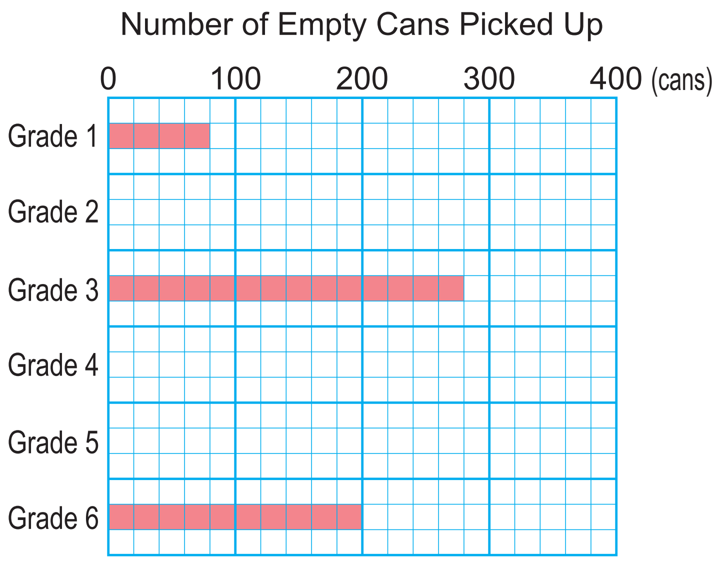
Grade	1	2	3	4	5	6	Total
Number of cans		120		240	160		

① What does the unit scale show on the graph on the right.

② Let's write the number of empty cans picked up in the above table.

③ Let's draw bars for grade 2, 4 and 5 on the graph.

④ Compare the table with the bar graph.



ⓐ Which one makes it easier to read and which grade picked up the most cans?

ⓑ Which one makes it easier to read and how many cans did the children in each grade pick up?

2 What can you learn from the above bar graph? Write as many points as possible.

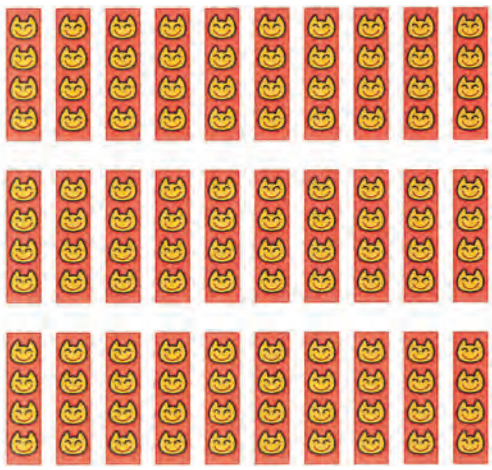
● Knowing various things from a graph.

15 Multiplication of 2-digit Numbers

Multiplier

Multiplicand	1-digit	2-digit
1-digit	8×6	3×10
2-digit	20×2 26×4	25×10
3-digit	400×9 315×6	

▷▷ There are 30 sets of stickers, each set with 4 stickers.



1 Multiplication by 20, 30 90

1 How many stickers are there altogether?

① Write an expression.

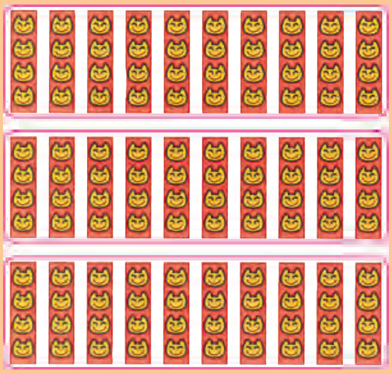
② Let's think about how to calculate.

Let's think about how to multiply by a large multiplier

Activity

Activity

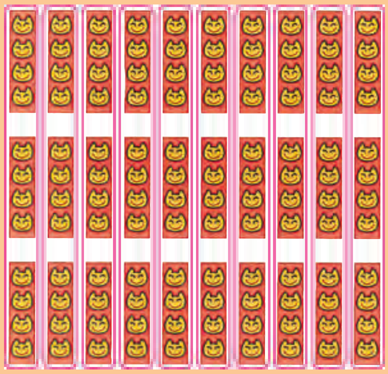
Sare's idea



$3 \times 10 \times 4 = \square$

$30 \times 4 = \square$

Kekeni's idea



$10 \times 3 \times 4 = \square$

$10 \times 12 = 12 \times 10 = \square$

Since 30×4 is 10 times of 3×4, the answer is same as 3×4 with 0 placed at the end.

$30 \times 4 = 3 \times 4 \times 10$

$30 \times 4 = 12 \times 10$

$30 \times 4 = 120$

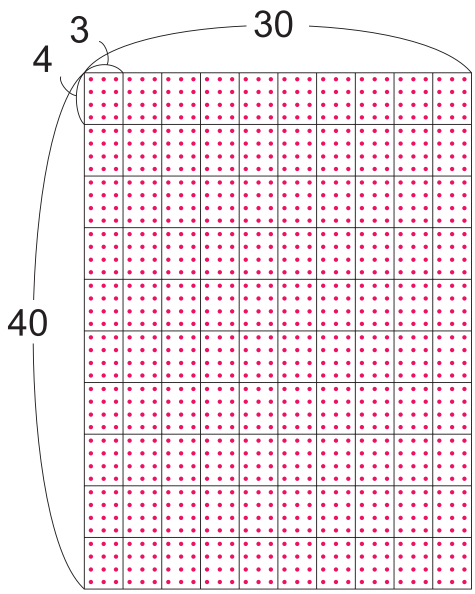
2 Let's think about how to calculate for 40×30.

$40 \times 30 = 4 \times 10 \times 3 \times 10$

$40 \times 30 = 4 \times 3 \times 10 \times 10$

$= \square \times \square$

$= \square$



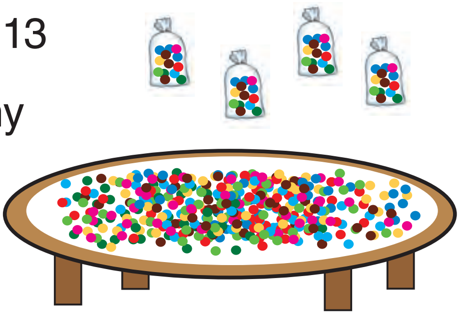
Since 40×30 is 100 times 4×3, the answer is same as 4×3 with 00 placed at the end.

Exercise

① 3×40 ② 4×60 ③ 70×30 ④ 80×50

2 How to Calculate (2-digit numbers) × (2-digit numbers)

1 There are 21 children who are buying 13 marbles each at the market. How many marbles do they have altogether?



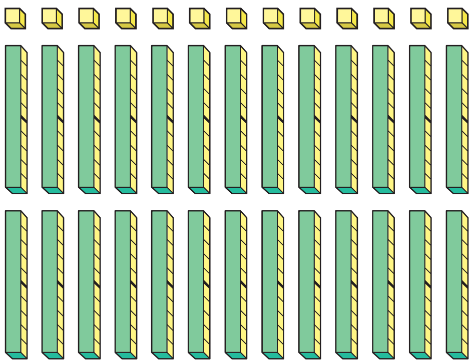
① Write an expression.

☐

Approximately, how many?

② Let's think about how to calculate.

Let's think about how to multiply (2-digit numbers) × (2-digit numbers)



Vavi's idea

Split 13 marbles into 10 marbles and 3 marbles.

$$21 \times 13 \begin{cases} 21 \times 3 = \square \\ 21 \times 10 = \square \end{cases}$$

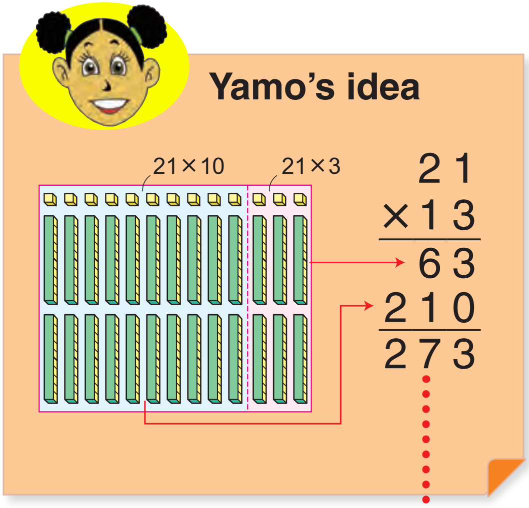
Total ☐

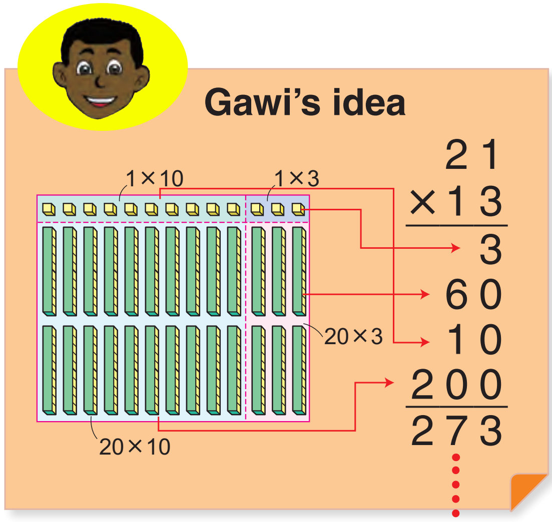
③ Where can you see 21 × 3 and 21 × 10 in the diagram? Circle them.

④ Let's think about how to calculate 21 × 13 in vertical form.

		2	1
	×	1	3

Activity





Multiplication Algorithm for 21 × 13 in Vertical Form

$$\begin{array}{rrr} & 2 & 1 \\ \times & 1 & 3 \\ \hline & 6 & 3 \end{array}$$

Multiplicand

Multiplier

Multiply 21 by 3. 21 × 3

$$\begin{array}{rrr} & 2 & 1 \\ \times & 1 & 3 \\ \hline & 6 & 3 \\ 2 & 1 & 0 \end{array}$$

There are 21 sets of 10s blocks.

Multiply 21 by 10. 21 × 10

$$\begin{array}{rrr} & 2 & 1 \\ \times & 1 & 3 \\ \hline & 6 & 3 \\ 2 & 1 & \\ \hline 2 & 7 & 3 \end{array}$$

Add 63 and 210.

$$\begin{array}{rrr} & 2 & 1 \\ \times & 1 & 3 \\ \hline & 6 & 3 \\ 2 & 1 & \\ \hline 2 & 7 & 3 \end{array}$$

2 Let's think about how to multiply in vertical form.

① 26 × 23

$$\begin{array}{rrrl} & 2 & 6 & \\ \times & 2 & 3 & \\ \hline & 7 & 8 & \leftarrow 26\times3 \\ 5 & 2 & & \leftarrow 26\times20 \\ \hline & & & \leftarrow 26\times23 \end{array}$$

52 means 52 sets of what?

② 18 × 27

$$\begin{array}{rrrl} & 1 & 8 & \\ \times & 2 & 7 & \\ \hline & & & \leftarrow 18\times7 \\ & & & \leftarrow 18\times20 \\ \hline & & & \leftarrow 18\times27 \end{array}$$

Exercise

Let's multiply in vertical form.

① 16 × 24 ② 27 × 32 ③ 15 × 12 ④ 21 × 14

⑤ 36 × 23 ⑥ 17 × 57 ⑦ 27 × 24 ⑧ 15 × 38

3 Let's think about how to multiply in vertical form.

① 58×46

		5	8	
	×	4	6	
				← 58×6
				← 58×40
				← 58×46

② 37×63

		3	7	
	×	6	3	
				← 37×☐
				← 37×☐
				← 37×63

4 Let's think about how to multiply 35×70 in vertical form.

① Explain how the following two children multiply in vertical form.

Vavi's idea

$$\begin{array}{r} 35 \\ \times\ \ 70 \\ \hline 00 \end{array} \rightarrow \begin{array}{r} 35 \\ \times\ \ 70 \\ \hline 00 \\ 245 \\ \hline \end{array} \rightarrow \begin{array}{r} 35 \\ \times\ \ 70 \\ \hline 00 \\ 245 \\ \hline \boxed{} \end{array}$$

Mero's idea

$$\begin{array}{r} 35 \\ \times\ \ 70 \\ \hline 245 \end{array} \rightarrow \begin{array}{r} 35 \\ \times\ \ 70 \\ \hline 2450 \end{array}$$

② Compare the answer of 70×35 with the answer of 35×70.

Exercise

1 Let's multiply in vertical form.

① 38×57	② 23×68	③ 57×87	④ 74×86
⑤ 29×44	⑥ 28×49	⑦ 46×97	⑧ 78×84
⑨ 38×40	⑩ 75×80	⑪ 25×70	⑫ 60×65

2 Waghi river guest house buys 20 mattresses that cost 98 kina each. How much is the total cost?

3 How to Calculate (3-digit numbers) × (2-digit numbers)

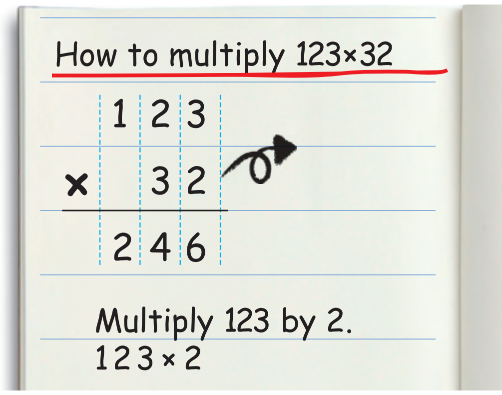
1 Let's think about how to multiply 123 × 32.

Let's consider using the same method we had used for the multiplication of (2-digit numbers) × (2-digit numbers).

123 × 32	123 × 2 =	□
	123 × □ =	□
	Total	□

2 Let's write how to multiply 123 × 32 in vertical form in your exercise book.

We can calculate by using how to multiply (2-digit number) × (2-digit number) in vertical form.



Activity

3 Collect 385 kina for each family as a youth's group fund raising activities for a trip. There are 35 families in the clan.

The amount of 10 families is 3850 kina, so …

① Is the total cost larger than ten thousand?

② Let's calculate in vertical form.

Exercise

Let's multiply in vertical form.

① 423 × 21	② 222 × 43	③ 279 × 64	④ 418 × 68
⑤ 587 × 57	⑥ 898 × 41	⑦ 337 × 85	⑧ 684 × 58
⑨ 754 × 45	⑩ 615 × 28	⑪ 680 × 48	⑫ 940 × 25

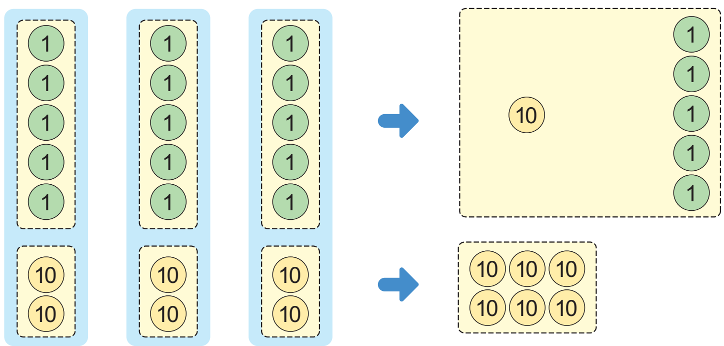
Hilda multiplied 508×40 as follows. If there are any mistakes in the following multiplication, correct them.

$$\begin{array}{r} 508 \\ \times \quad 40 \\ \hline 2320 \end{array}$$

Mental Calculations

4 Ruka's mother buys 4 pairs of shoes that cost 62 kina each in a supermarket. Let's think about how to find the total cost without using the vertical form.

5 Let's think about how to calculate 25×3 mentally.



Exercise

1 Let's calculate in vertical form.

① 608×50 ② 503×60 ③ 409×40 ④ 703×80

⑤ 205×74 ⑥ 802×26 ⑦ 400×37 ⑧ 900×70

2 Let's calculate mentally.

① 52×3 ② 71×5 ③ 46×2 ④ 33×4

Exercise

1 Let's calculate.

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① 5 × 20 ② 60 × 30 ③ 40 × 50

④ 22 × 14 ⑤ 19 × 31 ⑥ 27 × 28

⑦ 36 × 43 ⑧ 67 × 58 ⑨ 73 × 47

⑩ 25 × 84 ⑪ 48 × 60 ⑫ 30 × 92

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2 There are 34 children in Rataera's class. Each child studies 75 minutes after school. How many minutes did they study altogether?

3 Let's make problems by filling in the □ with a number.

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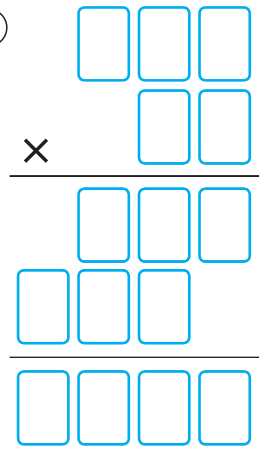
①



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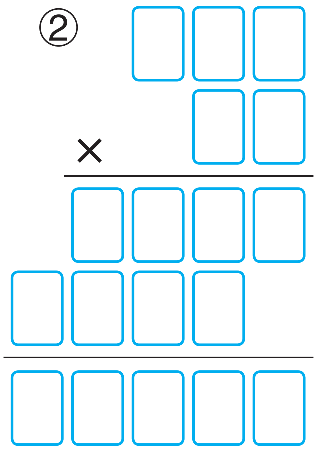


Problems

1 Summarise how to multiply 45×63.

● Understanding how to calculate in vertical form.

① Add the answers of 45×3 and of $45 \times \boxed{}$.

② ⓐ is from the multiplication of $\boxed{} \times \boxed{}$.

③ ⓑ is from the multiplication of $\boxed{} \times \boxed{}$,

and it means 270 sets of $\boxed{}$.

$$\begin{array}{r l} 45 & \\ \times\ \ 63 & \\ \hline 135 & \leftarrow ⓐ \\ 270\ \ & \leftarrow ⓑ \\ \hline 2835 & \end{array}$$

2 Are the following calculation in vertical form correct?

If there are any mistakes in the following multiplications, correct them.

● Multiplying in appropriate ways.

① $$\begin{array}{r} 54 \\ \times\ \ 94 \\ \hline 206 \\ 4560 \\ \hline 4766 \end{array}$$

② $$\begin{array}{r} 408 \\ \times\ \ 65 \\ \hline 240 \\ 288\ \ \\ \hline 3120 \end{array}$$

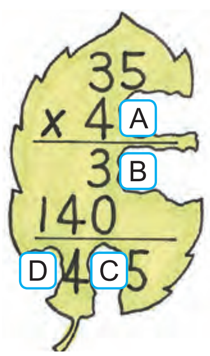
3 You need 43 sheets of papers to make each collection of work. You made 38 collections of work. How many sheets of paper are there altogether?

● Express a problem as an expression and finding the answer.

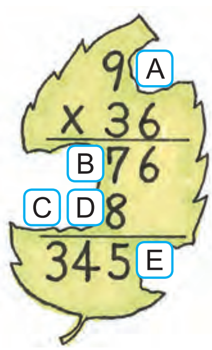
4 Let's write numbers in the spaces below.

● Understanding the structure of multiplication and solving problem.

①



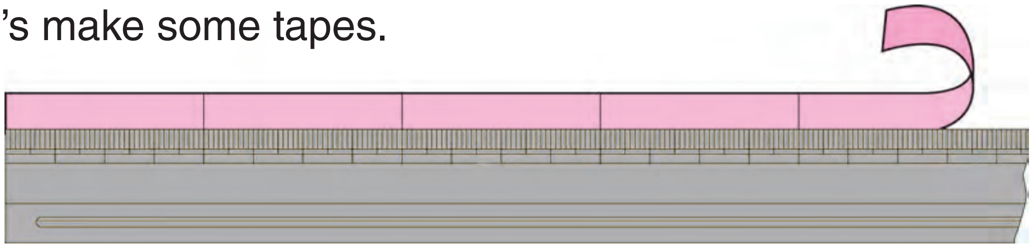
②



Calculation of multiples

Making Tapes

1 Let's make some tapes.



① Make a tape which length is 2 sets of [4cm].

Where should we cut it? And what is its length in cm?

$2 \times 4 = \square$

② Make a tape which length is 3 sets of [4cm].

Where should we cut it? And what is its length in cm?

$3 \times 4 = \square$

1 set, 2 sets and 3 sets are called 1 time, 2 times and 3 times.

The original number should be 1 times itself.

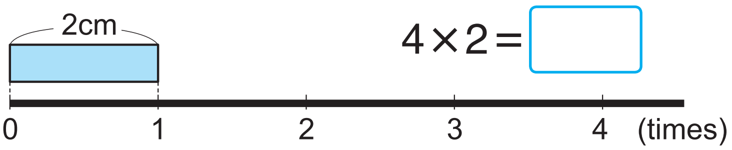
cm	4	?
Times	1	3

×3

×3

2 Let's find 4 times the following length.

①



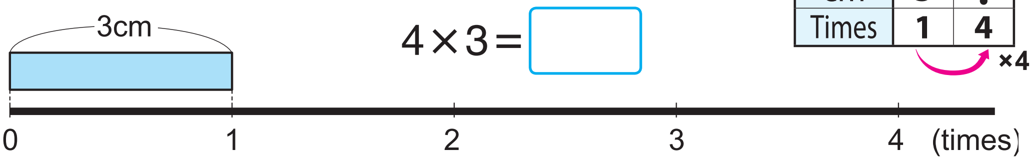
$4 \times 2 = \square$

cm	2	?
Times	1	4

×4

×4

②



$4 \times 3 = \square$

cm	3	?
Times	1	4

×4

×4

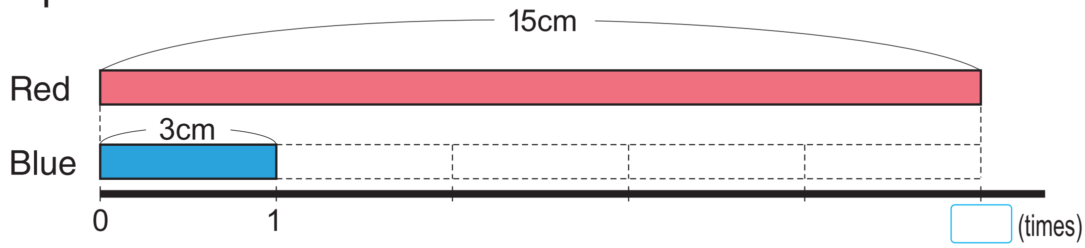
3 A kettle holds 8 times the amount of hot water in a coffee cup. A coffee cup holds 2 dL of hot water. How many dL of hot water can be poured into the kettle?

dL	2	?
Times	1	8

×8

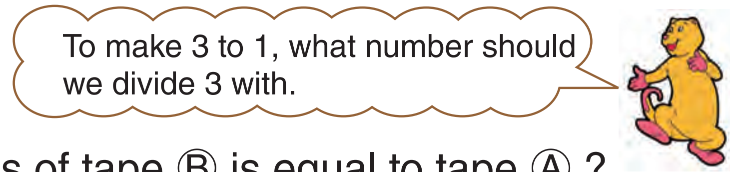
×8

4 Kila has 15 cm of red tape and 3 cm of blue tape. How many times the length of the blue tape is equal to the length of the red tape?

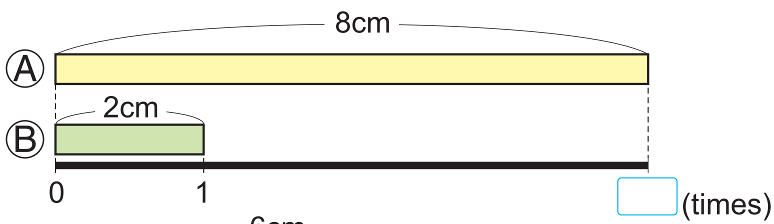


If 3 cm is regarded as 1 unit, 15 cm is 5 units of 3 cm.
This is called “15 cm is 5 times 3 cm”.
To obtain the number of units 3 cm is equal to 15 cm, calculate 15 ÷ 3.

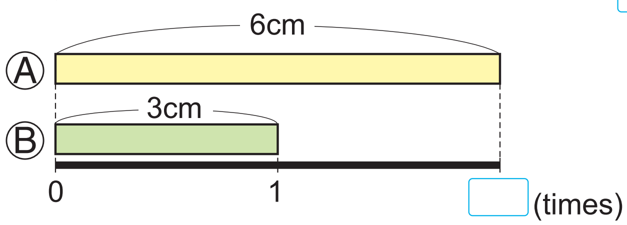
cm	3	15	
Times	1	?	
	÷3		÷3



5 How many times of tape Ⓑ is equal to tape Ⓐ ?



cm	2	8	
Times	1	?	
	÷2		÷2



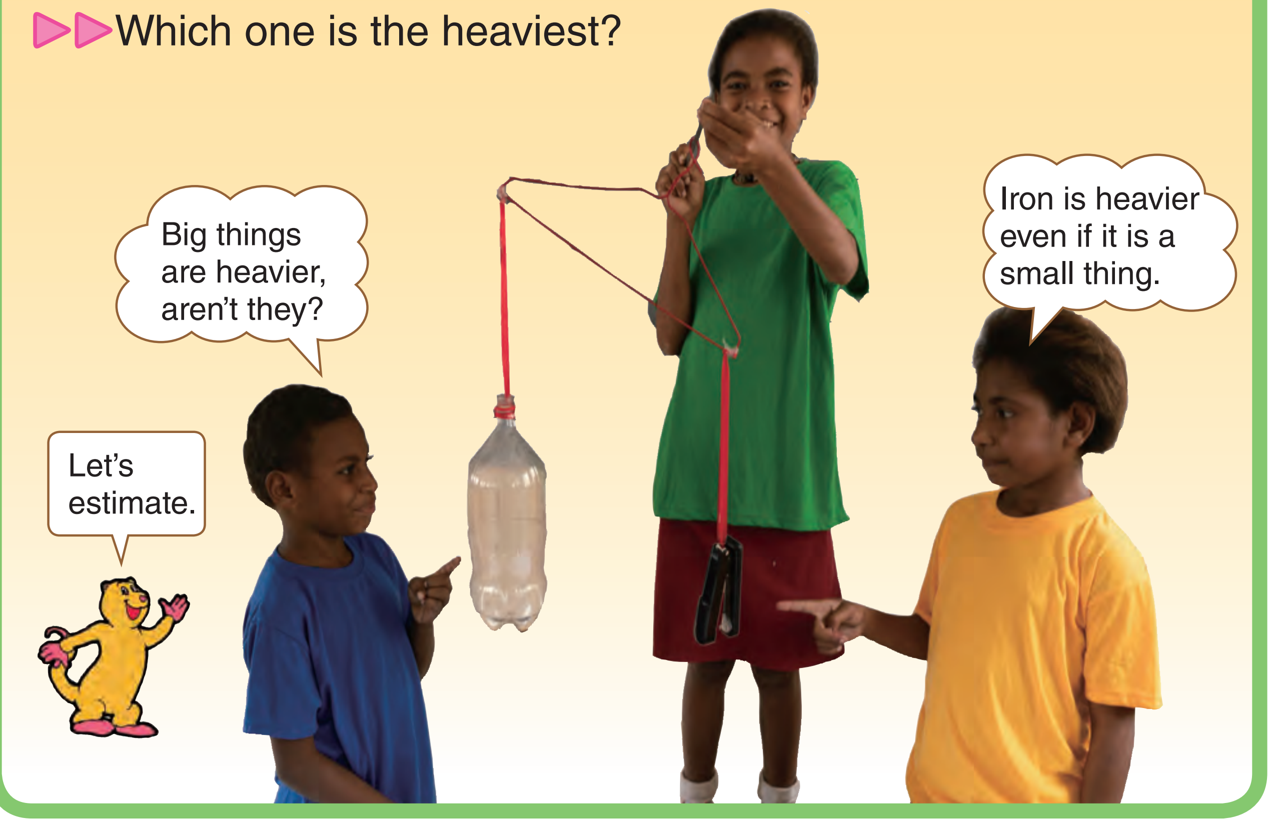
cm	3	6	
Times	1	?	
	÷3		÷3

6 The big cooking oil container for Rose’s aunty holds 24 L of cooking oil. The container for Angi’s aunty holds 6 L of cooking oil. How many times the cooking oil for Angi’s aunty’s container can be held in Rose’s aunty’s container?

L	6	24	
Times	1	?	
	÷6		÷6

16 Weight

▷▷Which one is the heaviest?



1 How to Represent Weight

1 Let's line up objects from the heaviest to the lightest.

Let's investigate how to compare weights and how to represent weights with numbers.

1 Let's try comparing weights by using some tools.



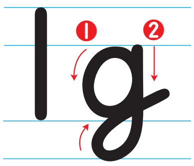
2 Express weight as numbers by using clips or 5 toea coins.

Objects measured	Paper clips	5 toea coin
Scissors		
Compass		

Scissors 88 of 5 toea coin

Weight is measured by finding how many units of weight something is equal to.

There is a unit called gram that is used to measure weight.
1 gram is written as 1 g.

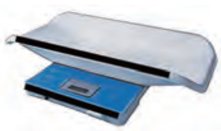


20 toea is 10 g.

3 What is the weight of a pair of scissors, a compass and a glue, respectively if a paper clip is 1 g?

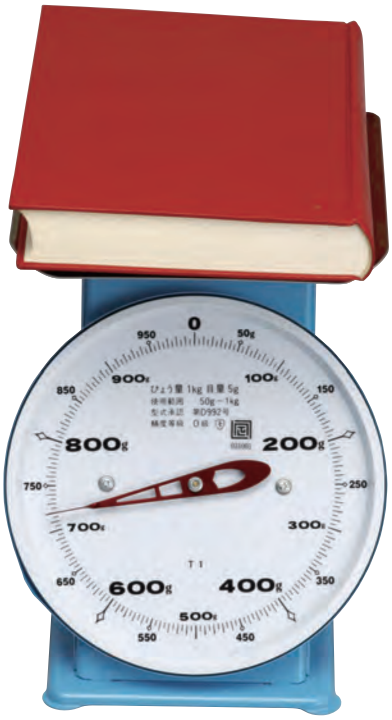
What kind of measuring instruments for weight are around us?

Electric scale

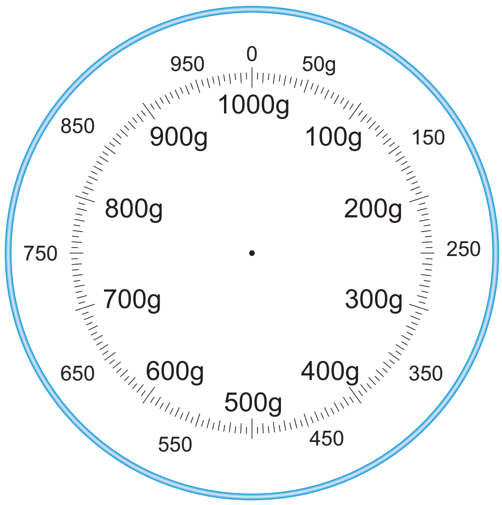




2 A scale is used to measure weight.

Measure the weight of the following objects by using the scale.



1. Up to how many grams can we measure on the above scale?
2. How many grams does the smallest unit express?
3. How many grams is the weight of the pencil case? And how many grams is the weight of the book?
4. The weight of the plate of avocados is 875 g. Draw a needle on the scale shown on the right of this weight.

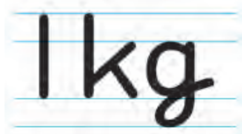


3 How much is the weight of 100 coins of 20 toea?

How many gram is a 20 toea coin?

1000 g is 1 kilogram and is written as 1 kg.

$\boxed{1\ \text{kg} = 1000\ \text{g}}$



1 L of water weighs 1 kg.

This is similar to the relationship when measuring length.
1 km = 1000 m

4 Make objects that weighs 1 kg.

Book

Sago

How to Use a Scale

① Put the scale on a flat surface.

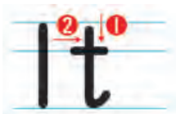
② Adjust the needle to 0.

③ Read the scale directly from the front.

5 Look for objects where different units of weight are used.

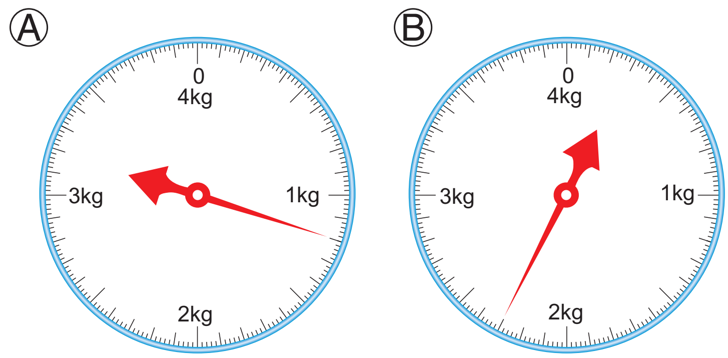
There is a unit called tonne to measure weight. 1000 kg is equal to 1 tonne and is written as 1 t (metric ton).

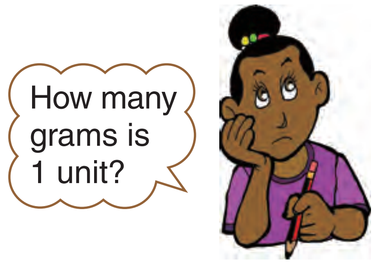
$\boxed{1\ \text{t} = 1000\ \text{kg}}$



There are 100 of 10 kg rice bags on a pallet. Total weight is 1000 kg or 1 t.

6 Let's look at the scales below.





❶ Read the weights shown on the scales. For example, 1 kg 500 g is called as "one kilo and five hundred grams" in short.

❷ Draw an ↑ for the following weight on the scales above.

① 1 kg 800 g ② 3 kg 300 g

7 Gibson weighs 31.8 kg.

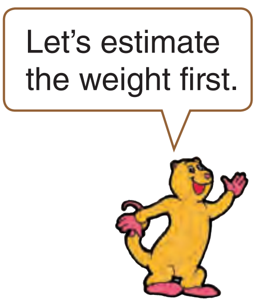
How many kg and g is his weight?

0.1 kg = 100 g

31.8 kg = ☐ kg ☐ g

8 Let's measure the weight of different objects using the scale.

Activity

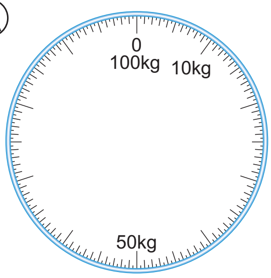


Objects measured	Weight expected	Weight measured
Dictionary		
Pencil case		

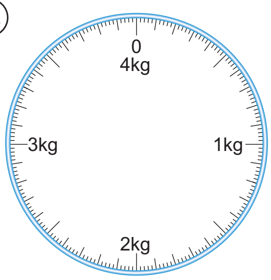
9 Identify the appropriate scale for the following items.

1. Watermelon 2. Textbook 3. Your weight

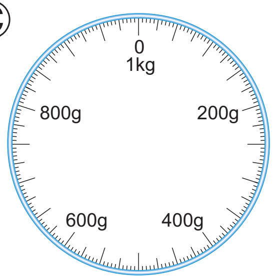
Ⓐ



Ⓑ



Ⓒ



Units of Quantities

10 We have learned the units of length, amount of water and weight. There are units of quantities as follows.

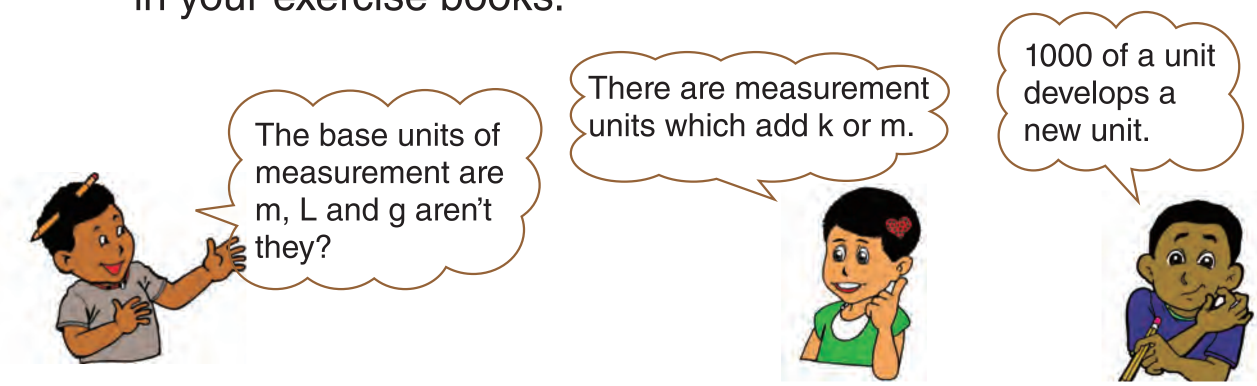
Length	mm, cm, m, km
Weight	g, kg, t
Amount of water	mL, dL, L

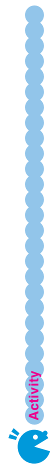
1. Fill in the $\square$ with a number.

1 m = $\square$ mm   1 L = $\square$ mL

1 km = $\square$ m   1 kg = $\square$ g

2. Let's discuss what you found. Then write down your answer in your exercise books.

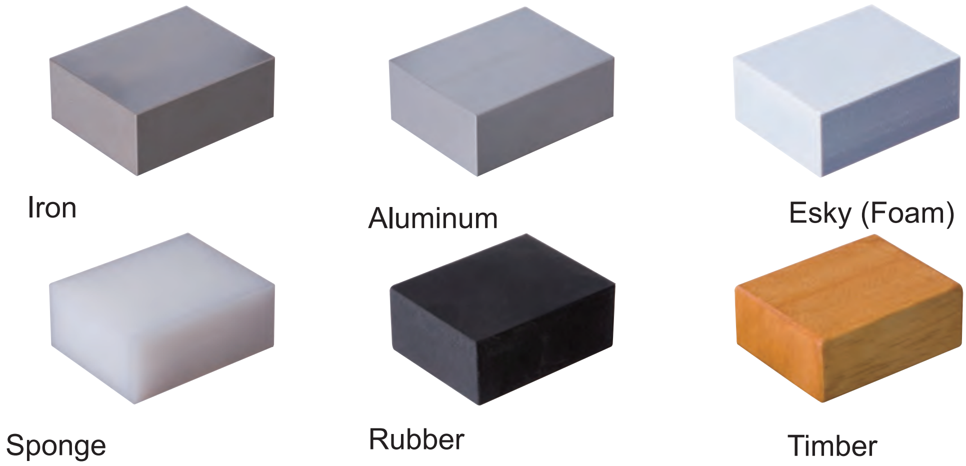




Amount of Block and Weight

11 Let's investigate the following using a scale.

① There are pieces of iron, aluminum, sponge, esky, rubber and timber each with the same size of block.
Do they weigh the same? Guess the answer and compare their real weights.

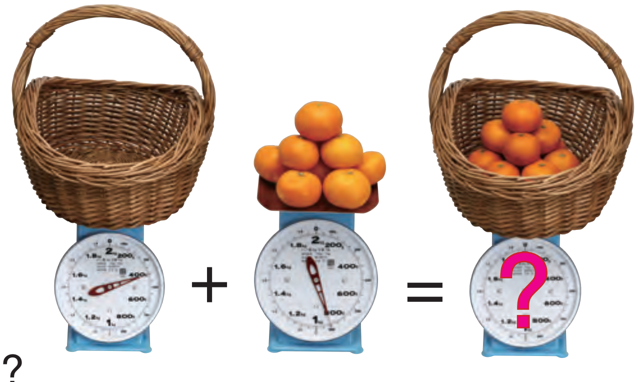


Different materials have different weights even if they are of the same size.

② Measure the weight of some clay. Then change the shape and measure it again.
Explain what happens to the weight.

2 Calculation of Weight

1 There are 900 g of oranges in a basket that weighs 400 g.



① What is the total weight in g?

400 g + 900 g

② What is the value in kg and g?

2 The bag weighs 900 g and the total weight of bag with first aid kits is 3 kg 200 g.

What is the value in kg and g of the first aid kits?

Exercise

1 Tom weighs 24 kg and George weighs 26 kg. If Tom stands on a scale while carrying George on his back, how many kg will the needle of the scale show?

2 Junior weighs 3200 g at birth and weighs 9100 g on his 1st birthday. By how many g has the weight increased during the 1 year?

E x e r c i s e

1 Solve the following problems.

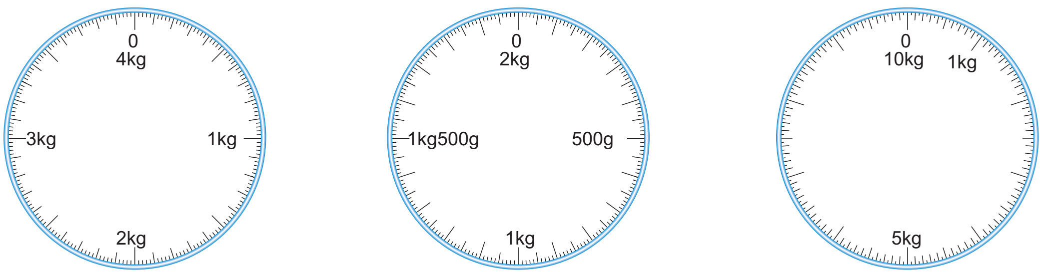
Pages 173,175

① When we add 1 kg of sand and 2 kg of sand, how many kg are there altogether? And how many g are there?

② When we add 2 L of water and 3 L of water, how many L are there altogether? And how many kg are there?

2 How many g is one unit on the following scales?

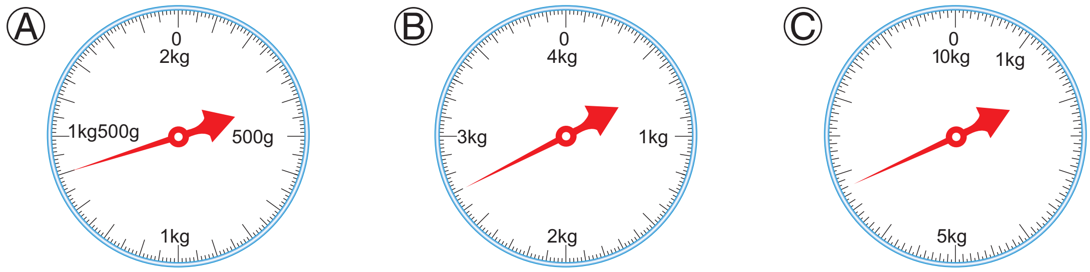
Page 173



3 Solve the following problems.

Page 172

① How many g and kg does each of the following scales Ⓐ ~ Ⓒ show? How many kg are there?

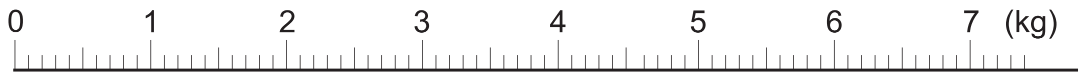


Ⓐ ☐ kg ☐ g　☐ g

Ⓑ ☐ kg ☐ g　☐ g

Ⓒ ☐ kg ☐ g　☐ g

② On the number line, mark ↓ where Ⓐ, Ⓑ and Ⓒ are.

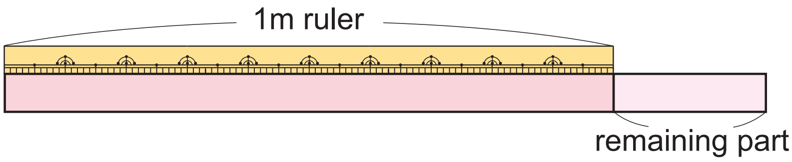


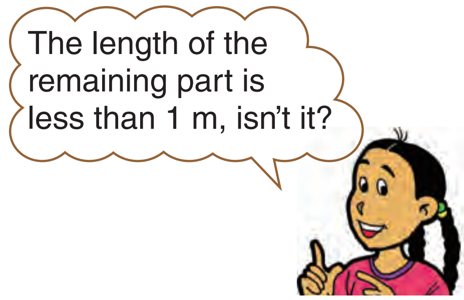
Let's calculate.　**Grade 3**　**Do you remember?**

① 84×65　② 56×90　③ 457×42　④ 209×70

17 Fractions

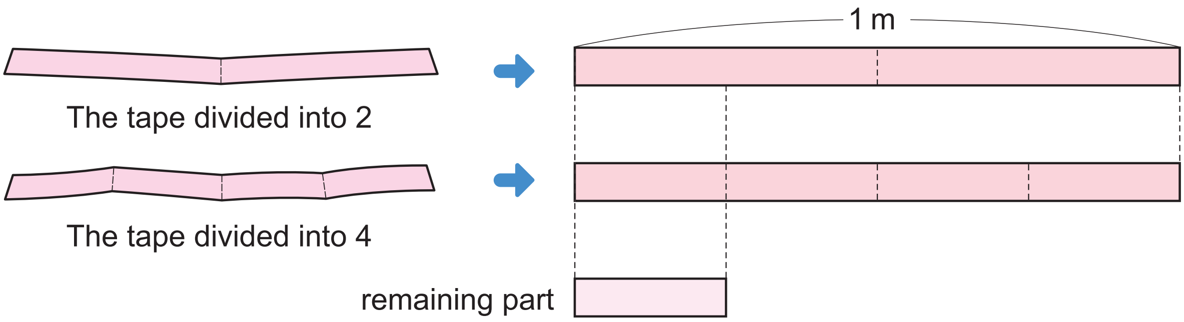
There is a 1 m tape. Let's measure the lengths of different objects by using the 1 m tape.
The length is 1 m and a remaining part. How can we represent the remaining part in metres?





1 Fractions

1 Divide a 1 m tape into 2 and 4 equal parts respectively.



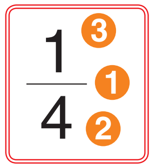
Let's compare the lengths of the divided parts respectively with the length of the remaining part.

Let's think about how to represent the given quantities in fractions.

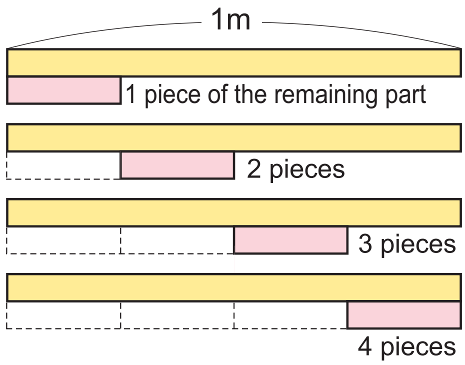
The length of remaining part is equal to one part that is made by dividing 1 m into 4 equal parts.

We learned that one part of a thing that is divided into 4 equal parts is expressed as $\frac{1}{4}$ of a thing in grade 2.

The length of one part made by dividing 1 m into 4 equal parts is called "one fourth of a metre" or "one quarter metre" and is written as $\frac{1}{4}$ m.



2 How many pieces of the remaining part are equal to 1 m?

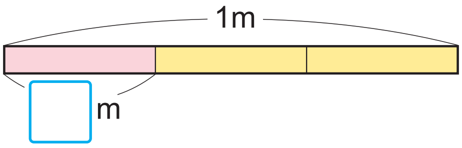


4 pieces of the length of the remaining part are equal to 1 m. The length of one part is obtained by dividing 1 m into 4 equal parts. The length of the remaining part is $\frac{1}{4}$ m.

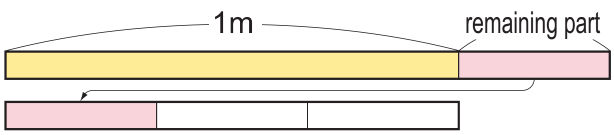
Exercise

How many metres are there?

① The length of one part is made by dividing 1 m into 3 equal parts is ☐ m.



② The length of the remaining part for which 3 pieces are equal to 1 m is ☐ m.

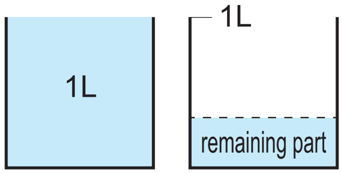


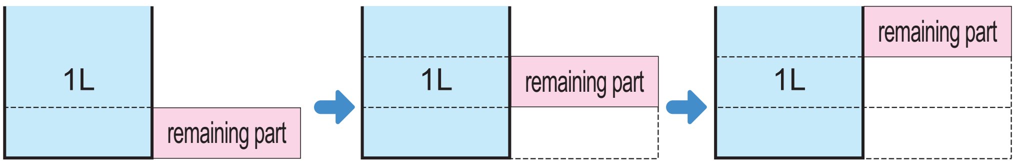
③ The length of one part that is made by dividing 1 m into 5 equal parts is ☐ m.

④ The length of the remaining part for which 2 pieces are equal to 1 m is ☐ m.

3 The amount of water in the thermos bottle is 1 L and more.

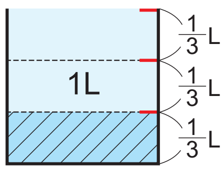
How much more in L?



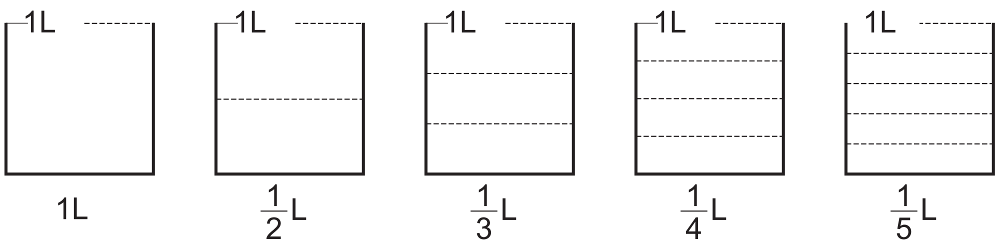


☐ remaining parts make 1 L.

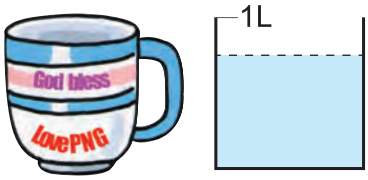
The amount for which 3 remaining parts are equal to 1 L is equal to the amount of one part. The amount is obtained by dividing 1 L into 3 equal parts. The amount is $\frac{1}{3}$ L.

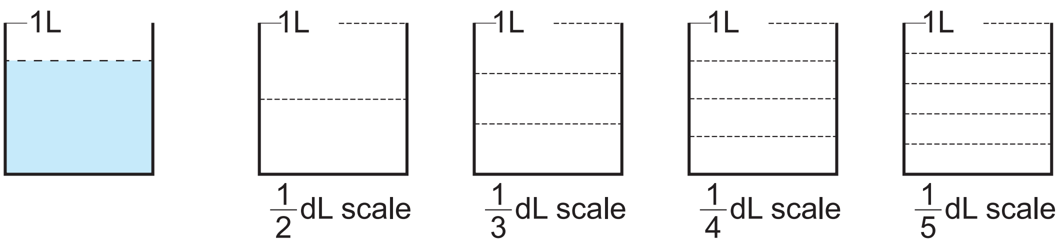


4 Colour in the portion of the amounts.

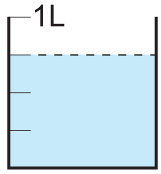


5 How many dL is the amount of water in the cup? Which measuring cup should we use to find?

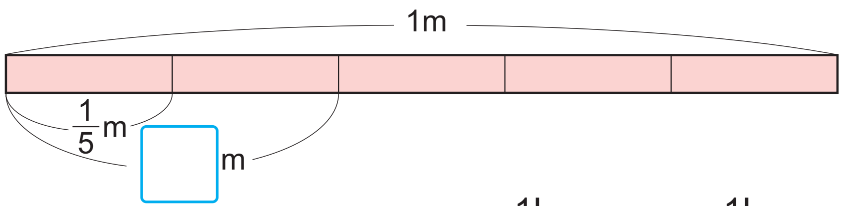




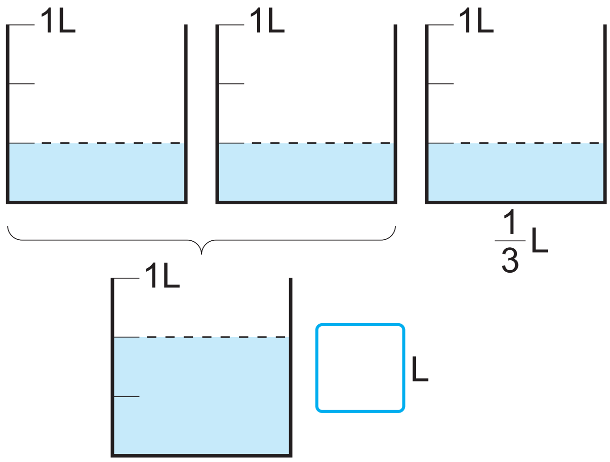
The amount of 3 sets of $\frac{1}{4}$ dL is called "three fourth of a decilitre" and is written as "$\frac{3}{4}$ dL."



6 When a 1 m tape is divided into 5 equal parts, how many metres are the length of 2 parts?



7 When a 1 L of milk is divided among 3 children equally, how many litres are there for 2 children?



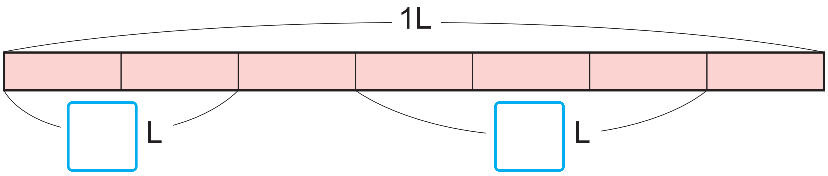
Numbers such as $\frac{1}{3}$, $\frac{3}{4}$ and $\frac{2}{5}$ are called fractions. **The number below the bar** is called **denominator** and **the number above the bar** is called **numerator**.

$\frac{3}{4}$ 3 …numerator, 4 …denominator

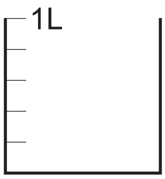
The denominator represents the number of equal parts of the original quantities, such as 1 m and 1 L, and the numerator represents the number of the collected parts.

Exercise

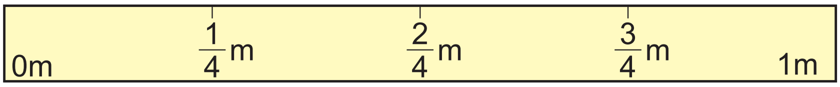
1 Let's represent fractions.



2 Let's colour in the portion of $\frac{4}{5}$ dL.

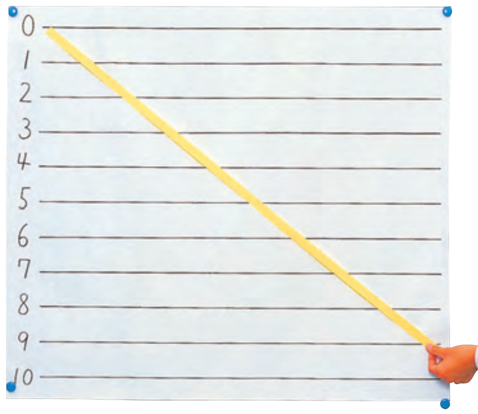


Measuring Different Things Using Fractions



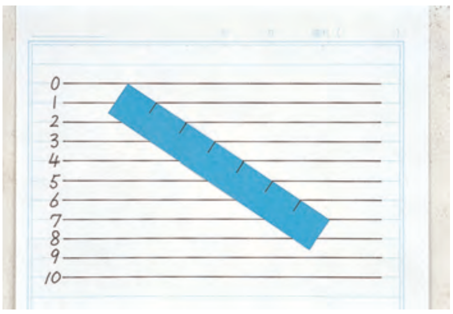
① Let's make a ruler to measure fractions by dividing a 1 m tape into equal sections. Make a ruler to measure fractions with denominators of 3, 5, 6, 7, 9 and 10 and then measure the lengths of different objects.

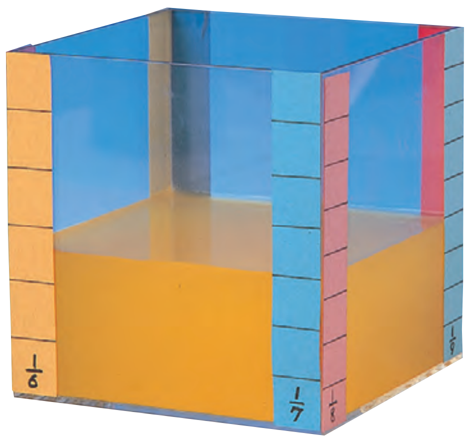
How to Make a Ruler with Denominator of 9



② Let's make a 1 L measuring cup to measure fractions by constructing a scale of fractions.

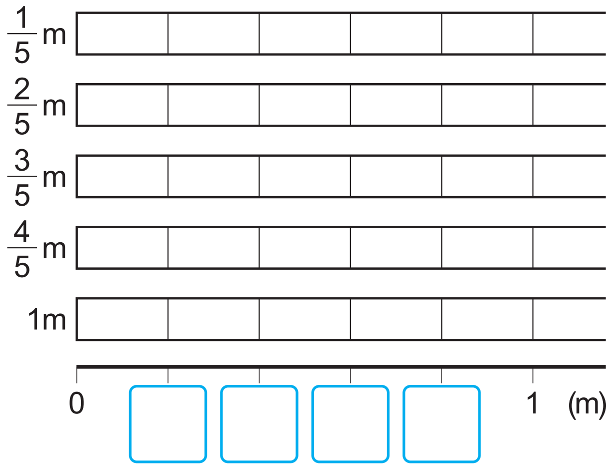
How to Construct a Fraction Scale of Which the Denominator Is 7





2 Structure of Fractions

1 Let's colour each bar from the left to a length that matches each fraction.



① How many $\frac{1}{5}$ m are in $\frac{3}{5}$ m?

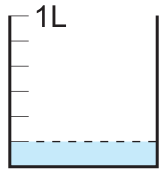
② Fill in the ☐ with a fraction.

③ How many $\frac{1}{5}$ m are in 1 m?

④ Which is longer, $\frac{3}{5}$ m or $\frac{4}{5}$ m?

2 How many L are 6 sets of $\frac{1}{6}$ L?

Fractions with the same denominator and numerator are equal to 1.



$$\frac{6}{6} = 1$$

Exercise

Let's compare the following fractions and represent the relations using inequality signs.

① Which is longer, $\frac{3}{4}$ m or $\frac{2}{4}$ m?

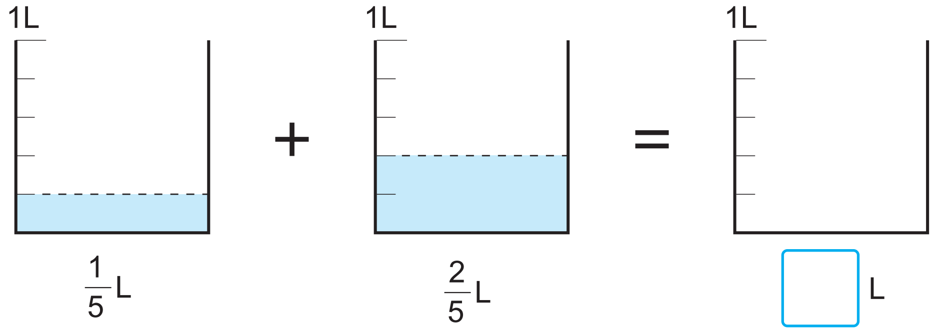
② Which is larger, $\frac{5}{7}$ L or $\frac{6}{7}$ L?

③ Which is larger, $\frac{7}{8}$ dL or 1 dL?

Do you remember?
$<$ less than
$>$ larger than
$=$ equal

3 Addition and Subtraction of Fractions

1 Elijah drank $\frac{1}{5}$ L of milk yesterday and $\frac{2}{5}$ L of milk today. How many litres did he drink altogether?

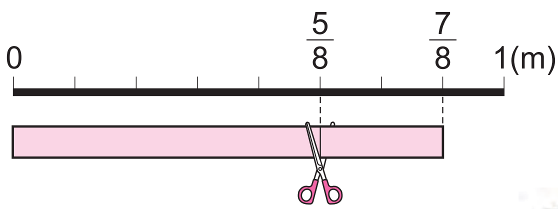


$\frac{1}{5} + \frac{2}{5} = \square$

Consider how many $\frac{1}{5}$ are in the amount ....

2 From a $\frac{7}{8}$ m tape, $\frac{5}{8}$ m was cut off. How many metres are left?

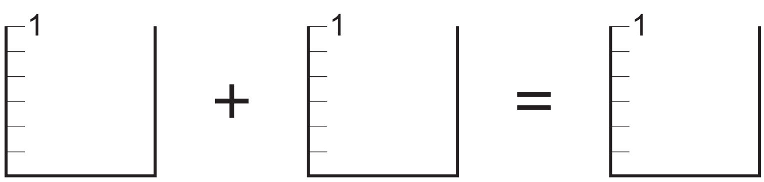
$\frac{7}{8} - \frac{5}{8} = \square$



How many sets of $\frac{1}{8}$ are left?

Exercise

1 Let's represent a calculation $\frac{2}{6} + \frac{3}{6}$ below.



2 Let's calculate.

① $\frac{2}{7} + \frac{4}{7}$ ② $\frac{3}{4} - \frac{1}{4}$ ③ $\frac{4}{5} - \frac{2}{5}$

Exercise

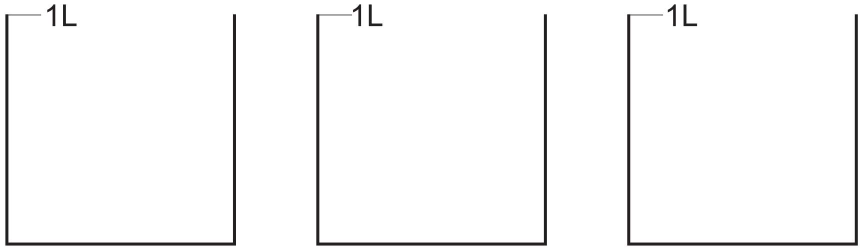
1 Fill in the □ with a number. Page 182

① $\frac{3}{5}$ dL is □ sets of $\frac{1}{5}$ dL. ② $\frac{\square}{\square}$ m is 5 sets of $\frac{1}{6}$ m.

③ □ sets of $\frac{1}{8}$ L is $\frac{3}{8}$ L. ④ 5 sets of $\frac{1}{5}$ cm is □ cm.

Pages 179 ~ 181

2 Let's colour the portion for the following numbers.



$\frac{2}{3}$L $\frac{3}{5}$L $\frac{4}{6}$L

3 Which is bigger? Fill in the □ with inequality signs. Page 182

① $\frac{2}{3}$ □ $\frac{1}{3}$ ② $\frac{5}{8}$ □ $\frac{7}{8}$ ③ 1 □ $\frac{3}{4}$

4 Let's calculate. Page 183

① $\frac{1}{4}+\frac{3}{4}$ ② $\frac{2}{8}+\frac{4}{8}$ ③ $\frac{5}{6}-\frac{4}{6}$ ④ $1-\frac{1}{3}$

Let's calculate. Grade 3 Do you remember?

① 24÷6 ② 35÷7 ③ 9÷1 ④ 0÷7

⑤ 12÷5 ⑥ 40÷9 ⑦ 31÷4 ⑧ 66÷8

Problems

1 A 1 m tape was divided into 6 equal parts, and we took 4 pieces of those parts. Let's represent the section that was taken by fractions.

● Understanding means of fractions.

2 Fill in the $\square$ with a number.

● Understanding the system of fractions.

① 3 sets of $\frac{1}{4}$ m is $\frac{\square}{\square}$ m.

② $\square$ sets of $\frac{1}{7}$ L is $\frac{4}{7}$ L.

③ 4 sets of $\frac{\square}{\square}$ m is $\frac{4}{10}$ m.

④ $\square$ sets of $\frac{1}{4}$ dL is 1dL.

3 Let's make an expression of the answer $\frac{7}{8}$ by filling in the $\square$ with number.

● Understanding the addition of fractions.

$$\frac{\square}{8} + \frac{\square}{8} = \frac{7}{8}$$

4 There are 5 cards from 1 to 5 as shown below.

Let's make fractions with the denominator 5 using these cards as numerator.

● Understanding the size and the structure of fractions.

1 2 3 4 5 $\quad \frac{\square}{5}$

① Make a fraction for which 3 sets are equal to $\frac{3}{5}$.

② Make a fraction that is equal to 1.

③ Make fractions that are smaller than $\frac{4}{5}$.

④ Make fractions that are larger than $\frac{3}{5}$ and smaller than 1.

18 Math Sentences Using the □

▷▷ Represent the mathematical sentences for the following situations shown in the photos below.

① 

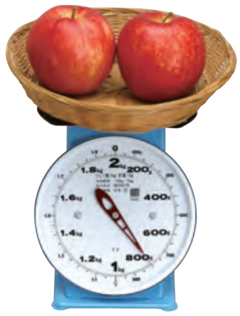
② 

③ 

There are two kinds of weight as fruits and holders.

To subtract two weights makes no sense.

I can make problems to do additions.



① The total weight of two apples on a bamboo tray.

② The total weight of eight laulau fruit on glass dish.

③ The total weight of eight tomatoes on wooden bowl.

Math Sentence ① □ + □ = □

Math Sentence ② □ + □ = □

Math Sentence ③ □ + □ = □

Weight of fruits + Weight of holders = Total weight

Represent the mathematical sentences for the following picture situations.

4

1 Sepik mask K150

5

1 Laplap roll K200

6
1 Necklace top K350



This is a shopping situation.

We can make multiplication problems.


4 The cost of 3 masks for 150 kina each.

5 The cost of 4 laplap rolls for 200 kina each.

6 The cost of 2 necklace tops for 350 kina each.

Math Sentence 4 □ × □ = □

Math Sentence 5 □ × □ = □

Math Sentence 6 □ × □ = □

Cost of each item × Number of items = Cost

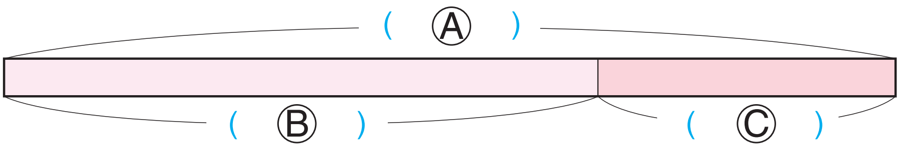

Let's think about how to make mathematical sentence using words and □ and how to find the number which fits the □.

1 Math Sentences of Addition

1 Let's think about the following problem.

There are 900 g of mandarins in a bowl. The bowl weighs 300 g.
What is the weight of mandarins in g?

❶ Let's complete the diagram below by filling in the (   ) with words. Weight of mandarins   Weight of a bowl   Total weight



❷ Let's complete the mathematical sentence with words from the diagram ❶.

☐ + ☐ = ☐

❸ Let's represent the unknown number in the mathematical sentence by using ☐.

☐ + ☐ = ☐

❹ Let's think about how to find the number in the ☐.

Put numbers in the ☐ in order.

Think of it using the figure.

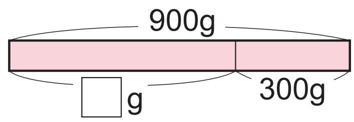
Kekeni's idea

To find the number which fits $\square + 300 = 900$, put numbers, 100, 200, … into $\square$.

$$100 + 300 < 900$$
$$200 + 300 < 900$$
$$\vdots$$
$$600 + 300 = 900$$

Naiko's idea

Consider how to use the diagram.



$$\square + 300 = 900$$
$$\square = 900 - 300$$

2 The weight of a 500 g avocado on the plate is 850 g. What is the weight of the plate in g ? Let's draw the diagram or write a mathematical sentence for the weight of the plate by using $\square$ g and find $\square$.

Exercise

The weight of 400 g bananas in the basket is 600 g. What is the weight of the basket in g? Let's draw the diagram or write mathematical sentence for the weight of the basket by using $\square$ g and find $\square$.

2 Math Sentences of Multiplication

1 Let's think about how to solve the following problem.

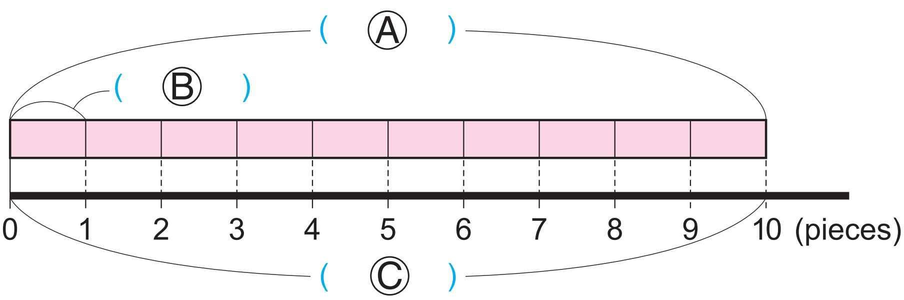
We bought 10 traditional grass skirts and paid 500 kina.
What is the cost of one traditional grass skirt?

❶ Let's complete the diagram below by filling in the (   ) with words.

Cost of each traditional grass skirt

The number

Cost



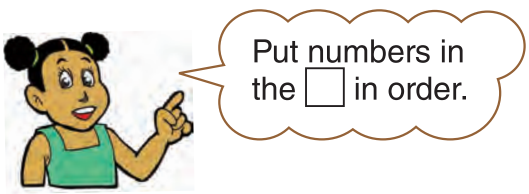
❷ Let's complete the mathematical sentence with words from the diagram.

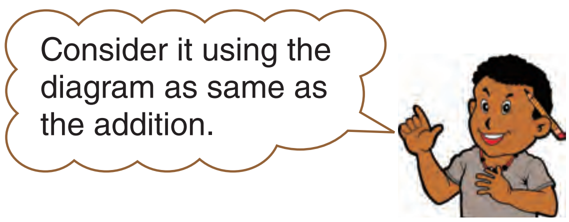
☐ × ☐ = ☐

❸ Let's represent the unknown number in a mathematical sentence by using ☐.

☐ × ☐ = ☐

❹ Let's think about how to find the number in the ☐.





Activity

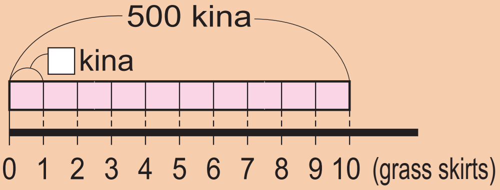
Ambai's idea

To find the number which fits $\square \times 10 = 500$, put numbers into $\square$.

$10 \times 10 < 500$
$20 \times 10 < 500$
$\vdots$
$50 \times 10 = 500$

Sare's idea

Consider how to use the diagram.

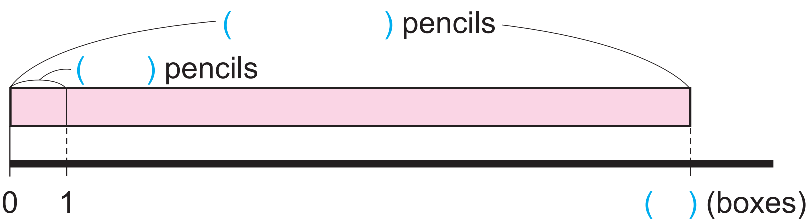


$\square \times 10 = 500$
$\square = 500 \div 10$
$\square = 50$

2 You divide 66 pencils into 6 pencils to each box.

How many boxes of 6 pencils can you fill?

① Let's draw the diagram by representing the unknown number by using □.



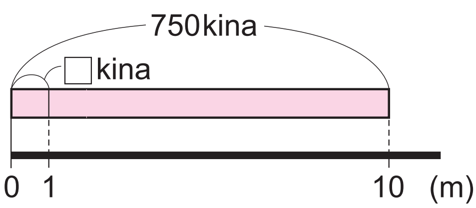
② Let's make mathematical sentences with words and by using □.

	×	Number of pencils in each box	=	
	×		=	

③ Let's find the number which fits the □ by using various ways.

Exercise

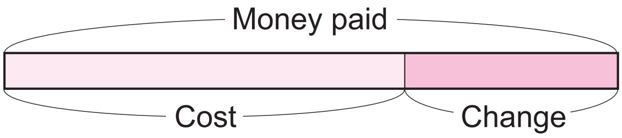
The cost of 10 m tug rope for ship is 750 kina. Write a mathematical sentence by using □ to find the cost of 1 m tug rope.



Problems

1 Write a mathematical sentence with words to find the money paid.

● Writing the mathematical sentence with words.



$\boxed{}$ + $\boxed{}$ = $\boxed{\text{Money paid}}$

2 Children are sowing flower seeds. They sowed 240 flower seeds yesterday. Today, they sowed some seeds again. There are 500 seeds sown in total. Answer the following.

● Solving the problem using the □.

① Using $\boxed{\text{Number of sowed seeds yesterday}}$, $\boxed{\text{Number of sowed seeds today}}$, $\boxed{\text{Total number}}$, write a mathematical sentence with words to find the total number.

② Let's change the unknown number in mathematical sentence by □ seeds.

③ Let's find the number by filling in the □.

3 The cost of 10 L paint is 980 kina. Now, answer the following problem.

● Solving the problem using the □.

① By using $\boxed{\text{volume of paint}}$, $\boxed{\text{Cost of 1 L paint}}$, $\boxed{\text{Cost}}$, let's write a mathematical sentence with words to find the cost.

② Let's change the unknown number in mathematical sentence by □ kina.

③ Let's find the number by filling in the □.

4 Let's make a math story to write the following mathematical sentence and find the number by filling in the □.

● Developing the problem for mathematical sentence.

① $\square + 50 = 1000$　　② $\square \times 10 = 1000$

19 Using Money in Our Life

Let's ask questions with friends.

What operation do we use?

I have .... kina in my pocket. Can I buy ... ? And how many? How much change will I receive?

How can we save money?

How can we reduce the number of coins in my pocket?

1 Price and Coins

1 Price and Coins

Let's read the following prices.

1 kina is written as K1.00 for the price. The price K3.95 is read as three-kina and ninety-five toea. The price 50 t is read just 50 toea. 1 kina is equal to 100 toea. Therefore, 3.95 kina is equal to 395 toea.

2 Let's read orally and fill in the box.

① The price of one small coffee packet is 50t. It is ☐ toea.

It is one 50 toea coin. It is ☐ coins of 20 toea

and ☐ coin of 10 toea.

The price of two mini coffee packets is ☐ toea.

It is 1 kina.

② The price of a bottle of water is K1.50. It is ☐ toea.

③ The price of a dozen for pencils is K3.99. It is ☐ toea.

Exercise

Read the following price and arrange them in order.

① Ice cream K2.00, Apple K1.50, Orange K2.60,

Chocolate K1.99 and Juice K2.95.

1. Arrange them from the highest price to the lowest.
2. Arrange them from the lowest price to the highest.

② Arrange the following from lowest price.

Lolly 30 toea, Milk 2 kina, Chocolate 95 toea,

Snack 1 kina and Bubble Gum 5 toea.

Papua New Guinea Coins

5t 10t 20t 50t K1

There are 5 types of coins in Papua New Guinea. Discuss what kind of characteristics each coin has.
Example: 1 kina coin has a hole.
The size is getting bigger while the value increases.

Which Coin Do you use

3 James saved his money in the box for one year. Now, he has a number of every coin in his box and goes shopping.

1. For paying a small coffee packet of 50 toea, which coins should he use for paying and explain why?
2. Whose idea do you prefer?

Gawi's idea

Count by five

5, 10,
15, 20,
25, 30,
35, 40,
45, 50

10 coins of 5 toea

Ambai's idea

☐ coins of 10 toea are 5×10

10
20
30
40
50 toea

Mero's idea

If we only use 20 toea coins, I use 3 coins of 20 toea and receive the change by 10 toea.
$3 \times 20 = 60$

Yamo's idea

If I pay by a 1 kina coin, 50 toea subtract from 1 kina.
The change is 50 toea.
It is 2 coins of 20 toea and a 10 toea coin.

Vavi's idea

☐ coins of 5 toeas are 10×5.

Which operation do you prefer?

To know the value of a number of the same currency, we use multiplication such as: 20 coins of five toea is $20 \times 5 = 100$ toea. Its value is 1 kina. Five toea coin used as a unit for counting.

(Number of the Coin) $\times$ (Value of the Coin) $=$ (Total Value)

For using coins, we use the several conversions such as:
2 coins of 5 toea convert to a 10 toea coin.
4 coins of 5 toea convert to a 20 toea coin.
20 coins of 5 toea convert to a 1 kina coin.

How Much in Total

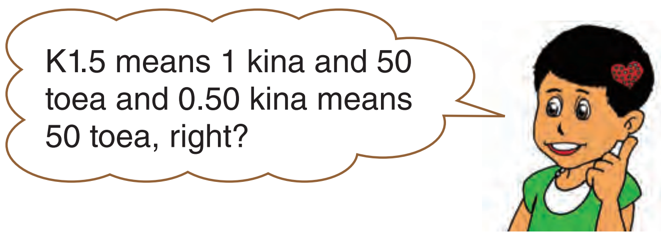
4 At a market, you find the prices in the table below.

1. Fill in the table.
2. When you buy a bottle of water and a coffee packet each, how much in total?

Item	Price	In Kina	In Toea
Bottle of water	K1.50	1.5 kina	
Coffee Packet	K0.50		
Dozen Pencil	K3.99		

$1.50 + 0.50$?

How can we add?



Kekeni's idea

I calculated using vertical form.

$1.5 + 0.5 = 2$

$$\begin{array}{r} 1.5 \\ +\ 0.5 \\ \hline 2.0 \end{array}$$

2 kina

Gawi's idea

If we represent them in toea:
K 1.5 is 150 toea
K 0.5 is 50 toea

$$\begin{array}{r} 150 \\ +\ \ 50 \\ \hline 200 \end{array}$$

200 toea is 2 kina.

5 In **4**, when you buy all three items, how much in total?

1. Let's find the total price in vertical form.
2. Which coins should you use and how much will be the change?

For using calculator, we write as follows.

$$\begin{array}{r} {}^{K}1.50^{\,t} \\ 0.50 \\ +\ 3.99 \\ \hline \end{array}$$

How do you type it in your calculator?

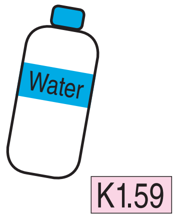
In shopping, we write the price in vertical form and find the total price by calculator. For payment, we usually show the money as for the same value of total price or more at first. When it is the same value, there is no change. When it is more, we must receive the change, exactly.

To know the value of change we use subtraction:
(Given money) – (Price) = (Change)
For Confirmation: **(Price) + (Change) = (Given money)**

6 How much in total? Write the prices in vertical form and find the answer.

Coke K2.00, Biscuit K1.50, Cream bun K2.60 and Chocolate K1.99.

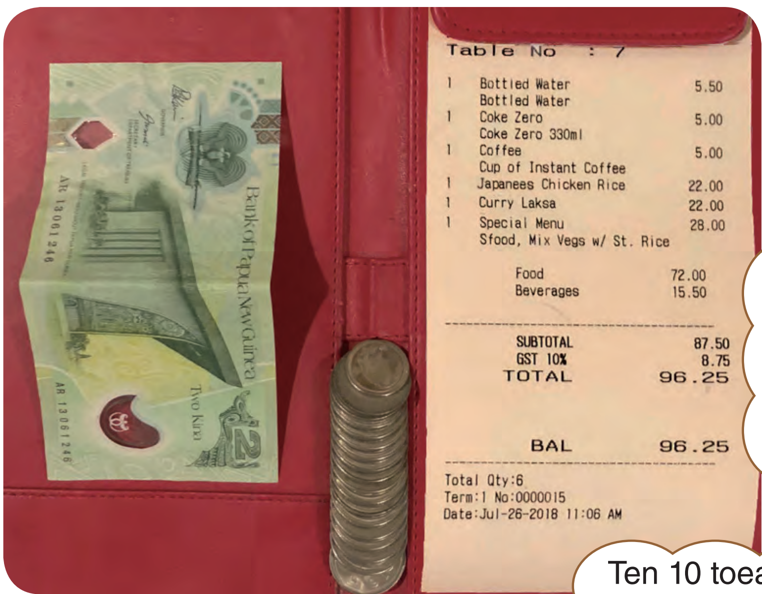
7 I bought a bottle of water for 1.59 kina and I gave two coins of one-kina, and received 3 coins of 20 toea as for change. Is it correct? Explain with reason.



In our country, some shops set the price which does not correspond to our money system. The price such as K0.99 cannot be paid by coins.

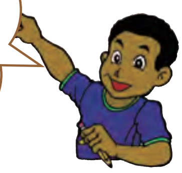
Daily situation..

In the restaurant ....



The total amount is K96.25. I think he paid K100.

The change is paid by one 2 kina note, seventeen 10 toea coins and one 5 toea coin.



Ten 10 toea coins can be changed to 1 kina coin and five 10 toea coins can be changed to 50 toea coin.

2 Unit for Currency

When we are not comfortable to pay by coins, we use notes as the currency. They are not heavy.

1 Price of one hand cream bottle is K5.50.

1. How many coins do we need for buying one bottle?

If 5 toea coin only: ☐

If 10 toea coin only: ☐

If 20 toea coin only: ☐

If 1 kina coin only: ☐

Which one will receive change? ☐

2. How much is the cost for 50 bottles? Can we pay by coins?

2 In 1, 1 if you use the following notes, below.

1. How would you pay and what will be the change?

A two-kina note is;
2 coins of 1 kina or
4 coins of 50 toea or
10 coins of 20 toea or
20 coins of 10 toea.
A five-kina note is; 5 coins of 1 kina, or
2 two-kina notes and one kina coin.
A five-kina note is 10 coins of 50 toea.
A ten-kina note is 10 coins of 1 kina coin.
A ten-kina note is 20 coins of 50 t or
2 notes of five-kina, or
five notes of two-kina .

Naiko's idea

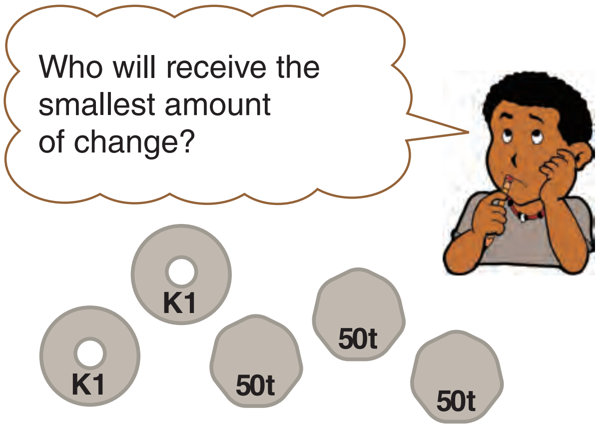
I only use two-kina notes as follows:
Two, four, six. 5.5 is larger than 4 and less than 6. Thus, pay 6 kina by three of two-kina note.
$6-5.5=0.5$
0.5 kina is fifty toea.

Yamo's idea

I use a ten-kina note because it is larger than 5.5 kina. The change is $10-5.5=4.5$.
4.5 kina is 4 kina and 50 toea.
It is 2 two-kina notes and one coin of 50 toea.

Sare's idea

I use a 5-kina note and 2-kina note. The change is
$7-5.5=1.5$
1.5 kina is 1 kina and 50 toea.
It is one coin of one kina and 50 toea.



❷ In 1 ❷, if you use the notes, how would you pay and what will be the change?

Have you ever seen the following notes

A twenty-kina note is 20 coins of 1 kina,or 2 notes of ten-kina, or 4 notes of five-kina, or 10 notes of two-kina.
A fifty-kina note is 2 notes of twenty-kina and a ten-kina note.
A hundred-kina note is 100 coins of 1 kina, or 5 notes of twenty-kina, or 10 notes of ten-kina, or 20 notes of five-kina, or 50 notes of two-kina.

3 Fill in number in the boxes.

① A two-kina note converts to ☐ coins of 20 toea.

② A fifty-kina note is 2 notes of twenty-kina and ☐ note of ten-kina.

③ 50 kina is ☐ note of twenty-kina and ☐ notes of five-kina.

④ 84 kina is a fifty-kina note, a ☐ -kina note, a ☐ -kina note and two notes of two-kina.

4 When you buy one of the items in the photo below, how much is the change?

① When you have a 100 kina note.

② When you have 2 notes of 20 kina, 3 notes of 10 kina and 3 notes of 2 kina.

K25.00 means 25 kina.

Exercise

Solve the following mathematics expression.

① 1.5 kina + 2.5 kina

② 2 kina + 50 toea

③ 50 toea + 90 toea

④ 2.5 kina + 50 toea

Price Survey Project at Local Market

Prices of selling food at the local market changes depending on time in a day, season, and seller and so on. For price down, we do some negotiation.

Visit your local market with your parents and learn the price.

Name of foods	Price	Location

① Write the price of every food on the table in your local market and report it in the class.

② Choose the best survey in ① and develop shopping-calculation questions for using notes and coins and write it on a big chart to show it to your friends.

③ Present the questions and select the interesting questions as for the shopping.

20 Summary of Grade 3

1 Numbers and Calculations

1 Fill in the □ with a number or numeral. 9 12 16

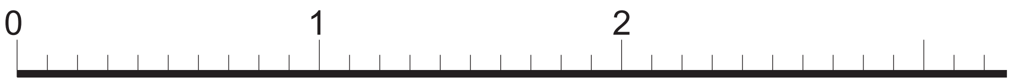
① The numeral in the hundred thousand place of 580000 is □.

② 10 times 4300 equals □ and divide 4300 by 10 equals □.

③ 4 sets of $\frac{1}{7}$ is □.

2 Let's represent the following numbers by ↓ on the number line. 12 16

$\frac{3}{10}$ $\frac{8}{10}$ 3



3 Let's fill in the □ with the equality or inequality sign. 9 12 16

① 32419 □ 319972 ② 301201 □ 300498

③ $\frac{2}{7}$ □ $\frac{6}{7}$ ④ $\frac{3}{5}$ □ $\frac{2}{5}$

4 Let's calculate. 1 6 7 12 14 16

① $7584+6439$ ② $8204-3427$ ③ $8125+650+350$

④ 30×70 ⑤ 67×48 ⑥ 870×32 ⑦ 508×50

8 $24 \div 3$ 9 $56 \div 8$ 10 $44 \div 7$ 11 $39 \div 5$

12 $\frac{1}{7} + \frac{2}{7}$ 13 $\frac{2}{3} - \frac{1}{3}$ 14 $\frac{1}{5} + \frac{3}{5}$ 15 $\frac{7}{9} - \frac{2}{9}$

5 There are 24 children who are going to receive 15 sheets of coloured paper each, how many sheets of coloured paper are needed?

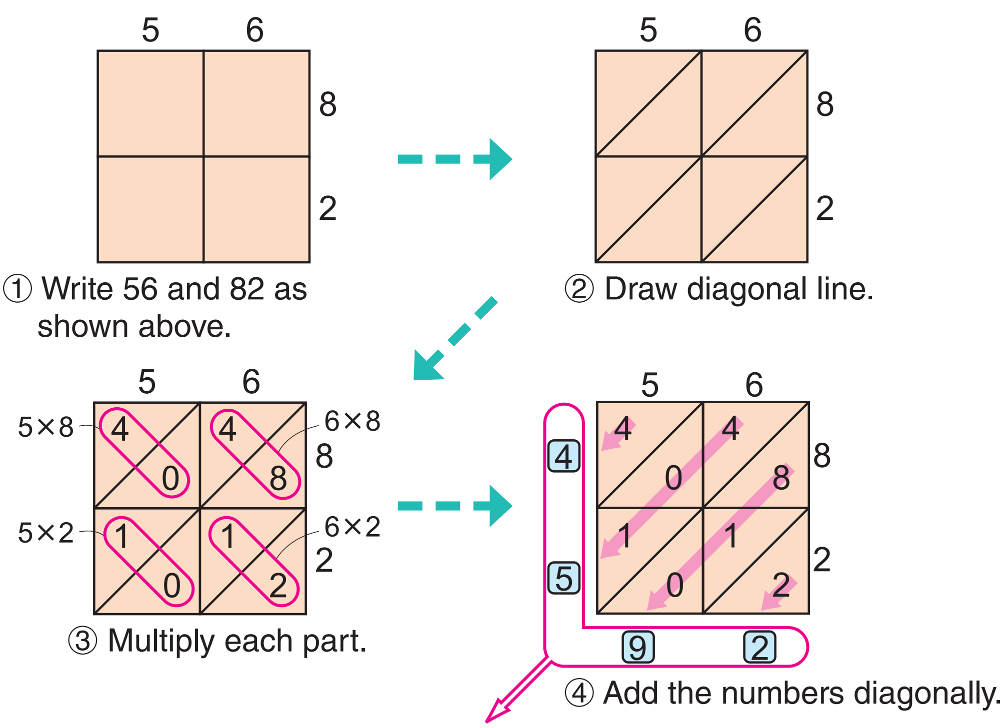
14 

6 Express the following problem using a multiplication with □ and find the answer.

17 

There are 64 mangoes that are divided equally into 8 boxes. How many mangoes can be put in each box?

Multiplication Using Squares 56 × 82



Answer □

Ones place…2

Tens place…8 + 1 + 0 = 9

Hundreds place…4 + 0 + 1 = 5

Thousands place…4

② How to Measure

1 Let's fill in the $\square$ with a number. 4 10 15

① 1 km = $\square$ m ② 2450 m = $\square$ km $\square$ m

③ 1 minute = $\square$ seconds ④ 1 kg = $\square$ g

⑤ 148 seconds = $\square$ minute $\square$ seconds

⑥ 3040 g = $\square$ kg $\square$ g 4

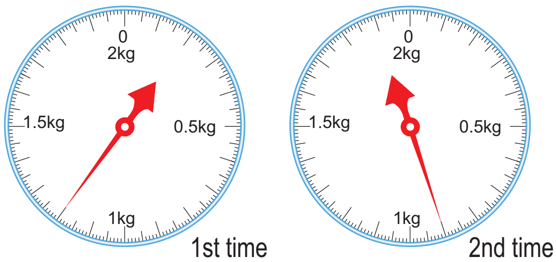
2 Let's find the duration of time.

① What is the duration from 7:40 to 11:00 in the morning?

② What is the time that is 1 hour and 30 minutes after 10:20 in the morning?

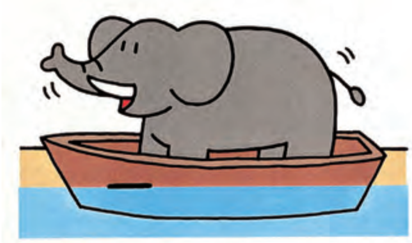
③ I enjoyed myself at the park for 1 hour and 10 minutes in the morning and later enjoyed 30 minutes in the afternoon.
Let's find the total time I enjoyed and the difference. 15

3 Measure the weight of two oranges.
What is the weight altogether?



Measure the Weight of an Elephant

In the old days, how did they measure the weight of an elephant?



Firstly, they put an elephant in the boat and drew a line to show how far the boat went down in the water.

Next, they put stones in the boat until it went down to the line.
Then they measured the weight of stones to calculate the total weight.

3 Shape

1 What kind of shapes are the following figures? 9 11

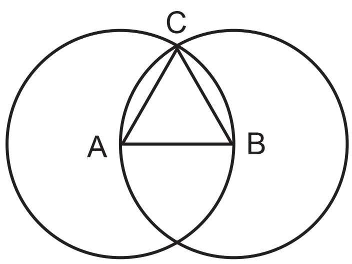
1. A round figure that is the same length from one point.
2. An object that looks a circle from any direction and like a ball.
3. A triangle with three equal sides.
4. A triangle with two equal sides.

2 Let's draw the following triangles. What kind of triangles is drawn? 11

1. A triangle where 3 sides are 8 cm, 5 cm and 8 cm.
2. A triangle where 3 sides are 9 cm, 9 cm and 9 cm.

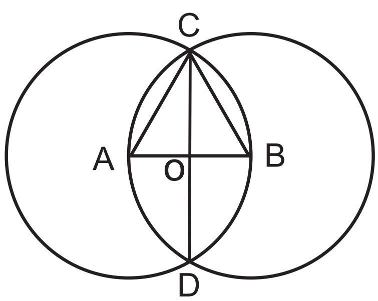
3 Let's draw two circle with a radius 4 cm and the centre points A and B. 8 11

1. What kind of triangles is a triangle ABC?
2. How many centimetres are the sides of a triangle ABC?



How to Make a Right Angle

Draw the line CD, and measure the angle COB. This is the way to draw the right angle. Let's apply this method using a rope for drawing a right angle on the land.



4 Tables and Graphs

1 The table below shows the grades of children who were absent from school during the 5 days from March 1 to March 5.

13 

1 day	2 day	3 day	4 day	5 day
Grade 6	Grade 2	Grade 2	Grade 6	Grade 1
Grade 3	Grade 3	Grade 6	Grade 6	Grade 1
Grade 1	Grade 1	Grade 3	Grade 3	Grade 4
Grade 2	Grade 3	Grade 4	Grade 5	Grade 2
Grade 3	Grade 6	Grade 3		Grade 3
	Grade 4			

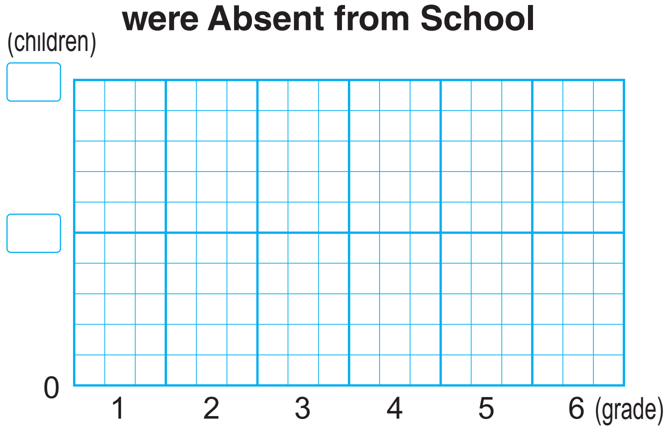
① Let's write the number of children in each grade in the table below.

Children in each Grade who were Absent from School

Grade		1	2	3	4	5	6
Number of children	Using tally marks 𝍸						
	Using number						

② Draw a bar graph using the table.

Children in each Grade who were Absent from School



③ What can you notice about the graph?

5 Using money

8 19 

1 Let's read orally and fill in the box.

The price of one small coffee packet is 70 t. It is $\square$ toea.

1. The change is one 1 kina and 30 toea. It is $\square$ coins of 20 toea and $\square$ coin of 10 toea.
2. The price of two mini coffee packets is $\square$ toea. It is 1 kina and 40 toea.
3. The price of a bottle of water is K1.00. It is $\square$ toea.
4. The price of a dozen for pencils is K2.99. It is $\square$ toea.

19 

2 At the super market, you find the prices in the table below.

1. Fill in the table.
2. When you buy a water bottle and coffee packet, how much in total?

	Price	In Kina	In Toea
Bottle of water	K1.00	1.00 kina	
Coffee Packet	K1.20		
Dozen Pencil	K2.99		

3 Let's convert!

1. A two-kina note converts to ☐ coins of 50 toea.
2. A fifty-kina note is 3 notes of ten-kina and ☐ notes of two-kina.
3. 100 kina is ☐ notes of twenty-kina and ☐ notes of five-kina.
4. 100 kina is ☐ notes of ten-kina and ☐ note of fifty-kina.
5. 19 kina is a ten-kina note and a ☐ -kina note and two note of ☐ -kina.
6. 89 kina is a fifty-kina note and a ☐ -kina note and a ☐ -kina note and a ☐ -kina note and two notes of two-kina.

4 Sam bought a tray of chicken for 15.95 kina and received 4 kina and 5 toea as change. How much did he pay?

5 Lucial bought a packet of rice for 4.50 kina and tinned fish for 2 kina. She received a change of 4 kina. How much did she pay?

Answers

Chapter 2 Excercise: Page 40

1 ① 577 683 ③ 734 ④ 731 ⑤ 603 ⑥ 832
⑦ 333 ⑧ 236 ⑨ 177 ⑩ 296 ⑪ 357 ⑫ 237

2 ① 1596 ② 1534 ③ 1003 ④ 5562
⑤ 5850 ⑥ 10000 ⑦ 813 ⑧ 508
⑨ 563 ⑩ 2022 ⑪ 1408 ⑫ 5995

3 ① 5487 ② 3385

4 75 pages

5 Total: 4724 children. Boys are 12 more than girls.

Do you remember?: Page 40

① 18 ② 32 ③ 54 ④ 28 ⑤ 9 ⑥ 8 ⑦ 15 ⑧ 4

Chapter 2 Problems: Page 41

1 ① 588 ② 782 ③ 812 ④ 543 ⑤ 807
⑥ 1303 ⑦ 8614 ⑧ 4000 ⑨ 10000 ⑩ 551
⑪ 119 ⑫ 678 ⑬ 254 ⑭ 387 ⑮ 398
⑯ 508 ⑰ 2291 ⑱ 8219

2 ① Cathy's sister has 891kina more savings.
② 8083 kina is their total savings.

3

$$\begin{array}{r} 2\ 9\ 4 \\ +\ 1\ 1\ 9 \\ \hline 4\ 1\ 3 \end{array} \qquad \begin{array}{r} 4\ 3\ 7 \\ -\ 1\ 9\ 8 \\ \hline 2\ 3\ 9 \end{array}$$

Chapter 4 Excercise: Page 58

1 ① 0 ② 0 ③ 0 ④ 0 ⑤ 40
⑥ 70 ⑦ 80 ⑧ 70 ⑨ 24 ⑩ 40 ⑪ 90

2 ① 3 ② 6 ③ 7 ④ 4 ⑤ 3 ⑥ 8

3

8×7: 8× 3 = 24, 8× 4 = 32, In total 56

9×6: 9× 6 = 54, 9× 0 = 0, In total 54

Do you remember?: Page 58

See teacher.

Chapter 4 Problems: Page 59

1 ① 0 ② 0 ③ 6 ④ 3 ⑤ 4

2 ① 0 ② 0 ③ 0 ④ 20
⑤ 60 ⑥ 20 ⑦ 24 ⑧ 90

3

Points on card	0	2	5	10	Total
Number of cards obtained	3	0	4	3	10
Total points	0	0	20	30	50

4 90 capsules

Chapter 6 Excercise: Page 67

1 ① 60 ② 80 ③ 3

2 6 minutes 8 seconds

3 1 hour 55 minutes

4 1 hour 40 minutes

5 9 hours 45 minutes

Do you remember?: Page 67

① 0 ② 0 ③ 0 ④ 0 ⑤ 70 ⑥ 50 ⑦ 30 ⑧ 60

Chapter 6 Problems: Page 68

1 1) 1 day 2) 15 hours 3) 3 hours 45 minutes
4) 60 minutes 5) 75 seconds

2 ① 180 ② 100
③ 2 , 5 ④ 33, 20

3 ① minutes ② seconds ③ hours

4 10:40

Chapter 7 Excercise: Page 73

1 ① 45 ② 96 ③ 94 ④ 72
⑤ 252 ⑥ 441 ⑦ 232 ⑧ 666
⑨ 304 ⑩ 210 ⑪ 320 ⑫ 3000

2 220 kina

3 I LOVE MATHS

Chapter 7 Excercise: Page 77

1 ① 99 ② 608 ③ 301 ④ 224 ⑤ 145
⑥ 564 ⑦ 648 ⑧ 1524 ⑨ 2415 ⑩ 1008
⑪ 3689 ⑫ 5104

2 7, 7

3 750 kina

4 1360 meters

Do you remember?: Page 77

① 8 ② 3 ③ 3 ④ 5 ⑤ 3 ⑥ 8

Chapter 7 Problems: Page 78

1 Total 2688,
$(7\times4=28,\ 7\times80=560,\ 7\times300=2100)$

2 ① 150 ② 900 ③ 4200 ④ 88 ⑤ 270
⑥ 512 ⑦ 669 ⑧ 2653 ⑨ 2920

3 ① 255 ② 1104 ③ 1008

4 1080 kina

Chapter 7 Problems: Page 79

1 ① 540 kina

2 ① 87×9=783 ② 98×1=98 and 492=98

3 A=1, B=5 and C=7

Chapter 8 Excercise: Page 91

1 ① 5 ② 8 ③ 3 ④ 7 ⑤ 4 ⑥ 7 ⑦ 5 ⑧ 6
⑨ 8 ⑩ 6 ⑪ 4 ⑫ 8 ⑬ 9 ⑭ 9 ⑮ 7 ⑯ 4
⑰ 1 ⑱ 0 ⑲ 23 ⑳ 21

2 ① 3 ② 5 ③ 8 ④ 4 ⑤ 7 ⑥ 3 ⑦ 8 ⑧ 6

3 ① 7 friends ② 7 cookies

Do you remember?: Page 91

① 144 ② 504 ③ 448 ④ 310
⑤ 852 ⑥ 4501 ⑦ 1854 ⑧ 8991

Chapter 8 Problems: Page 92

1 ① 4 sheets ② 4 children

2 ① 9 ② 5 ③ 9 ④ 7 ⑤ 9 ⑥ 4 ⑦ 3 ⑧ 7
⑨ 3 ⑩ 7 ⑪ 4 ⑫ 7 ⑬ 4 ⑭ 6 ⑮ 9 ⑯ 7
⑰ 1 ⑱ 0 ⑲ 2 ⑳ 1

3 ① There are 32 pencils distributed to 4 friends equally. How many pencils can each friend receive?
② There are 32 pencils. 4 pencils are distributed to each friend.
How many friends can receive?

Chapter 9 Excercise: Page 97

1 ① 9 remainder 2 ② 7 remainder 1
③ 2 remainder 5 ④ 4 remainder 7
⑤ 4 remaunder 6 ⑥ 6 remainder 7

2 6 pencils and a remainder of 6

3 7 cards and a remainder of 3

4 8 plastic bags

Do you remember?: Page 97

① 307 ② 328 ③ 164 ④ 267 ⑤ 539
⑥ 247 ⑦ 2189 ⑧ 2332 ⑨ 979

Chapter 9 Problems: Page 98

1 9 remainder 1, 7 remainder 2

2 ① 7 tomatoes remainder 4, ② 2 tomatoes

3 ① 4 remainder 1 ② 9 remainder 3
③ 4 remainder 1 ④ 3 remainder 5
⑤ 6 remainder 2 ⑥ 6 remainder 5
⑦ 5 remainder 1 ⑧ 5 remainder 4
⑨ 8 remainder 2

4 Total 15 L, 15 divided by 3 equals 5, 5 L per child.
1. 2 bottles of 2L and 1 bottle of 1L, 2 bottles of 2L and 1 bottle of 1L and 5 bottles of 1L.
2. 1 bottle of 2L and 3 bottles of 1L, 1 bottle of 2L and 3 bottles of 1L, 1 bottle of 2L and 3 bottles of 1L.

Chapter 10 Excercise: Page 107

1 ① (a) Centre ② (b) Radius (c) Diameter

2 ① Diameter ② 2

3 See teacher

4 Compare the lengths using a compass.
Longest-C and Shortest-B

Do you remember?: Page 107

① 1 ② 100
③ 100 ④ 2

Chapter 10 Problems: Page 108

1 See teacher

2 Radius is 2cm. Length of 1 side of square is same as diameter

3 Square

4 16cm

Chapter 11 Excercise: Page 121

1 ① 20180 ② 763000 ③ 305000

2 ① 11500, 13000, 13500 ② 324, 326, 330

3 ① ⓐ 180000 ⓑ 320000 ⓒ 490000
② ⓓ 545000 ⓔ 553000 ⓕ 567000

4 ① > ② >

5 ① 230 ② 400 ③ 1110 ④ 6050

6 ① 13080 ② 14040 ③ 1991

Chapter 11 **Problems: Page 122**

1 ① 480270 ② 509200 ③ 235000 ④ 1000000

2

3 ① 19900 ② 20000 ③ 200000, 150000

Chapter 12 **Excercise: Page 131**

1 ① Distance ② Road distance ③ 1000 m

2 ⓐ 10m 5cm ⓑ 10m 48cm ⓒ 10m 93cm

ⓓ 7m 7cm ⓔ 7m 56cm ⓕ 8m 19cm

3 ① 1220m ② 240m

Do you remember?: Page 131

① 11:25 ② 2 hours

Chapter 12 **Problems: Page 132**

1 ① 8m ② 4km ③ 60cm ④ 4509m

2 ① 16m 84cm ② 16m 99cm ③ 17m 6cm

④ 17m 18cm ⑤ 17m 23cm

3 ① 2km 50m ② 1580m ③ 5km

4 ① 1200m ② 2km 100m ③ 6km 80m

④ 700m ⑤ 1km 700m ⑥ 2km 990m

5 Through Hona's house. By 20m

Chapter 13 **Excercise: Page 143**

1 ⓐ, ⓒ and ⓔ are Equilateral Triangles

ⓑ & ⓓ are Isosceles Triangles.

2 ⓐ Isosceles Triangle ⓑ Equilateral Triangle

3 See teacher.

Do you remember?: Page 143

① 20 & 200 ② 400 & 4000

③ 780 & 7800 ④ 910 & 9100

Chapter 13 **Problems: Page 144**

1 ① two, two ② three, three

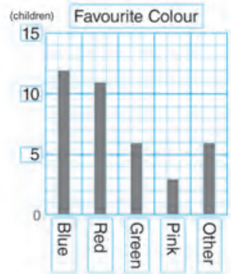
2 See teacher

3 ① DAC and CBE are isosceles.

② CAB is formed by the radius of the two circles. They are of the same length.

Chapter 14 **Excercise: Page 155**

1



2 Ⓐ 1 Ⓑ 4 Ⓒ 3 Ⓓ 11 Ⓔ 4

Ⓕ 4 Ⓖ 15 Ⓗ 58

Chapter 14 **Problems: Page 156**

1 ① 20 cans ② 80, 280, 200. Total: 1080

③ See teacher ④ ⓐ Bar Graph ⓑ Table

2 See teacher.

Chapter 15 **Excercise: Page 164**

1 ① 100 ② 1800 ③ 2000 ④ 308 ⑤ 589

⑥ 756 ⑦ 1548 ⑧ 3886 ⑨ 3431 ⑩ 2100

⑪ 2880 ⑫ 2760

2 2550 minutes

3 ① $\begin{array}{r} 54 \\ \times 94 \\ \hline 216 \\ 486 \\ \hline 5076 \end{array}$ ② $\begin{array}{r} 408 \\ \times\ 65 \\ \hline 2040 \\ 2448 \\ \hline 26520 \end{array}$

Chapter 15 **Problems: Page 165**

1 ① 60 ② 45, 3 ③ 45, 60, 10

2 ① $\begin{array}{r} 54 \\ \times 94 \\ \hline 216 \\ 486 \\ \hline 5076 \end{array}$ ② $\begin{array}{r} 408 \\ \times\ 65 \\ \hline 2040 \\ 2448 \\ \hline 26520 \end{array}$

3 1634 papers

4 ① A1, B5 ② A6, B5

C3, D1 C2, D8

E6

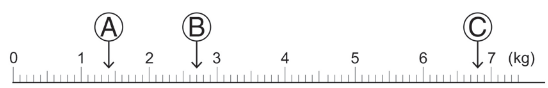
Chapter 16 **Excercise: Page 176**

1 ① 3kg, 3000g ② 5L , 5kg,

2 ① 20g ② 10g ③ 50g

3 Ⓐ 1kg400g, 1400g Ⓑ 2kg700g,2700g

Ⓒ 6kg800g, 6800g



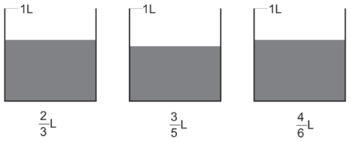
Do you remember: Page 176

① 5460 ② 5040 ③ 19194 ④ 14630

Chapter 17 **Excercise: Page 184**

1 ① 3 ② $\frac{5}{6}$ ③ 3 ④ 1

2



3 ① > ② < ③ >

4 ① 1 ② $\frac{6}{8}$ ③ $\frac{1}{6}$ ④ $\frac{2}{3}$

Do you remember?: Page 184

① 4 ② 5 ③ 9 ④ 0 ⑤ 2 remainder 2

⑥ 4 remainder 4 ⑦ 7 remainder 3

⑧ 8 remainder 2

Chapter 17 **Problems: Page 185**

1 ① $\frac{4}{6}$ simplified to $\frac{2}{3}$

2 ① $\frac{3}{4}$ ② 4 ③ $\frac{1}{10}$ ④ 4

3 Possible answers: $\frac{2}{8}+\frac{5}{8}$

4 ① $\frac{1}{5}$ ② $\frac{5}{5}$ ③ $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}$ ④ $\frac{4}{5}$

Chapter 18 **Problems: Page 192**

1 Cost + Change = Money paid

2 ① No.of seeds yesterday + No. of seeds today = Total number

② 240 + □ = 500

③ 500 − 240 = 260, therefore, 240 + 260 = 500 (seeds).

3 ① Volumme of paint × Cost of 1L pint = Cost

② 10 × □ = 980

③ 980 ÷ 10 = 98, therefore, 10 × 98 = 980 (kina).

4 ① □ = 950

② □ = 100

Glossary

Addend is the number to be added. 5

Angle is a figure formed by 2 straight lines from one point. 140

Augend is the number we add with. 5

Bar graph is a graph which represents the various amounts by the length of bars. 147

Convert is changing from one money or unit to another. 196

Denominator number below the fraction bar that represents the number of equal parts the whole is divided into. 180

Diameter is Is a straight line drawn from one point on the circle to the other point on the circle passing through the centre of the cicle. 102

Distance is the length between 2 places along a straight line. 124

Dividend is the number to be divided. 88

Divisible is when the dividend is divisible by the divisor, having no remainder. 94

Divisor is the number we divide. 88

Equal Sign: " = " is called the equal sign. The symbol is not only used for writing the answer of the calculation, but also used for showing that the expressions or numbers on the left hand side and the right hand side are equal. 50

Equilateral triangle is a triangle with three sides and three angles equal. 137

Fractions is a number that represents part of a whole such as $\frac{1}{3}$, $\frac{3}{4}$, etc. 180

Gram is a unit used to measure weight. 1 gram is written as 1g. 169

Hundred thousand is the number that is10 sets of ten thousand and written as 100 000 or 100 thousand. 112

Inequality signs are symbols using to compare different quantities. < and > are symbols used to compare two numbers, whether one number is larger or smaller than the other number. 115

Isosceles triangle is a triangle with two sides and two angles equal. ... 136

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