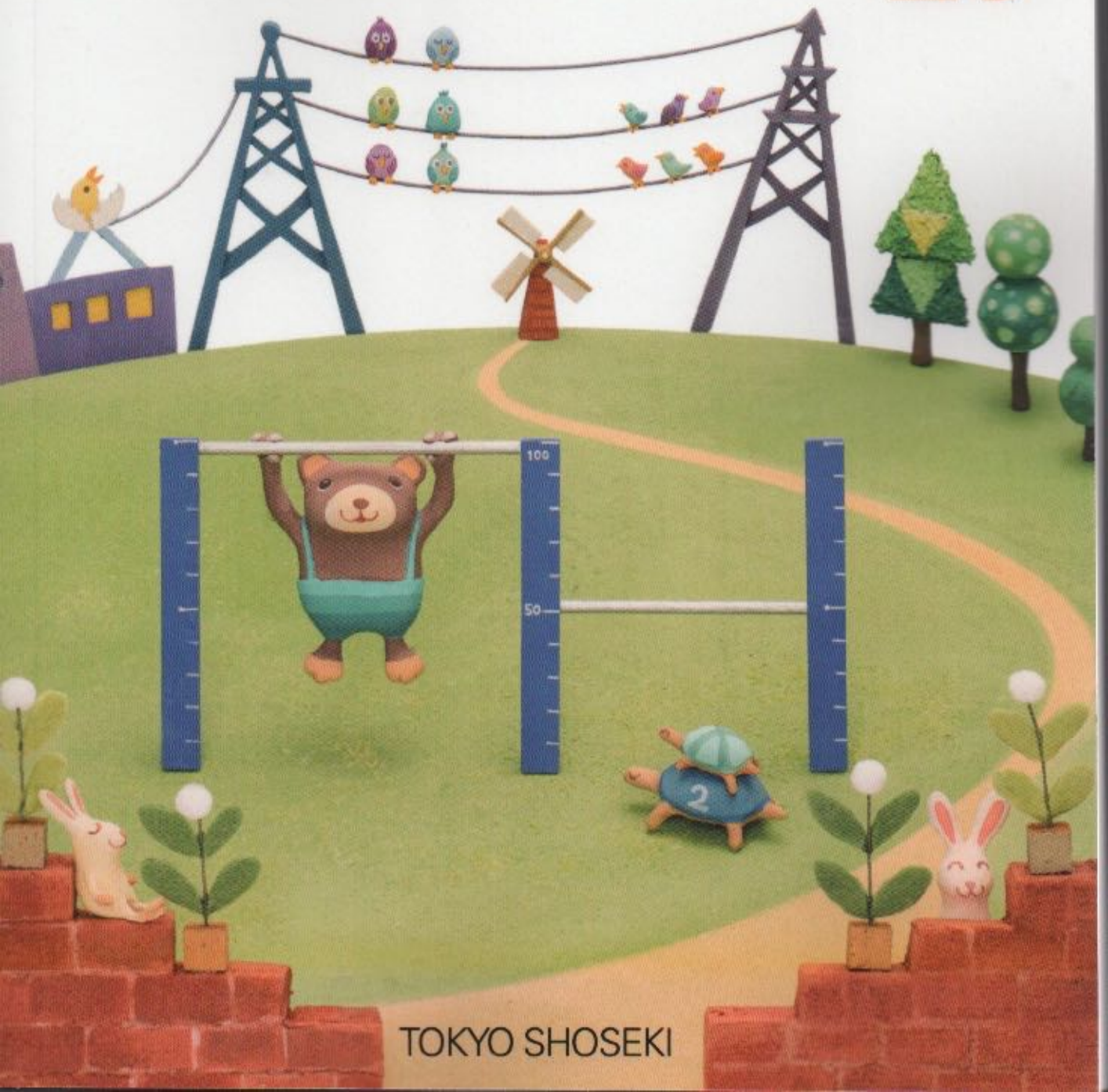
New Mathematics
for Elementary School

2B



TOKYO SHOSEKI

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About the "D" Symbol

＊Available in Japanese only

- Sections marked with this symbol have additional materials available online.
- Tell your teacher or parent before you use the Internet.

To Study Online

Use the URL below or QR code on the right to access online contents.

https://tsho.jp/02p/m2b/

Notice to Teachers and Parents

Use of the online contents marked with the "D" symbol is free of charge, if you have Internet access.

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Notice to Teachers and Parents

"New Mathematics 2B Plus" is an optional resource for students who want or need to work on additional material.
Not all students need to use "New Mathematics 2B Plus."

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1 Today's Problem

Goal of the Lesson

1 Hint for Your Thinking

Key Viewpoints and Ways of Thinking

Summary Summary

1 Practice Problem

How many children are on the rides?

In ① and ②, children are on the amusement park rides. In each picture, how many children are on the rides altogether?

①

②

In which picture is it easier to count the children, ① or ② ? Discuss why.

Kota

In ①, different numbers of children are in each boat.

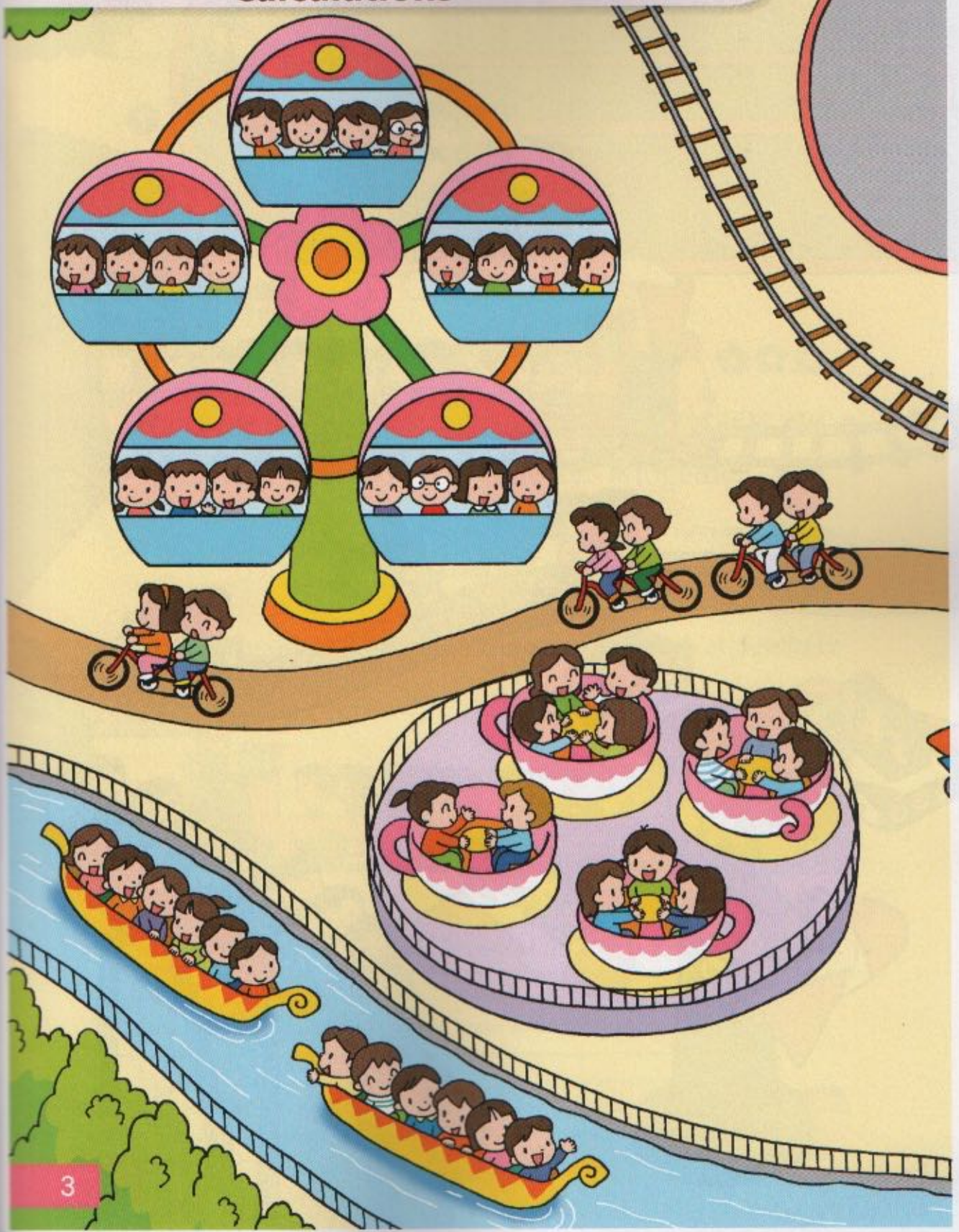
Ami

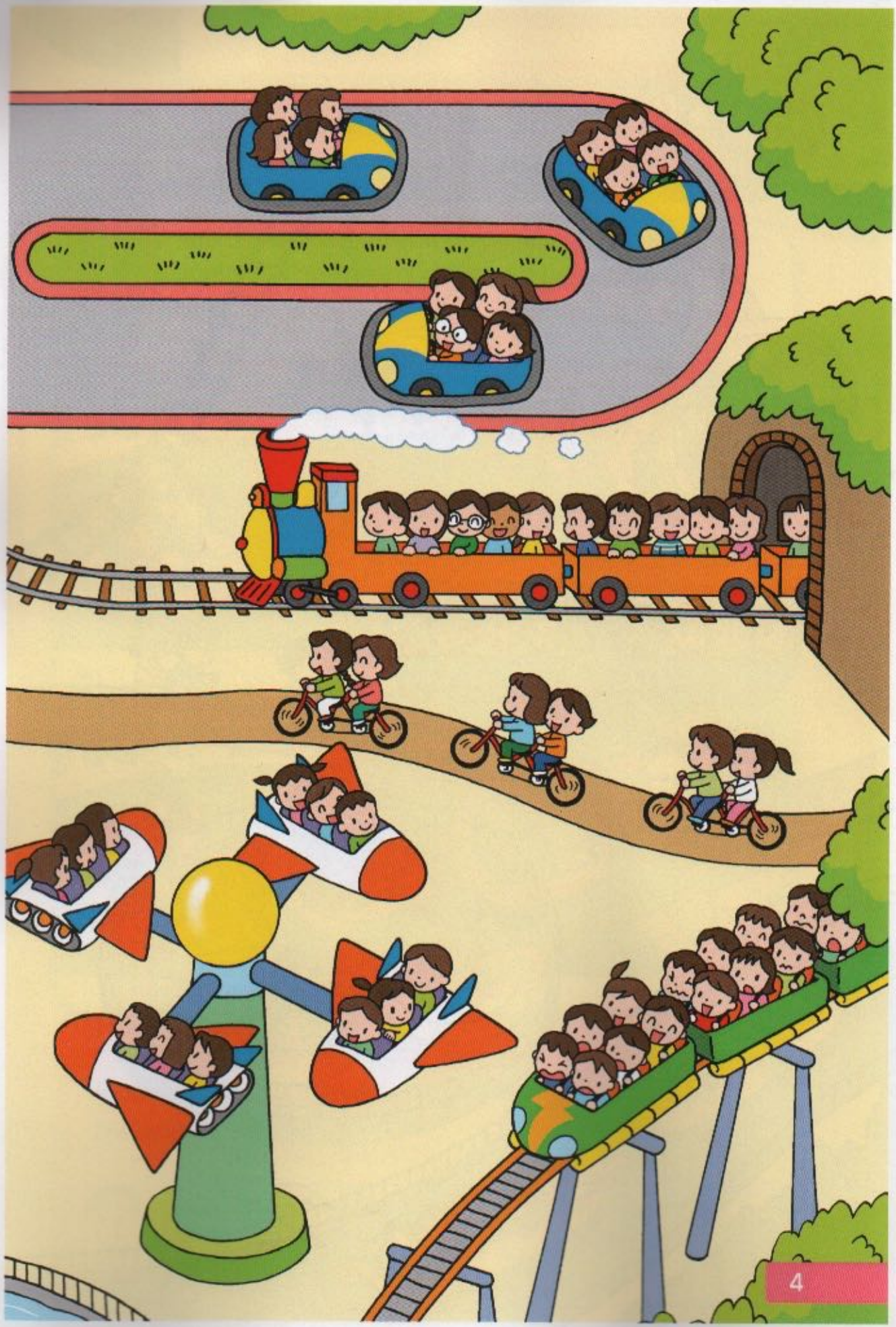
In ②, all four boats...

Multiplication (1)

11 Let's Think about New Calculations

La multiplicación como un tipo de calcúlo





1 Multiplication

1 Investigate how many children are on each ride.

1. How many children are riding ?

2. How many children are riding ?

3. Arrange the counters to show how many children are on each .

There are 3 children on each plane , and there are 4 planes . There are 12 children altogether.

Shiho

The same number of children are riding each .

The same number of children are in each .

4. How many children are riding on altogether?

Haruto

I can't tell, because the back of the train is hidden in the tunnel.

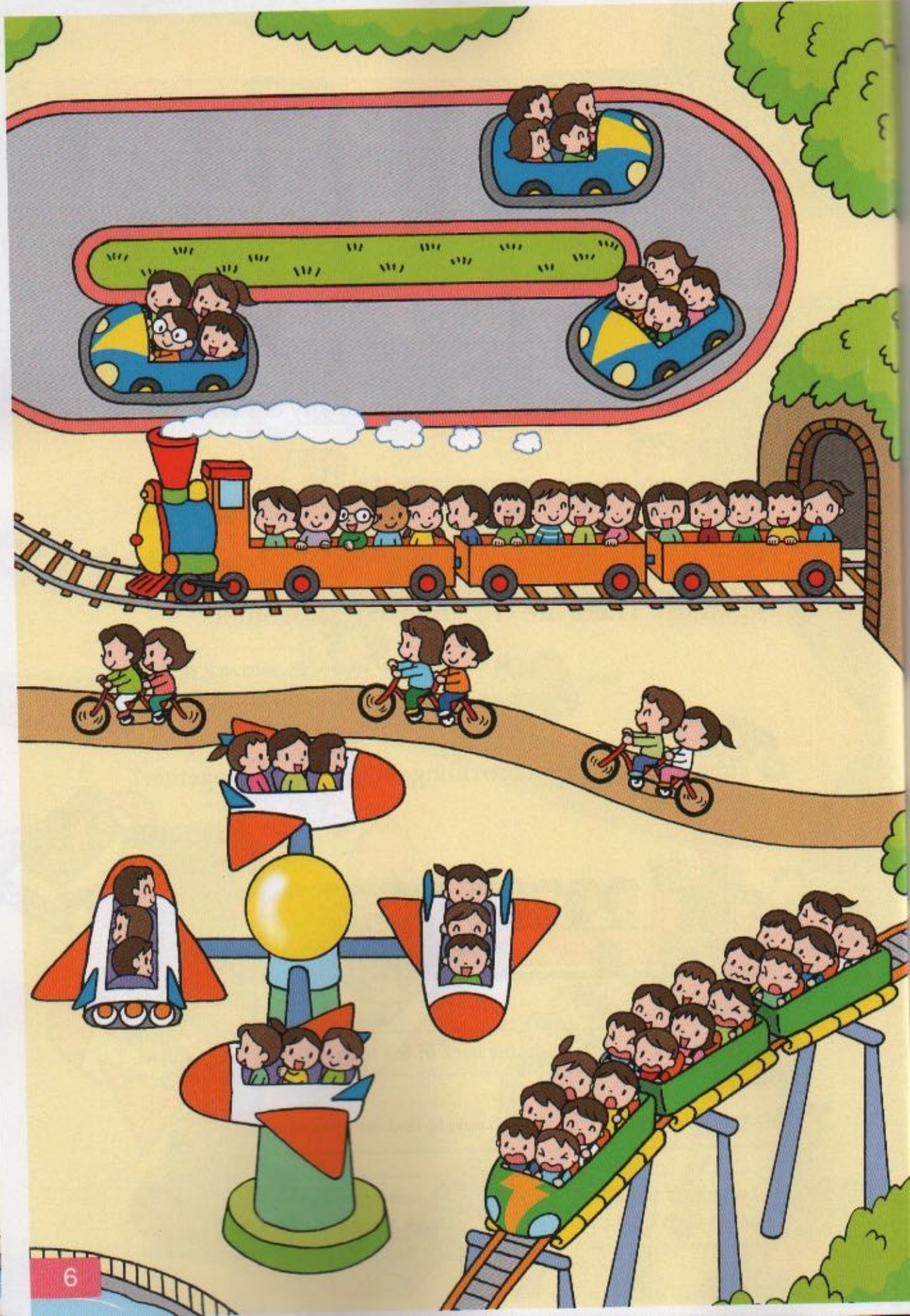
Let's think about what you need to know to find the total number?

I wonder if 5 children are in each train car.

Ami

I wonder how many train cars there are altogether.

Kota



The number of children riding on . is:

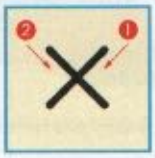
5 children in each train car , and
3 train cars . There are 15 children altogether.

You can write this using the following math sentence.

$5 \times 3 = 15$

Five multiplied by three equals fifteen.

Look at the other rides and find out how many children are on each part of the ride.



5	×	3	=	15
Number in each group		Number of groups		Total number

Summary

If you know the number in each group and the number of groups, you can find the total number.

5 Write the number of people riding on page 6.

Write it just like we did above.

There are ☐ children in each car, and there are ☐ cars. There are ☐ children.

Number in each group	Number of groups	Total number
☐	× ☐	= ☐

Math Sentence

How many are in each group?

6 Write a math sentence for the number of people riding on pages 3 and 4. Write the math sentence just like we did above.

Se Puede Retomar

Calculations like 5×3 and 2×6 are called **multiplication.**

Misaki: This is a new calculation.

explicación

1 Look at pages 3 and 4 and find the situations that can be expressed as multiplication math sentences. Then write the math sentences.

Airplane
There are 3 children on each airplane and there are 4 airplanes. There are 12 children altogether.
$3 \times 4 = 12$

Math Sentence ▸ (Number of objects in each group) × (Number of groups) = (Total number of objects)

Math Sentence ▸ ☐ × ☐ = ☐

I wonder if we can do something with the so we could express it with a multiplication math sentence.

Riku

2 Write multiplication math sentences for the following.

①

Shiho: There are 5 cherry tomatoes on each plate, and there are 4 plates. There are ☐ cherry tomatoes altogether.

Math Sentence ▸ ☐ × ☐ = ☐

②

Compare the math sentences in ① and ②.

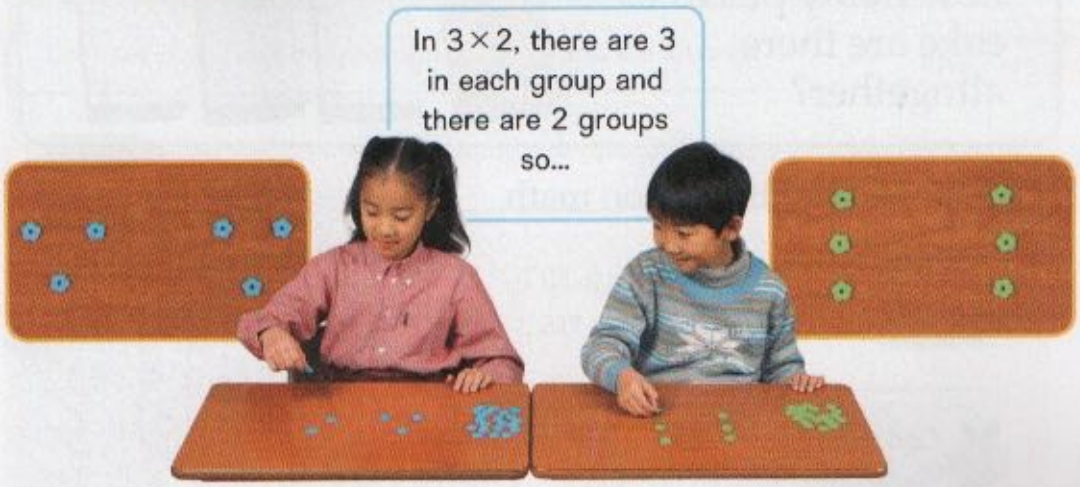
Math Sentence ▸

Haruto: If you use math sentences, you can express situations easily.

3 Use counters to represent multiplication math sentences.

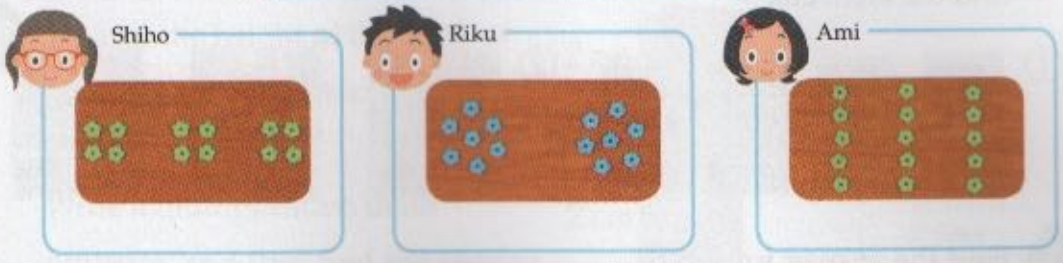
① Arrange your counters to show the following math sentences.

Ⓐ 3×2 Ⓑ 2×3 Ⓒ 5×2 Ⓓ 2×5



② Think about your own multiplication math sentences and arrange your counters. After you have arranged your counters, show the counters to your friends. Then say each other's multiplication sentences.

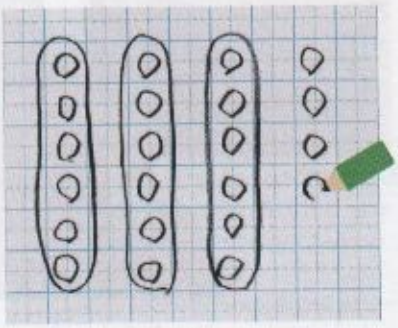
Can you tell what multiplication math sentences the 3 friends below are showing to each other?



2 Each box contains 6 pieces of cake. If there are 4 boxes, how many pieces of cake are there altogether?

1 Write a multiplication math sentence.

Math Sentence ▸ ☐ × ☐



Can you explain why the math sentence is written like that?

Ami: Counting all the pieces to find the answer of the multiplication would take a long time.

Let's think about how you can find the answer for 6×4.

Can't I find the answer with calculation?

Riku

There are 6 in each box and there are 4 boxes, so...

Misaki

Summary

The answer for 6×4 can be found by calculating $6 + 6 + 6 + 6$.

4 Write a multiplication math sentence for each situation below and find the answers.

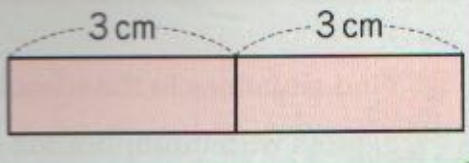
①

②

5 Find the answer for 7×6.

Haruto: You can do multiplication to find the number of objects around you.

3 What is the length of two 3 cm strips of paper put together?



Let's see if you can use multiplication to find the answer.

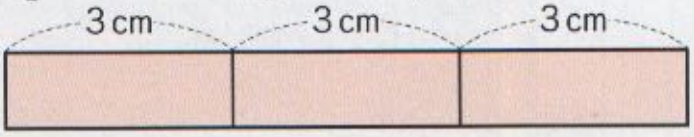
Units of Length
Page 115⑤

Math Sentence

Answer ☐ cm

If a piece of tape is as long as two 3 cm strips of paper put together, we can say the tape is **2 times** as long as the 3 cm tape.
You can use the multiplication math sentence 3×2 to find the length that is two times as long as 3 cm.

1 If a piece of tape is as long as three 3 cm strips of paper put together, how many times as long is it as a 3 cm strip of paper? How long is the tape?

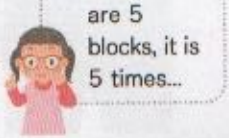


3 times or 4 times as much as an amount is the same as 3 or 4 sets of the amount put together.
1 time as much is the same as the given amount.

Multiplication also works when you find the length that is so many times as long as something.

Kota

6 What is the height of the stack of blocks if it is 4 times as high as 2 cm?
Write a multiplication math sentence, and then find the answer.



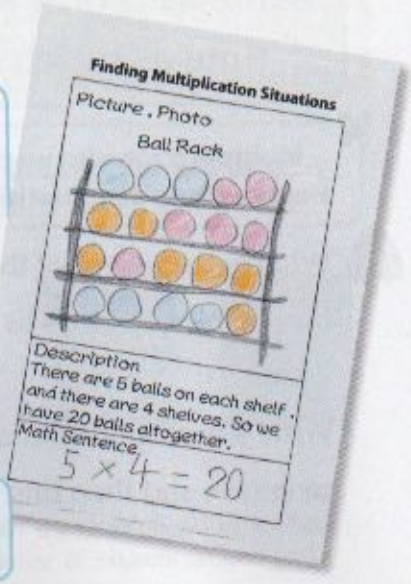
Use What You Have Learned

Find situations in the school that we can express with multiplication sentences.

se trata de priorizar la operación

Share the multiplication sentences you found with your friends.

I found balls lined up in the gym.
There were 5 balls on each shelf, and there were 4 shelves. So we have 20 balls altogether.
You can express this with the math sentence $5 \times 4 = 20$.



Find more situations that show multiplication.

2 Multiplication Facts: 5 and 2

Multiplication Facts of 5

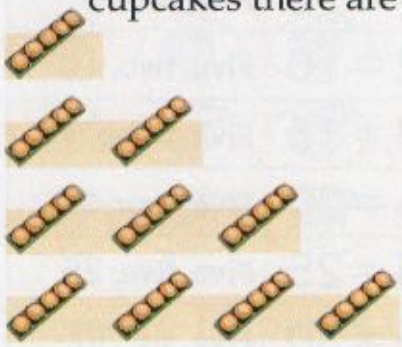
1

Each box has 5 cupcakes.

There are several boxes.

Find out the number of cupcakes.

1 How many cupcakes are there when there are 5 cupcakes in each box and there are 2 boxes? Find out how many cupcakes there are in 3 boxes and 4 boxes.



$5 \times 1 =$ ☐

$5 \times 2 =$ ☐

$5 \times 3 =$ ☐

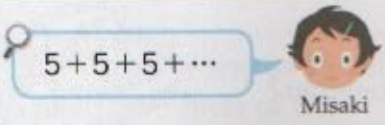
$5 \times 4 =$ ☐

There are 20 cupcakes in 4 boxes.

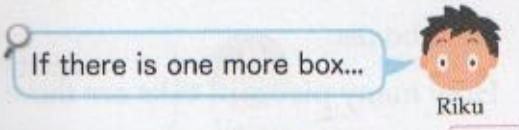
2 How many cupcakes are there when there are 5 cupcakes in each box and there are 5 boxes?

$5 \times 5 =$ ☐

Let's think about how we can find the number of cupcakes when there are more boxes.



Misaki



Riku

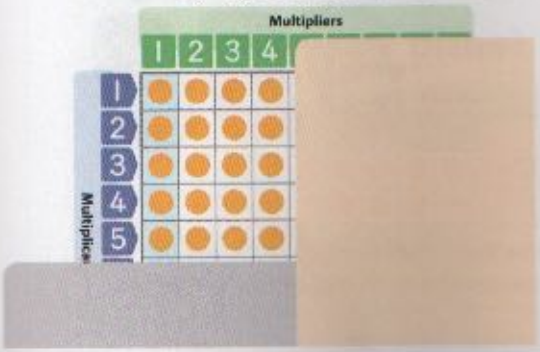
3 How many cupcakes are there in 6, 7, 8 and 9 boxes?

$5 \times 6 =$ ☐

$5 \times 7 =$ ☐

$5 \times 8 =$ ☐

$5 \times 9 =$ ☐



Look at Page 119.

You can find the number of cupcakes by **calculating** 5+5+5+... **or increasing the answer by** 5.

Kota

It is useful to remember the answer for 5×4 as "five, four, 20" and 5×5 as "five, five, 25".
This way of remembering multiplication facts is called **"kuku"** in Japanese.

2 Memorize the multiplication facts of 5.

Do the practice on page 26.

pide memorizar

The answers in the table are increasing by 5.

Multiplication facts of 5

$5 \times 1 = 5$	**Five, one,** 5
$5 \times 2 = 10$	**Five, two,** 10
$5 \times 3 = 15$	**Five, three,** 15
$5 \times 4 = 20$	**Five, four,** 20
$5 \times 5 = 25$	**Five, five,** 25
$5 \times 6 = 30$	**Five, six,** 30
$5 \times 7 = 35$	**Five, seven,** 35
$5 \times 8 = 40$	**Five, eight,** 40
$5 \times 9 = 45$	**Five, nine,** 45

1 There are 5 pieces of cake in each box and there are 6 boxes.
How many pieces of cake are there altogether?

2 What number of people is 3 times as many as 5 people?
Write a multiplication math sentence and find the answer.

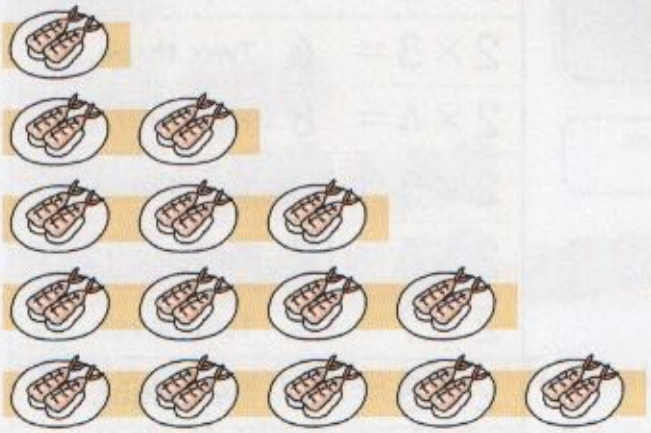
Ami

If you memorize these multiplication facts, you can quickly find the answers to multiplication calculations.

Multiplication Facts of 2

3

Each plate has 2 pieces of sushi. There are several plates. Find out the number of pieces of sushi.



$2 \times 1 =$ ☐

$2 \times 2 =$ ☐

$2 \times 3 =$ ☐

$2 \times 4 =$ ☐

$2 \times 5 =$ ☐

There are 10 pieces of sushi on 5 plates.

1. How many pieces of sushi are there when there are 2 pieces of sushi on each plate and there are 6 plates?

$2 \times 6 =$ ☐

Let's think about how we can find the number of pieces of sushi when there are more plates.

Think the same way as you did with the multiplication facts of 5.

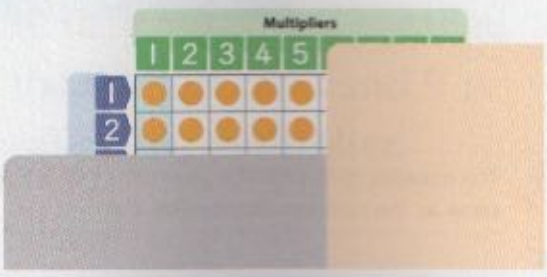
Haruto

2. How many pieces of sushi are there on 7, 8 and 9 plates?

$2 \times 7 =$ ☐

$2 \times 8 =$ ☐

$2 \times 9 =$ ☐



You can find the number of pieces of sushi by **calculating** 2+2+2+... **or increasing the answer by** 2.

Misaki

4 Memorize the multiplication facts of 2.

Do the practice on page 26.

The answers in the table are increasing by 2.

Multiplication Facts of 2	
2×1= 2	Two, one, 2
2×2= 4	Two, two, 4
2×3= 6	Two, three, 6
2×4= 8	Two, four, 8
2×5=10	Two, five, 10
2×6=12	Two, six, 12
2×7=14	Two, seven, 14
2×8=16	Two, eight, 16
2×9=18	Two, nine, 18

3 We bought five 2 L bottles of iced tea.

Units of Volume Page 115⑥

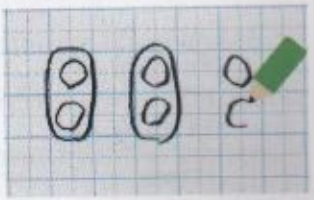
① How many L of iced tea do we have altogether?

② If we buy one more bottle, how many L does the amount of iced tea increase?

How many L of iced tea is there altogether?

4 There are 3 boats and 2 people are in each boat.

How many people are in the boats altogether?



Riku

The answers to the multiplication facts of 2 are the same as the numbers counted by 2's.

3 Multiplication Facts: 3 and 4

Multiplication Facts of 3

1 Find the multiplication facts of 3.

Let's think about how to find multiplication facts of 3.

$3 \times 1 =$ ☐

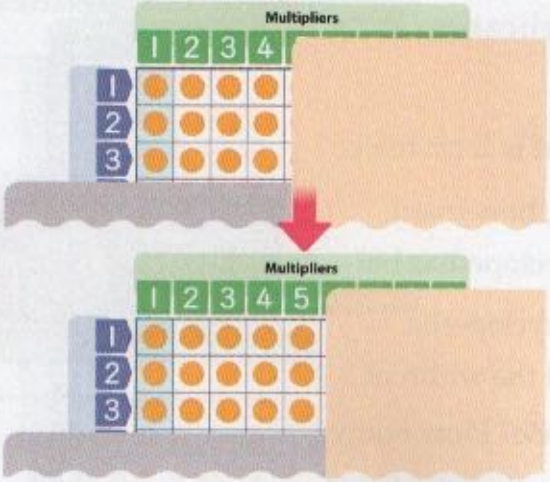
$3 \times 2 =$ ☐

$3 \times 3 =$ ☐

$3 \times 4 =$ ☐

1 To get the answer for 3×5, what do you need to add to the answer of 3×4?

$3 \times 5 =$ ☐



$3 \times 6 =$ ☐

$3 \times 7 =$ ☐

$3 \times 8 =$ ☐

$3 \times 9 =$ ☐

2 Find the answers for 3×6, 3×7, 3×8, and 3×9.

In the multiplication math sentence 3×9, 3 is called the **multiplicand** and 9 is called the **multiplier.**

$3 \times 9 = 27$

3: Multiplicand

9: Multiplier

You can find multiplication facts for 3 based on the following fact: **when the multiplier increases by 1, the answer increases by 3.**

Ami

2 Let's wrap up our study of the multiplication facts of 3.

Multiplication Facts of 3

$3 \times 1 = 3$	**Three, one, 3**
$3 \times 2 = 6$	**Three, two, 6**
$3 \times 3 = 9$	**Three, three, 9**
$3 \times 4 = 12$	**Three, four, 12**
$3 \times 5 = 15$	**Three, five, 15**
$3 \times 6 = 18$	**Three, six, 18**
$3 \times 7 = 21$	**Three, seven, 21**
$3 \times 8 = 24$	**Three, eight, 24**
$3 \times 9 = 27$	**Three, nine, 27**

1 Look at the multiplication facts of 3 again carefully.

Kota

For the multiplication facts of 2, the answer increases by 2. What about the multiplication facts of 3?

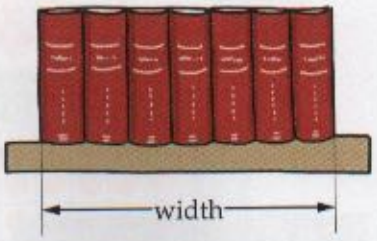
2 Memorize the multiplication facts of 3.

Do the practice on page 26.

1 There is an encyclopedia that is 3 cm thick.

① If you line up 7 of them, how many cm wide would the encyclopedias be?

② If you add one more encyclopedia, by how many cm would the width of the encyclopedias increase? How many cm wide would the encyclopedias be altogether?



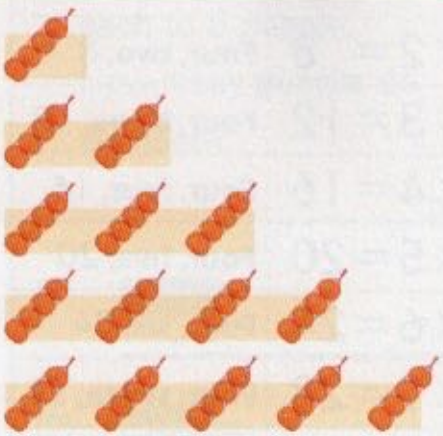
2 There are 6 flowerpots.
If you plant 3 bulbs in each pot, how many bulbs do you need altogether?

Shiho

We have found multiplication facts of 2 and 3. What's next?

3 Find the multiplication facts of 4.

Let's think about how to find multiplication facts of 4.



$4 \times 1 =$ ☐

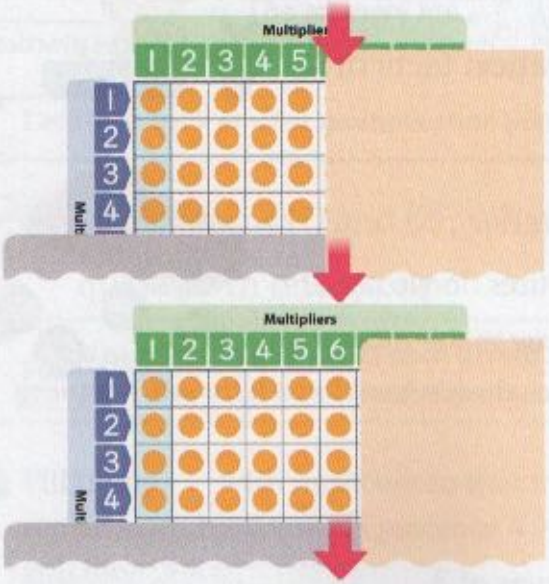
$4 \times 2 =$ ☐

$4 \times 3 =$ ☐

$4 \times 4 =$ ☐

$4 \times 5 =$ ☐

1 When the multiplier of 4×5 increases by 1, by how much does the answer increase?



$4 \times 5 =$ ☐

Increase by 1

$4 \times$ ☐ $=$ ☐

Increase by ☐

$4 \times 6 =$ ☐

$4 \times 7 =$ ☐

$4 \times 8 =$ ☐

$4 \times 9 =$ ☐

2 Find the answers for 4×6, 4×7, 4×8, and 4×9.

You can find multiplication facts of 4 based on the following fact: **when the multiplier increases by 1, the answer increases by 4.**

Haruto

4 Let's wrap up our study of the multiplication facts of 4.

Multiplication Facts of 4

$4 \times 1 = 4$	**Four, one,** 4
$4 \times 2 = 8$	**Four, two,** 8
$4 \times 3 = 12$	**Four, three,** 12
$4 \times 4 = 16$	**Four, four,** 16
$4 \times 5 = 20$	**Four, five,** 20
$4 \times 6 = 24$	**Four, six,** 24
$4 \times 7 = 28$	**Four, seven,** 28
$4 \times 8 = 32$	**Four, eight,** 32
$4 \times 9 = 36$	**Four, nine,** 36

1 Look at the multiplication facts of 4 again carefully.

Ami

For the multiplication facts of 5, 2, and 3, when the multiplier increases by 1, the answer increases by...
What about the multiplication facts of 4?

2 Memorize the multiplication facts of 4.

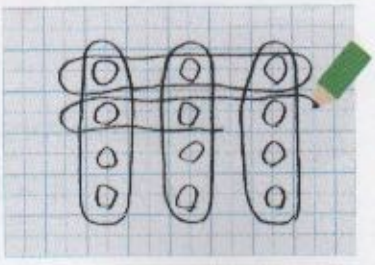
Do the practice on page 26.

3 We are making toy cars.
We put 4 tires on each car.

① To make 5 cars, how many tires do we need?

② If we make one more car, how many more tires do we need? How many tires do we need altogether?

4 Find one of the multiplication facts of 3 that has the same answer as 4×3.



Riku

We are broadening the world of multiplication facts, aren't we?

5 Make math sentences for the following two problems. Then, find the answers and compare them.

(1) We will give 2 pencils each to 5 people. How many pencils do we need?

(2) We will give 5 pencils each to 2 people. How many pencils do we need?

(1) Math Sentence ▸ _____ Answer ☐ pencils

(2) Math Sentence ▸ _____ Answer ☐ pencils

Misaki

The answers are...

The math sentences are...

Kota

Let's look back at what multiplication math sentences mean.

1 In problems (1) and (2), what numbers express the quantity in one group?

The number of objects in each group × the number of groups = the total number of objects.

Shiho

5 Fill in the ☐ with numbers so that the problem situation can be represented by the math sentence 4×3. Then, make the problem situation 3×4.

Each bag contains ☐ oranges and there are ☐ bags.
How many oranges are there altogether?

Find the answers.

Additional Problems
→Page 106 A

Kota

Math sentences also express situations.

Check Your Understanding

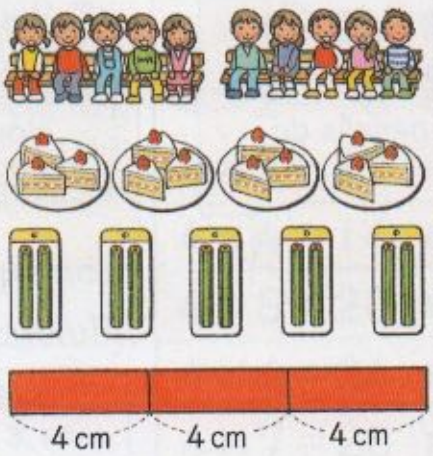
1 Select the picture that matches each multiplication math sentence. Then, draw lines to connect the pairs.

2×5 ·

4×3 ·

5×2 ·

3×4 ·



◀ Can you express situations with multiplication math sentences?

Page 5 1

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

◀ Can you find answers for multiplication?

①④⑤⑧ Page 13 1
②③⑥⑦⑨ Page 15 3

3 The length of a side of a square is 2 cm.

① How many times as long is the length around the square as the length of a side of the square?

② How many cm is the length around the square?

Square Page 115④

◀ Can you make math sentences out of situations and find the answers?

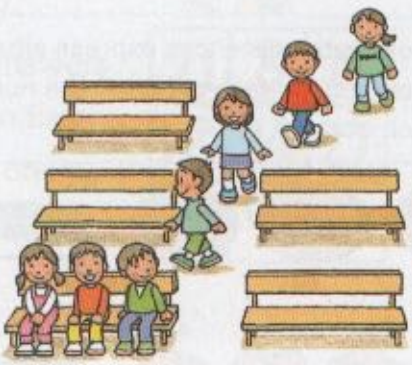
Page 16 4

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

◀ Can you find answers for multiplication?

②③⑤⑥⑧ Page 17 1
①④⑦⑨ Page 19 3

5 There are 5 benches. 3 children will be seated on each bench. How many children can sit altogether?



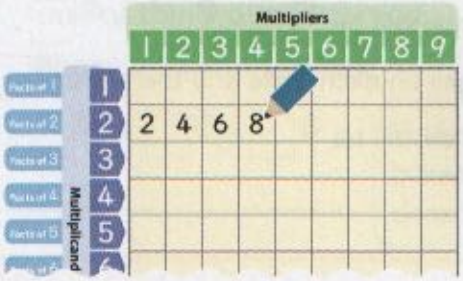
◀ Can you make math sentences out of situations and find the answers?

Page 18 2

6 Fill in the table on page 27 with the multiplication facts of 2, 3, 4, and 5, and investigate questions ①, ②, and ③.

◀ Can you see patterns in the multiplication table?

Page 14 2
Page 16 4
Page 18 2
Page 20 4



① For the multiplication facts of 5, by how much does each answer increase?

② For the multiplication facts of 5, when the multiplier increases by 1, by how much does the answer increase?

③ Investigate the questions asked in ① and ② for the multiplication facts of 2, 3, and 4.

Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on situations and express them as multiplication math sentences

Riku expressed the following two situations as multiplication math sentences.

Multiplication math sentences express situations as follows: the number of objects in each group × the number of groups = the total number of objects.

①

Math Sentence ▸ $4 \times 3 = 12$

②

Math Sentence ▸ $3 \times 4 = 12$

Fill in the □ with numbers and explain Riku's idea.

Riku

In ①, there are Ⓐ□ oranges on each plate and there are Ⓑ□ plates. So, the math sentence will be Ⓒ□ × Ⓓ□ = Ⓔ□.

In ②, there are Ⓕ□ oranges on each plate and there are Ⓖ□ plates. So, the math sentence will be Ⓗ□ × Ⓘ□ = Ⓙ□.

Look back at what you have studied in "Let's Think about New Calculations" and discuss.

Ami

Now we know the multiplication facts of 5, 4, 3, and 2. Multiplication facts are useful. You can find answers quickly without doing addition.

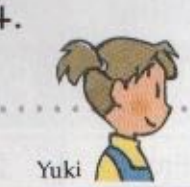
Haruto

It looks like there are many situations that you can express with multiplication math sentences.

Multiplication Bingo

Se Puede Retomar

Let's play Bingo using the multiplication fact cards from the tables of 3 and 4.

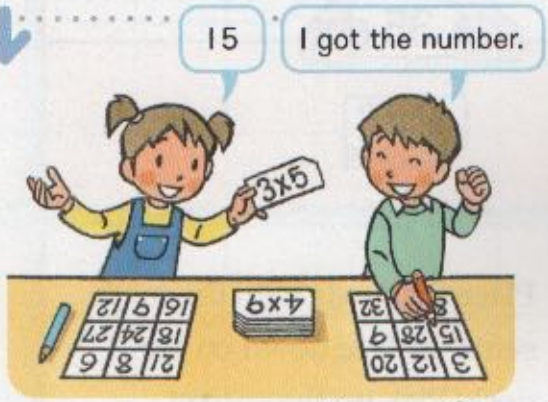


21	8	6
18	24	27
16	9	12

3	12	20
15	28	9
8	16	32

1 Pick your favorite 9 numbers from the answers of the multiplication facts of 3 and 4 and put one number in each of the 9 boxes.

2 Draw a card from the top of the face down stack of multiplication fact cards, then find the answer. If you find an answer that matches one of the 9 numbers you chose, color in the box.



Yuki can't color in any boxes because she does not have a 15.

Ken

3	12	20
15	28	9
8	16	32

3 Repeat the process. The person who gets 3 in a row vertically, horizontally, or diagonally wins.

21	8	6
18	24	27
16	9	12

Try this game using the multiplication facts of different numbers.

Wow, I got 3 in a row diagonally.

Multiplication Practice

Se Puede Retomar

Shuffle the multiplication fact cards well. Look at the math sentences and answer them.

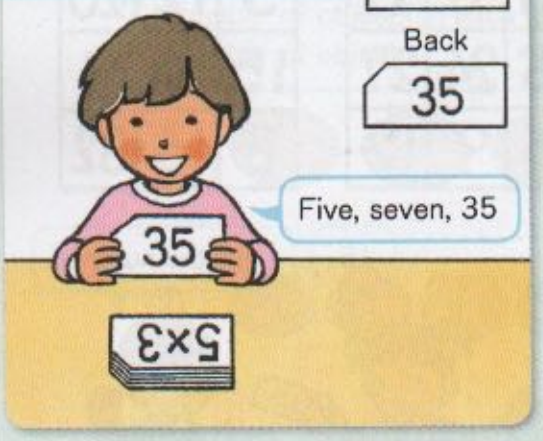
Flip the cards and check the answers.

Front

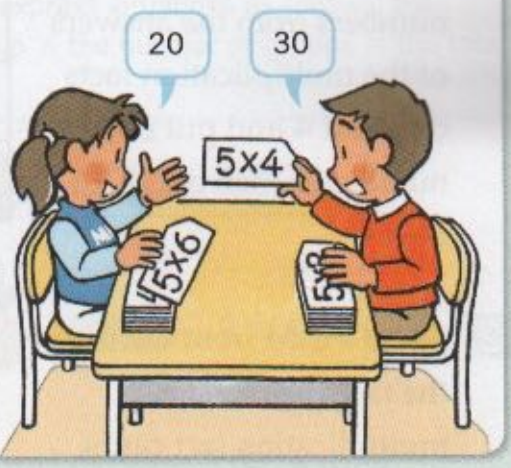
5×7

Back

35



Each player picks up a card and shows the multiplication sentence to the other player. Answer each other's problems.



Place the cards with the math sentence face down on the desk. Pick up the correct answer when your partner tells you the multiplication fact.

Shuffle the cards well. Pick a card. Look at the answer and guess what the math sentence is.

Multiplication Table

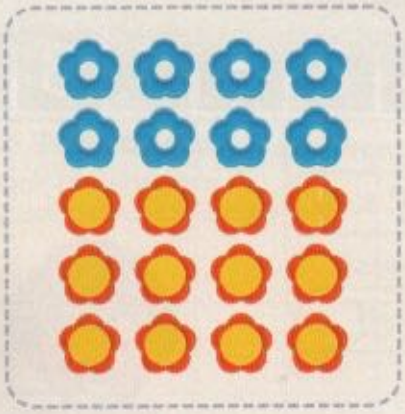
Multiplicands	Multipliers								
	1	2	3	4	5	6	7	8	9
Facts of 1	1								
Facts of 2	2								
Facts of 3	3								
Facts of 4	4								
Facts of 5	5								
Facts of 6	6								
Facts of 7	7								
Facts of 8	8								
Facts of 9	9								

As you learn different multiplication facts, fill in the multiplication table.

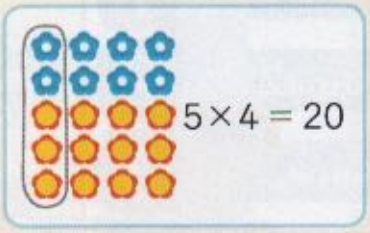
Mathlin Newsletter

If You Use Multiplication Wisely

In the diagram below, how many counters are there altogether?

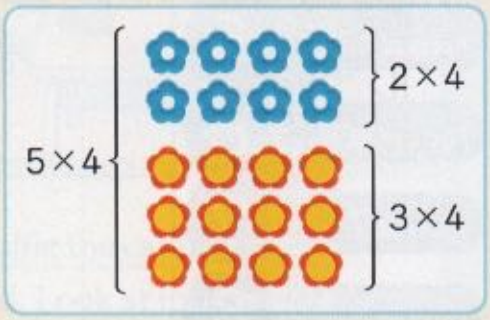


Riku



Shiho thought the following way.

Shiho



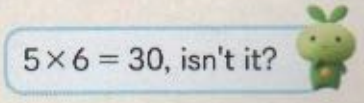
Explain Shiho's thinking.

The answer of 5×4 is the answers of 2×4 and 3×4 added together.

5×4 < $2 \times 4 =$ ☐ / $3 \times 4 =$ ☐

Altogether ☐

Find the number of counters shown on the right using Shiho's idea.



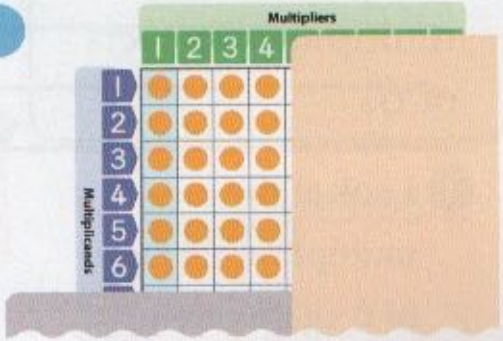
Multiplication (2)

12 Let's Make the Multiplication Table

1 Multiplication Facts: 6 and 7

Multiplication Facts of 6

1 Find the multiplication facts of 6 by using what you learned previously.



Let's think about how to find multiplication facts of 6.

It looks like there are several different ideas to create the table.

$6\times1=6$
$6\times2=12$ ··· $6+6$
$6\times3=18$ ··· $6+6+6$

Shiho

$6\times1=6$
Increase by 1 / Increase by 6
$6\times2=12$ ··· $6+6$
Increase by 1 / Increase by 6
$6\times3=18$ ··· $12+6$
⋮

Haruto

$6\times1=$ ☐
$6\times2=$ ☐
$6\times3=$ ☐
$6\times4=$ ☐
$6\times5=$ ☐
$6\times6=$ ☐
$6\times7=$ ☐
$6\times8=$ ☐
$6\times9=$ ☐

1 Write the multiplication facts of 6 in the multiplication table on page 27.

Using the properties we have learned so far, we have found the multiplication facts of 6.

Misaki

2 Let's wrap up our study of the multiplication facts of 6.

Multiplication facts of 6

$6 \times 1 = 6$	**Six, one,** 6
$6 \times 2 = 12$	**Six, two,** 12
$6 \times 3 = 18$	**Six, three,** 18
$6 \times 4 = 24$	**Six, four,** 24
$6 \times 5 = 30$	**Six, five,** 30
$6 \times 6 = 36$	**Six, six,** 36
$6 \times 7 = 42$	**Six, seven,** 42
$6 \times 8 = 48$	**Six, eight,** 48
$6 \times 9 = 54$	**Six, nine,** 54

1 Look at the multiplication facts of 6 again carefully.

Kota

The answers for 6×4 and 4×6 are the same.

$6 \times 4 = 4 \times 6$

Ami

The answer for 6×3 is the same as adding the answers of 4×3 and 2×3.

$6 \times 3 = 18$

$4 \times 3 = 12$

$2 \times 3 = 6$

2 Memorize the multiplication facts of 6.

Do the practice on page 26.

1 There are 3 packages of cheese.
Each package contains 6 individually wrapped pieces of cheese.

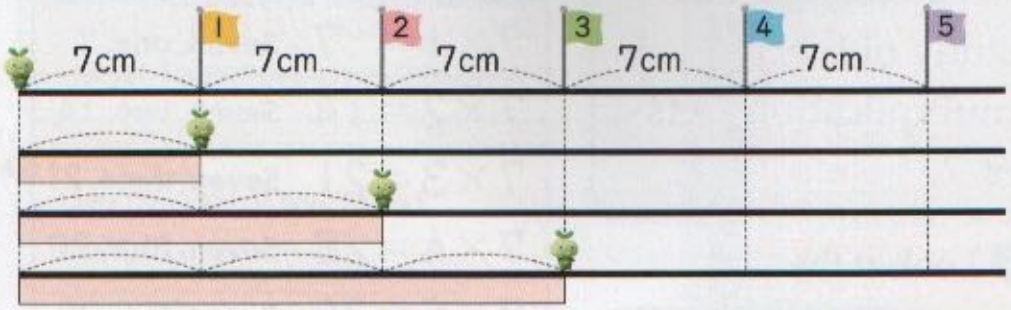
① How many pieces of cheese are there altogether?

② If you add one more package, by how much would the number of pieces of cheese increase?

Riku

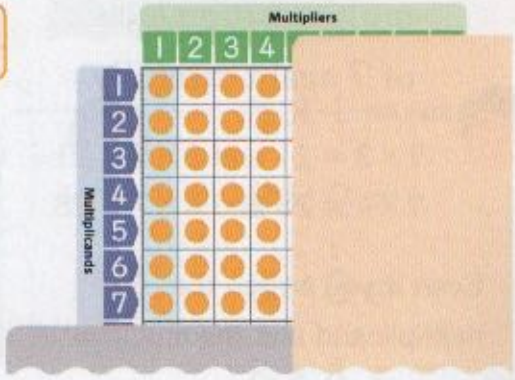
I wonder if we can find multiplication facts for 7 in the same way.

3 Find the multiplication facts of 7 by using what you learned previously.



Units of Length
Page 115⑤

Let's think about how to find multiplication facts of 7.



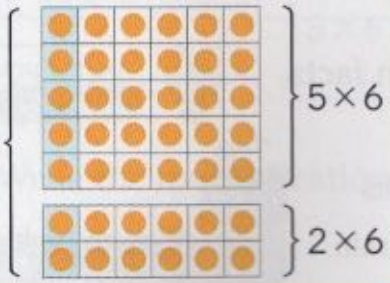
For the multiplication facts of 7, when the multiplier increases by 1, the answer increases by ☐. So...

Shiho

The answers for 7×2 and 2×7 are the same so...

Kota

To find the answer for 7×6, you can add the answers for 5×6 and 2×6.



Ami

$7 \times 1 =$ ☐
$7 \times 2 =$ ☐
$7 \times 3 =$ ☐
$7 \times 4 =$ ☐
$7 \times 5 =$ ☐
$7 \times 6 =$ ☐
$7 \times 7 =$ ☐
$7 \times 8 =$ ☐
$7 \times 9 =$ ☐

1 Write the multiplication facts of 7 in the multiplication table on page 27.

Using the properties we have learned so far, we have found the multiplication facts of 7.

Haruto

4 Let's wrap up our study of the multiplication facts of 7.

Multiplication facts of 7

$7 \times 1 = 7$	**Seven, one,** 7
$7 \times 2 = 14$	**Seven, two,** 14
$7 \times 3 = 21$	**Seven, three,** 21
$7 \times 4 = 28$	**Seven, four,** 28
$7 \times 5 = 35$	**Seven, five,** 35
$7 \times 6 = 42$	**Seven, six,** 42
$7 \times 7 = 49$	**Seven, seven,** 49
$7 \times 8 = 56$	**Seven, eight,** 56
$7 \times 9 = 63$	**Seven, nine,** 63

1 Look at the multiplication facts of 7 again carefully.

Riku

$7 \times 3 = 21$ and $3 \times 7 = 21$

$7 \times 4 = 28$ and $4 \times 7 = 28$

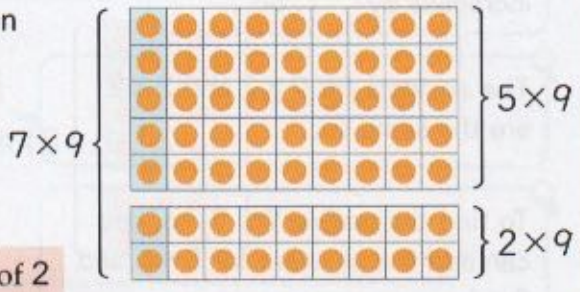
⋮ ⋮

Even if you switch the multiplicand and the multiplier...

Misaki

The answers to the multiplication facts of 7 are the same as adding the answers of the multiplication facts of 5 with the multiplication facts of 2.

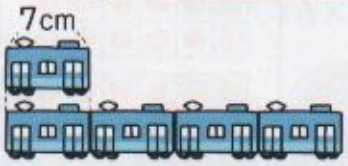
Facts of 7 = Facts of 5 + Facts of 2



2 Memorize the multiplication facts of 7.

Do the practice on page 26.

2 What is the length of the toy train if its length is 4 times as long as another train of 7 cm?



3 5 children will each get 7 pieces of colored paper.
How many pieces of colored paper do you need altogether?

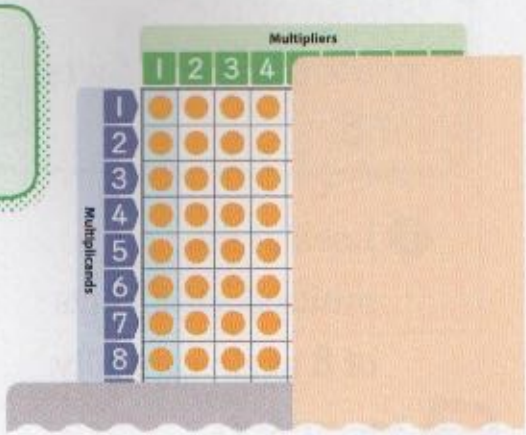
Kota

I wonder if we can find multiplication facts for 8, based on the properties that we have learned so far.

2 Multiplication Facts: 8, 9, and 1

Multiplication Facts of 8

1 Find the multiplication facts of 8 by using what you learned previously.



Let's think about how to find multiplication facts of 8.

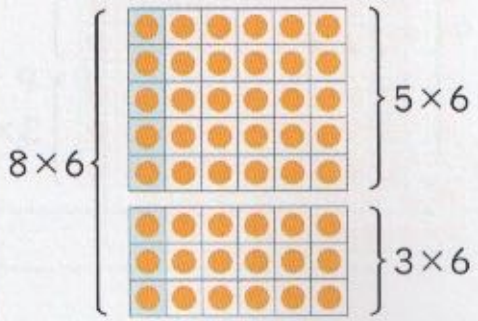
For the multiplication facts of 8, when the multiplier increases by 1, the answer increases by ☐. So...

Ami

The answers for 8×2 and $2 \times$ ☐ are the same, so...

Haruto

To find the answer for 8×6, you can add the answers for 5×6 and 3×6.



Misaki

$8 \times 1 =$ ☐

$8 \times 2 =$ ☐

$8 \times 3 =$ ☐

$8 \times 4 =$ ☐

$8 \times 5 =$ ☐

$8 \times 6 =$ ☐

$8 \times 7 =$ ☐

$8 \times 8 =$ ☐

$8 \times 9 =$ ☐

1 Write the multiplication facts of 8 in the multiplication table on page 27.

Using the properties we have learned so far, we have found the multiplication fact of 8.

Shiho

2 Let's wrap up our study of the multiplication facts of 8.

Multiplication facts of 8	
8 × 1 = 8	**Eight, one**, 8
8 × 2 = 16	**Eight, two**, 16
8 × 3 = 24	**Eight, three**, 24
8 × 4 = 32	**Eight, four**, 32
8 × 5 = 40	**Eight, five**, 40
8 × 6 = 48	**Eight, six**, 48
8 × 7 = 56	**Eight, seven**, 56
8 × 8 = 64	**Eight, eight**, 64
8 × 9 = 72	**Eight, nine**, 72

1 Look at the multiplication facts of 8 again carefully.

Kota

$8 \times 3 = 24$ and $3 \times 8 = 24$

$8 \times 4 = 32$ and $4 \times 8 = 32$

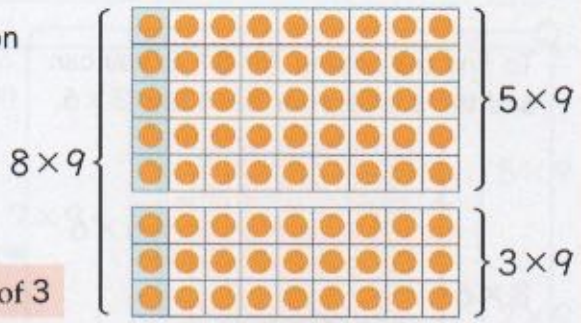
⋮ ⋮

Even if you switch the multiplicand and the multiplier...

Haruto

The answers to the multiplication facts of 8 are the same as adding the answers of the multiplication facts of 5 with the multiplication facts of 3.

Facts of 8 = Facts of 5 + Facts of 3



Ami

Facts of 6 + Facts of 2 , too...

2 Memorize the multiplication facts of 8.

Do the practice on page 26.

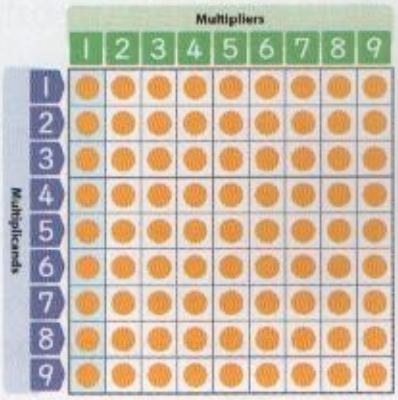
1 There are 6 benches. 8 children will be seated on each bench. How many children can sit altogether?

Misaki

It looks like we can find multiplication facts for 9, based on the properties that we have learned so far.

Multiplication facts of 9

3 Find the multiplication facts of 9 by using what you learned previously.



Let's think about how to find multiplication facts of 9.

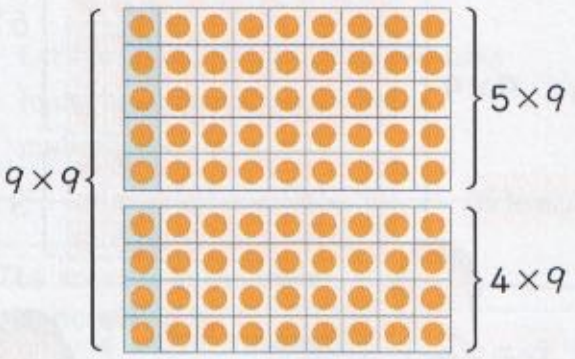
For the multiplication facts of 9, when the multiplier increases by 1...

Shiho

The answers for 9×2 and □×9 are...

Riku

To find the answer for 9×9, you can add the answers for 5×9 and 4×9.



Misaki

$9\times1=$ □
$9\times2=$ □
$9\times3=$ □
$9\times4=$ □
$9\times5=$ □
$9\times6=$ □
$9\times7=$ □
$9\times8=$ □
$9\times9=$ □

1 Write the multiplication facts of 9 in the multiplication table on page 27.

Using the properties we have learned so far, we have found the multiplication fact of 9.

Kota

4 Let's wrap up our study of the multiplication facts of 9.

Multiplication Facts of 9	
$9 \times 1 = 9$	**Nine, one,** 9
$9 \times 2 = 18$	**Nine, two,** 18
$9 \times 3 = 27$	**Nine, three,** 27
$9 \times 4 = 36$	**Nine, four,** 36
$9 \times 5 = 45$	**Nine, five,** 45
$9 \times 6 = 54$	**Nine, six,** 54
$9 \times 7 = 63$	**Nine, seven,** 63
$9 \times 8 = 72$	**Nine, eight,** 72
$9 \times 9 = 81$	**Nine, nine,** 81

1 Look at the multiplication facts of 9 again carefully.

Ami

$9 \times 3 = 27$ and $3 \times 9 = 27$

$9 \times 4 = 36$ and $4 \times 9 = 36$

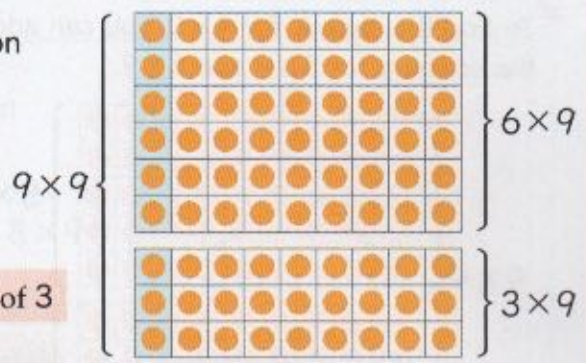
⋮ ⋮

Even if you switch the multiplicand and the multiplier...

Haruto

The answers to the multiplication facts of 9 are the same as adding the answers of the multiplication facts of 6 with the multiplication facts of 3.

Facts of 9 = Facts of 6 + Facts of 3



Riku

Facts of 9 = Facts of 7 + Facts of 2

There are more...

Shiho

2 Memorize the multiplication facts of 9.

Do the practice on page 26.

2 Make problems that represent the math sentences 9×8 and 8×9.

Misaki

If you read ☐ pages a day, how many pages do you read in ☐ days?

Haruto

I wonder what number we haven't found multiplication facts for yet.

Multiplication Facts of 1

5 At a party, each child will get 2 oranges and 1 slice of cake. How many oranges and slices of cake do we need for 6 children?

Math Sentence ▸ $2 \times 6 = \square$

Answer $\square$ oranges

Math Sentence ▸ $\square \times \square = \square$

Answer $\square$ cakes

1 Write the multiplication facts of 1 in the multiplication table on page 27.

Let's find out if the properties we have found so far also apply to the multiplication facts of 1.

The answers in the table are increasing by 1.

Shiho

$1 \times 8 = 8$ and $8 \times 1 = 8$

Kota

The properties we have learned so far also apply to the multiplication facts of 1.

Riku

Multiplication facts of 1

$1 \times 1 = 1$	**One, one,** 1
$1 \times 2 = 2$	**One, two,** 2
$1 \times 3 = 3$	**One, three,** 3
$1 \times 4 = 4$	**One, four,** 4
$1 \times 5 = 5$	**One, five,** 5
$1 \times 6 = 6$	**One, six,** 6
$1 \times 7 = 7$	**One, seven,** 7
$1 \times 8 = 8$	**One, eight,** 8
$1 \times 9 = 9$	**One, nine,** 9

2 Memorize the multiplication facts of 1.

Do the practice on page 26.

Ami: Now we have completed the multiplication table!

Let's Become Masters of Multiplication Facts

Practice multiplication in many different ways.

Can you say the multiplication facts of a number starting from the largest answer?

Nine, nine, 81
Nine, eight, 72
Nine, seven, 63

Ask your friends to listen to your multiplication facts and make sure you say them correctly.

Can you randomly pick a multiplication fact ... and say the rest of the facts from there?

Seven, three, 21

Seven, four, 28
Seven, five, 35
Seven, six, 42

It is a great idea to record your progress.

Can you say multiplication facts in random order?

Eight, three, 24

Eight, seven, 56

Mathlin Newsletter

Why Is the Multiplication Table Called "Kuku" in Japanese?

We call the multiplication table that has 81 multiplication facts starting from, "one, one, 1" and ending at, "nine, nine, 81", "kuku" in Japanese.
In the olden days, people often recited the table starting with "nine, nine, 81".
In Japanese, kuku means "nine, nine, 81" therefore people started to call this table "kuku".

People used to memorize the multiplication facts in the opposite order that we do today.

3 The Multiplication Table and Its Properties

(Move)

1 Review the properties that we have used to create the multiplication facts by looking at the multiplication table.

What properties did you use?

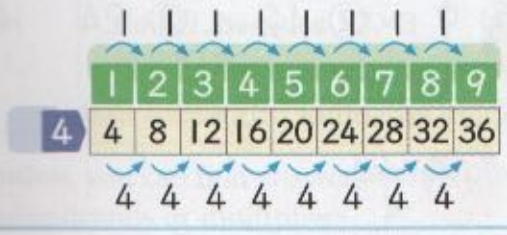
Multiplicands	Multipliers: 1	2	3	4	5	6	7	8	9
Facts of 1 — 1	1	2	3	4	5	6	7	8	9
Facts of 2 — 2	2	4	6	8	10	12	14	16	18
Facts of 3 — 3	3	6	9	12	15	18	21	24	27
Facts of 4 — 4	4	8	12	16	20	24	28	32	36
Facts of 5 — 5	5	10	15	20	25	30	35	40	45
Facts of 6 — 6	6	12	18	24	30	36	42	48	54
Facts of 7 — 7	7	14	21	28	35	42	49	56	63
Facts of 8 — 8	8	16	24	32	40	48	56	64	72
Facts of 9 — 9	9	18	27	36	45	54	63	72	81

Let's summarize the properties of multiplication.

1 Explain Kota's idea.

Kota

In the facts of 4, when the multiplier increases by 1, the answer increases by 4.



2 Check this property with other multiplication facts.

3 Explain Shiho's idea.

Shiho

The answers to 7×8 and 8×7 are the same.

	Multipliers			
	5	6	7	8
7				56
8			56	

4 Look for multiplication math sentences with answers of 15 by looking at the multiplication table on page 39.

Compare the math sentences.

Summary

- **If you increase the multiplier by 1, the answer increases by the multiplicand.**

$$4 \times 8 = 4 \times 7 + 4$$

- **Even if you switch the order of the multiplicand and the multiplier, the answer remains the same.**

$$7 \times 8 = 8 \times 7$$

If you forget a multiplication fact, you can use these properties to find the answer.

1 Fill in the ☐ with the appropriate number.

$3 \times 7 = 3 \times 6 + \square$

Misaki

For the multiplication facts of ☐, when the multiplier increases by 1...

2 Find the multiplication sentences that match the following answers.

① 9 ② 12 ③ 24 ④ 28 ⑤ 36 ⑥ 63

3 Share any other properties that you noticed.

Riku

If I add the answers of the facts of 3 and the facts of 4 ...

Haruto

These properties apply to all the multiplication facts.

2 Find the numbers that fit in ⓐ, ⓑ, and ⓒ in the table below.

Let's go beyond the nine by nine multiplication table.

Shiho: I wonder if the properties of multiplication work.

Multiplicands \ Multipliers	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1	2	3	4	5	6	7	8	9				
2	2	4	6	8	10	12	14	16	18				
3	3	6	9	12	15	18	21	24	27			ⓑ	
4	4	8	12	16	20	24	28	32	36				
5	5	10	15	20	25	30	35	40	45	ⓐ			
6	6	12	18	24	30	36	42	48	54				
7	7	14	21	28	35	42	49	56	63				
8	8	16	24	32	40	48	56	64	72				
9	9	18	27	36	45	54	63	72	81				
10													
11													
12			ⓒ										

1 What math sentences can you use to find the numbers that fit in ⓐ, ⓑ, and ⓒ?

Haruto: In the row that has ⓐ, when the multiplier increases by 1, the answer...

For ⓒ, because $12 \times 3 = 3 \times 12$...

Ami

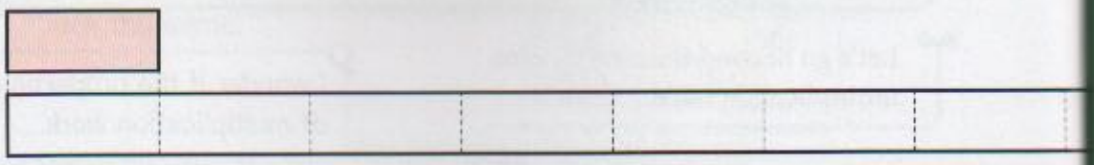
Using the properties of multiplication, you can find answers for multiplications even if their multiplicands or multipliers are larger than 9.

Kota

Riku: It looks like we can fill in the empty spaces in the table above in the same way.

4 Times as Much and Multiplication

1 Find the length that is 3 times as long as the length of tape Ⓐ?

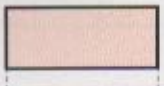
Ⓐ 

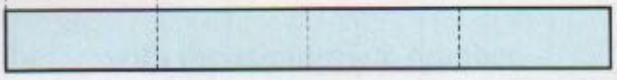
Let's think more about "times."

1. Color in the tape so that it is 3 times as long as the length of Ⓐ.
2. Tape Ⓐ measured 2 cm in length.
   What is the length of the part you colored in 1?

Math Sentence _____ Answer ☐ cm

3. How many times as long is the length of tape Ⓑ as the length of tape Ⓐ?

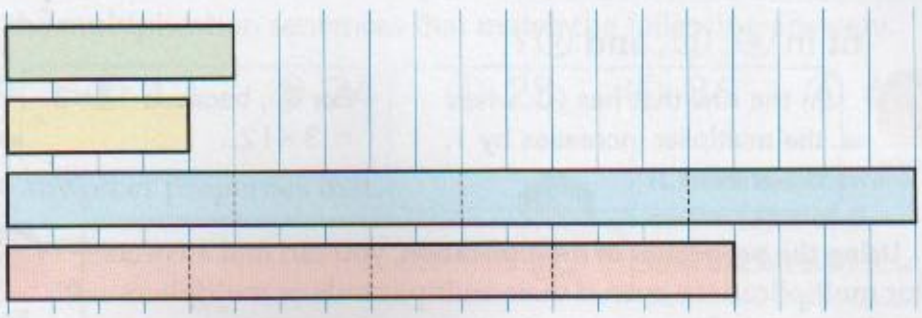
Ⓐ 

Ⓑ 

Shiho

You can express the length of tape Ⓑ as ☐ times as long as the length of tape Ⓐ.

1 Which tapes are 4 times as long as tape Ⓒ? How many times as long is the length of tape Ⓕ as the length of tape Ⓓ?

Ⓒ 

Ⓓ

Ⓔ

Ⓕ

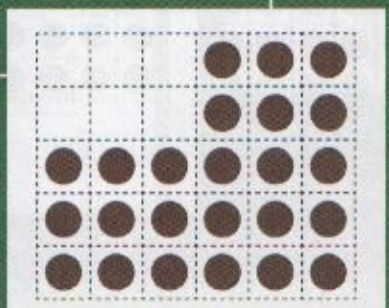
Additional Problems
→Page 106 B

Misaki

The length that is 4 times as long as the length of Ⓒ is different from the length that is 4 times as long as the length of Ⓓ.

5 Problems

1 How many chocolates are in the box altogether? Think about different ways to find the answer.



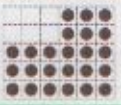
1 Plan how to find the answer.

Haruto

We could count them one by one, but...

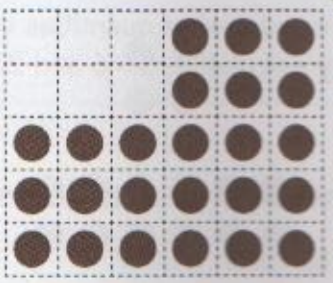
How about making groups of the same number of pieces?

Ami

Let's think about how to find the number of ● when they are shaped like  by calculating.

2 Write a diagram or math sentences to show your idea.

There are diagrams on page 117, too.



〈Write and Move〉

Grasp the problem.

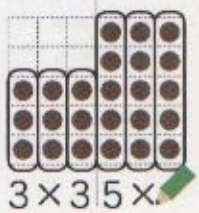
- What problem are we going to work on today?

- What idea may be useful to solve the problem?
- Is there anything you have learned before that you can use to solve this problem?

Write down your ideas.

- Is your idea clear to others?

Kota



Shiho, Kota, and Misaki are explaining their classmates' ideas.

I think that Riku divided the chocolates into groups of 3 pieces and groups of ☐ pieces...

Shiho

Riku

$3 \times 2 = 6$

$6 \times 3 = 18$

$6 + 18 = 24$

Answer: 24

Learn with your classmates.

- Can you understand your classmates' ideas based on their diagrams and math sentences?
- What is common and what is different about your own idea and your classmates' ideas?

3 Look at the math sentences that Riku wrote. Draw a diagram to express his idea and explain.

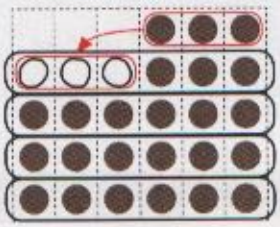
4 Look at the diagram that Ami drew on the next page. Write a math sentence to express her idea.

5 Look at the diagram and math sentences that Haruto made. Explain his idea.

I wonder what quantities are found by calculating 5×6 and 2×3.

6 Discuss how the three students' methods are similar to each other.

Ami



□ × □ = 24

Answer: 24

Kota

Haruto

5 × 6 = 30

2 × 3 = 6

30 − 6 = 24

Answer: 24

Misaki

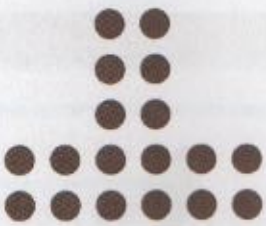
7 Look back and summarize today's lesson.

Summary

The number of ● can be determined **using multiplication by focusing on groups of the same number.**

Diagrams and math sentences help you understand the methods used.

1 Think about ways to find the number of ●.



Additional Problems → Page 107 C

Look back and summarize today's lesson.

- What did you learn from today's investigation?
- Which way of thinking was useful?

Put it into use.

- Can you use what you learned in a new problem?

Let's look back at the ideas you used to solve problems.

Riku

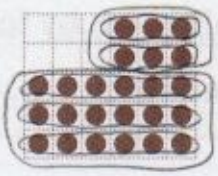
December 8

Problem

How many chocolates are in the box altogether? Think about different ways to find the answer.

Let's think about how to calculate the number of ● when they are shaped like by calculating.

My Idea ①



$3 \times 2 = 6$
$6 \times 3 = 18$
$6 + 18 = 24$

Answer 24 pieces

The Multiplication facts of 6 were learned on November 24.

He focused on groups of 3 pieces and groups of 6 pieces.

When you work on problems, don't only write math sentences and answers but also consider using:

- **Diagrams**
- **Tables**
- **Graphs**

Classmates' reflections

Shiho

When I found groups of chocolates that have the same number, I could use multiplication.

She wrote how her learning from before was useful.

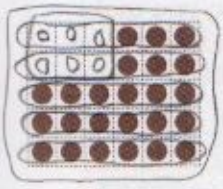
Note Taking Tip ①

Today's lesson was based on what he had learned before. So he added the date of the lesson so that he can go back to the page of his notebook.

Note Taking Tip ②

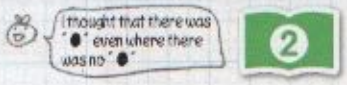
In a balloon, he wrote about what he needed to be careful of and what he noticed during the lesson.

My idea ②



$6 \times 5 = 30$
$3 \times 2 = 6$
$30 - 6 = 24$

Answer 24 pieces



He pretended that there were chocolates even in the empty spaces.

Summary

The number of ● can be determined using multiplication by focusing on groups of the same number.

He noticed that what he learned before (multiplication) was useful for solving this problem.

Reflection

When I showed my ideas in diagrams and math sentences, it became easier to understand the differences between myself and my friends.

Kota

I think there are other ways, so I'd like to think about it.

He wrote about further ideas he would like to investigate.

Check Your Understanding

1 ① 6×3 ② 7×5 ③ 6×8
④ 7×4 ⑤ 6×6 ⑥ 7×7
⑦ 6×5 ⑧ 6×2 ⑨ 7×9
⑩ 6×9 ⑪ 7×8 ⑫ 7×3

Can you find answers for multiplication?

①③⑤⑦⑧⑩ Page29 1
②④⑥⑨⑪⑫ Page31 3

2 Each gondola can hold 6 people.
How many people can ride in 4 gondolas altogether?

Can you make math sentences out of situations and find the answers?

Page30 2

3 ① 9×6 ② 8×4 ③ 9×8
④ 8×7 ⑤ 8×5 ⑥ 1×6
⑦ 9×4 ⑧ 8×3 ⑨ 9×2
⑩ 8×8 ⑪ 1×9 ⑫ 9×5

Can you find answers for multiplication?

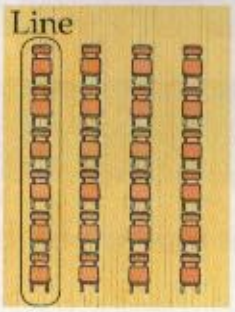
②④⑤⑧⑩ Page33 1
①③⑦⑨⑫ Page35 3
⑥⑪ Page37 5

4 There are 6 children. We are going to give 8 candies to each child.
How many candies do we need?

Can you make math sentences out of situations and find the answers?

Page34 2

5 In the gym, students are setting up chairs from their classroom. First, they made a line of 6 chairs. Then, they made 4 lines altogether.



① How many chairs have been set up?

② Yuki notices that the same number of chairs can be set up in different ways.

Look at the multiplication table on page 39 and describe other ways of setting up the chairs.

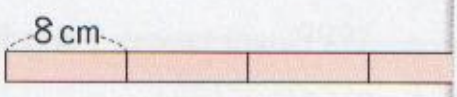
Write as follows: ☐ chairs in each line, ☐ lines

◀ Can you find multiplication facts from the answer?

① Page30 2
② Page39 1

6 We have 7 pieces of 8 cm tape. We are going to connect 5 of the pieces together as shown.

You do not need to think about the tapes overlapping where they are connected.



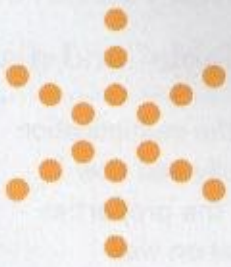
① How many times as long is the connected tape as an 8 cm piece?

② How many cm will the length of the tape be?

◀ Can you use multiplication to find the length that is ☐ times as long as something?

Page42 1

7 Think of ways to find the number of ●.



Write down your ideas using diagrams and/or math sentences.

◀ Can you calculate to find the answer?

Page43 1

Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Think about ways to find the answer by using properties of multiplication.

Haruto cannot remember the answer for 8×6.

Haruto

The answer for 8×6 is...

Ami and Riku are explaining how to find the answer for 8×6.

What are the numbers that fit in each $\square$?

Ami

For the multiplication facts of 8, when the multiplier increases by 1, the answer increases by Ⓐ $\square$.
So, the answer for 8×6 is

$8 \times 5 + \overset{Ⓑ}{\square} = \overset{Ⓒ}{\square}$

$8 \times 4 = 32$
Increase by 1 → Increase by Ⓓ $\square$
$8 \times 5 = 40$
Increase by 1 → Increase by Ⓔ $\square$
$8 \times 6 = \overset{Ⓕ}{\square}$
⋮

Riku

The answer for 8×6 is the same as the answer for $6 \times \overset{Ⓚ}{\square}$. So,

$8 \times 6 = 6 \times 8$
$= \overset{Ⓛ}{\square}$

Multipliers	5	6	7	8
6				48
7				
8		48		

Look back on what you have learned in "Let's Make the Multiplication Table" and discuss.

Misaki

I looked at the multiplication table carefully and now I understand the properties of multiplication well.

Kota

I want to extend the multiplication table much further and think about multiplication of larger numbers.

We will study this in the third grade.

Do You Remember?

Answer → Page 114

1 ① 72+54 ② 28+85 ③ 99+7
④ 138−47 ⑤ 106−62 ⑥ 152−79

Addition and Subtraction Algorithms Page 115①

2 Which of the following are squares?

Rectangles and Squares Page 115④

3 Fill in the ( ) with the units of length.

Units of Length Page 115⑤

① Length of a ball-point pen ····· 15( )

② Thickness of a notebook ····· 4( )

Warm-up

4 ① How many tens are in 640?
② What is the number that is 1 greater than 999?

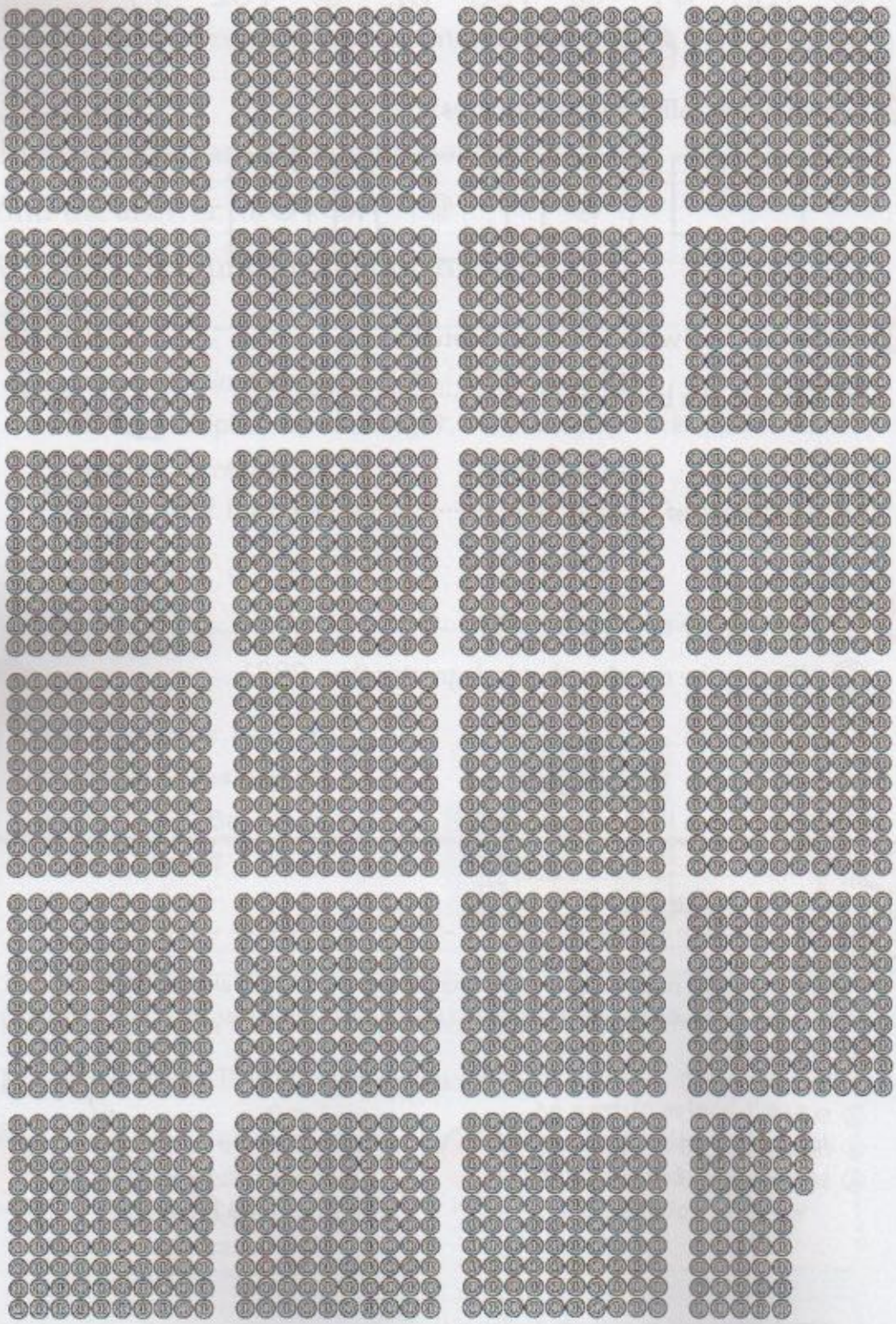
Playing with Numbers and Calculations

To make it 0

Subtract the same number from 100 several times to make the answer 0.
How many times do you need to subtract the following numbers from 100 to make the answer 0?

① Subtracting 10 100−10−10−10−···· =0
② Subtracting 20 100−20−··· =0
③ Subtracting 50 100−50−··· =0
④ Subtracting 25 100−25−··· =0

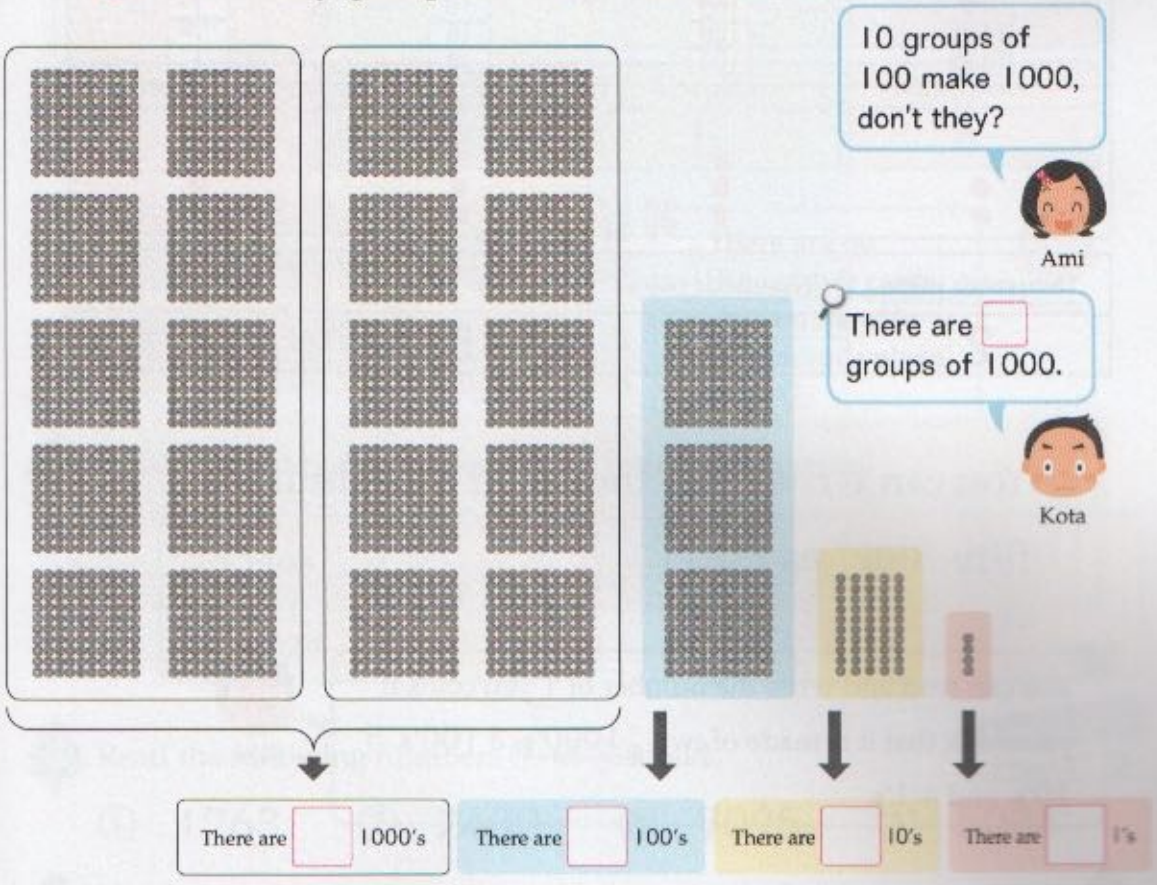
13 Let's Investigate Numbers Greater Than 1000



They held a 1-yen-coin fund raiser.

1 How many 1 yen coins are there?

1. How many groups of 100 coins are there?
2. How many groups of 1000 coins are there?

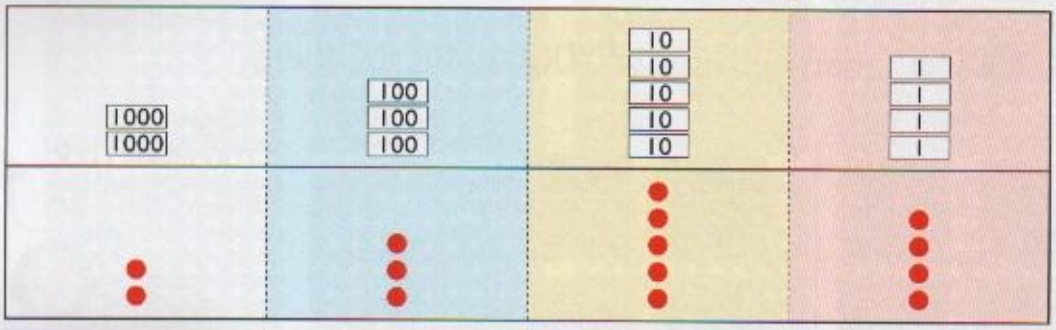


Let's find out how to read and write numbers greater than 1000.

2 groups of a thousand is called **two thousand.**
If we put two thousand and three hundred fifty-four together, we have the number **two thousand three hundred fifty-four.**

3 Write two thousand three hundred fifty-four using numerals.

Structure of numbers
Page 115②



Thousands place	Hundreds place	Tens place	Ones place
2	3	5	4

You can write "two thousand three hundred fifty-four" as **2354.**

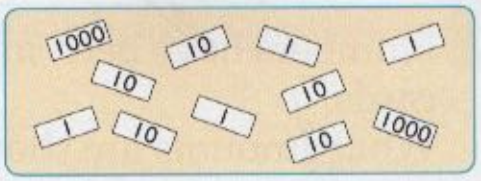
You can read and write the number of 1 yen coins if you think that it is made of two 1000's, 3 100's, 5 10's, and 4 1's.

Riku

1 2354 is made of the following numerals: ☐ in the thousands place, ☐ in the hundreds place, ☐ in the tens place, and ☐ in the ones place.

Misaki: I wonder if we can read and write other numbers larger than 1000?

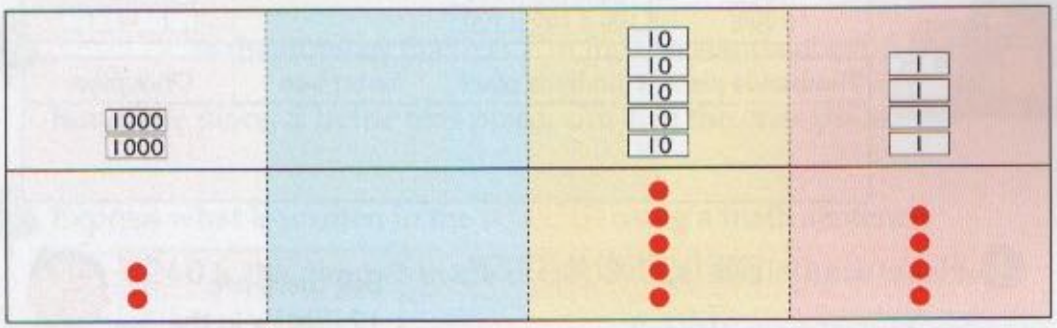
2 What amount is shown here? Write it using numerals.



Let's find out how to write numbers.

What should I do with the hundreds place?

Shiho



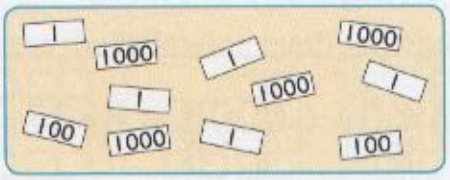
Thousands place	Hundreds place	Tens place	Ones place
2	0	5	4

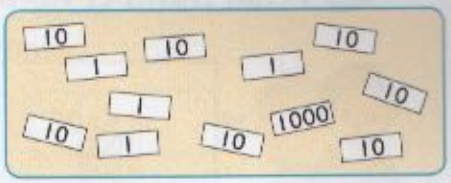
"Two thousand fifty-four" is written as 2054

There are no 100 number cards, so the numeral in the hundreds place will be 0.

Haruto

2 What amount is shown here? Write it using numerals.

① 

② 

3 Read the following numbers ① to ④ aloud.

Additional Problems → Page 107 D

① 1763 ② 2430 ③ 7095 ④ 5004

4 Write the following using numerals.

① One thousand three hundred eighty-three

② Six thousand

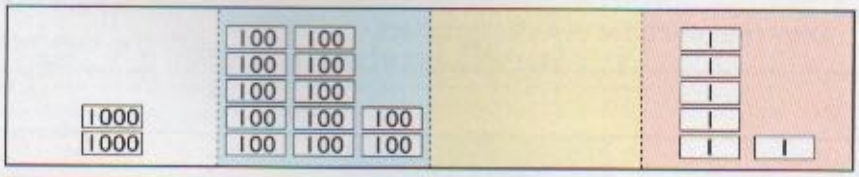
③ Seven thousand eight.

Ami

Now I know how to express numbers greater than 1000.

There are number cards on page 117.

3 Numbers have been made by lining up number cards. What amounts are shown in each case?



Thousands place	Hundreds place	Tens place	Ones place

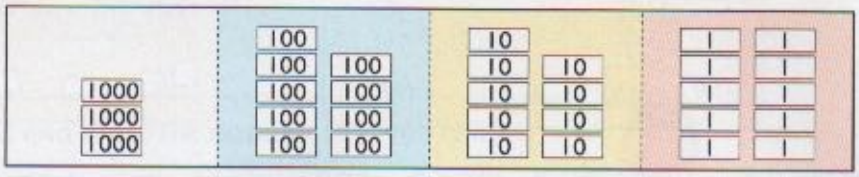
(1) How many 1000 's, 100 's, 10 's and 1 's are there?

Let's figure out the structure of numbers.

(2) Write a numeral in each place.

If there are ten 100 's, you put them together to make one 1000 and move it into the thousands place.

(3) What number do the following cards show?



Thousands place	Hundreds place	Tens place	Ones place

5 Show 3265, 6047, and 9008 using number cards.

6 ① ☐ is the number made of 4 thousands, 3 hundreds, and 9 ones.

② 4025 is the number made of ☐ thousands, ☐ tens, and ☐ ones.

③ 6050 is the number made of ☐ thousands and ☐ tens.

7 ☐ is the number that has 2 in the thousands place, 6 in the hundreds place, 5 in the tens place, and 1 in the ones place.

8 Express what is written in the ☐ using a math sentence.

① 3240 is the number made of 3000, 200 and 40 put together.

$3240 = \square + \square + \square$

You can call math sentences the "language of math."

② 8009 is the number made of 8000 and 9.

$\square + \square = 8009$

9 Express the following math sentences as words.

① $5048 = 5000 + 40 + 8$

② $2000 + 100 + 6 = 2106$

Misaki However large a number is, you can easily understand how it is structured if you express it as a math sentence.

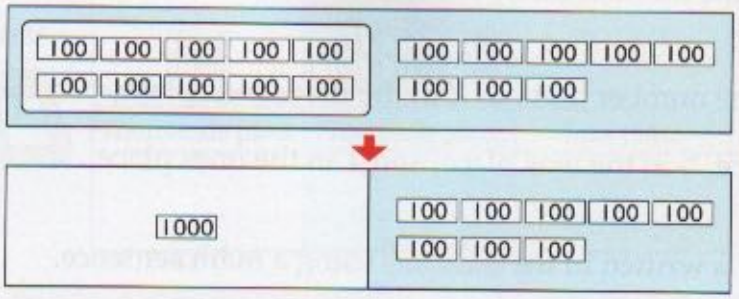
4

(1) What number is made of 18 hundreds?

(2) How many hundreds are in 2300?

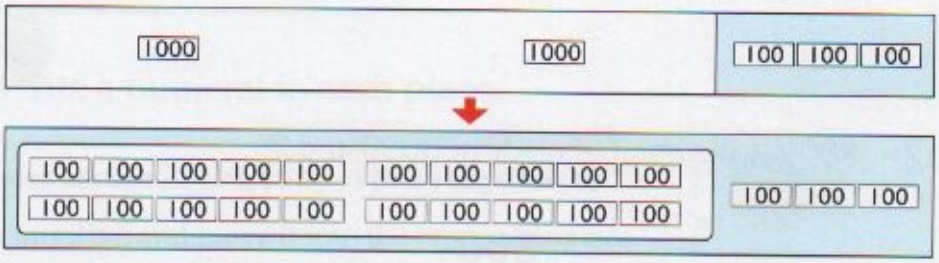
Let's expand ways of seeing numbers by thinking about them in terms of 100.

(1)



18 hundreds < 10 hundreds → 1000 ; 8 hundreds → 800 > [ ]

(2)



2300 < 2000 → 20 hundreds ; 300 → 3 hundreds > [ ] hundreds

You can think how large a number is **by thinking in terms of hundreds.**

10 ① What number is made of 46 hundreds?

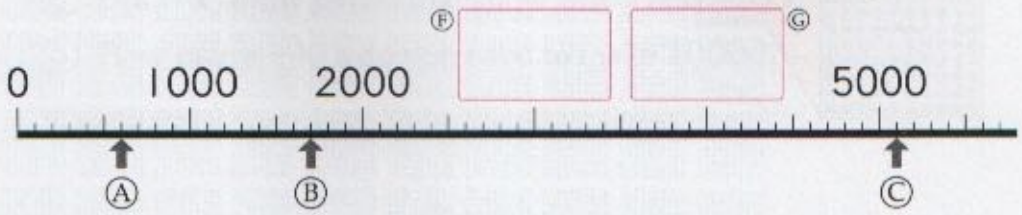
② How many hundreds are in 5700?

Additional Problems → Page 107 E

11 ① 800+700 ② 900−600 ③ 1000−800

Additional Problems → Page 108 F

5 Use the line of numbers below to answer the questions.



Let's think about how to read numbers greater than 1000 on a line of numbers.

1. What does the smallest interval between the tick marks show?

The part between 0 and 1000 is divided into ☐ segments.

Haruto

When reading the line of numbers, you need to think about what the smallest tick marks represent.

2. Write the numbers that fit in the ☐ on the line of numbers above.

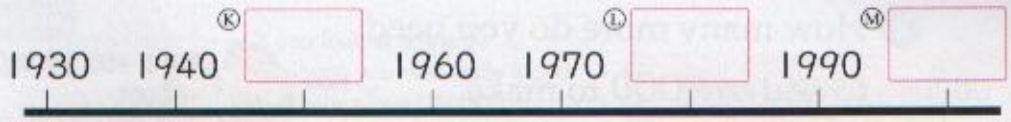
3. What numbers do arrows Ⓐ, Ⓑ, and Ⓒ point to?

4. Draw ⬆ at the places that show 2800 and 4500.

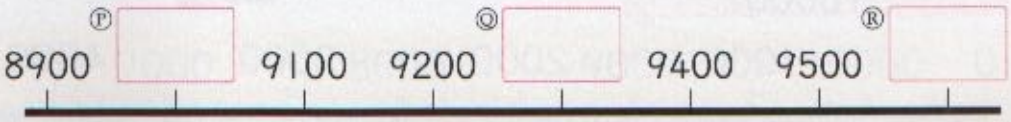
If you focus on what the smallest interval between the tick marks shows, you can read numbers on the line of numbers like you read numbers up to 1000.

Misaki

12 ①



②

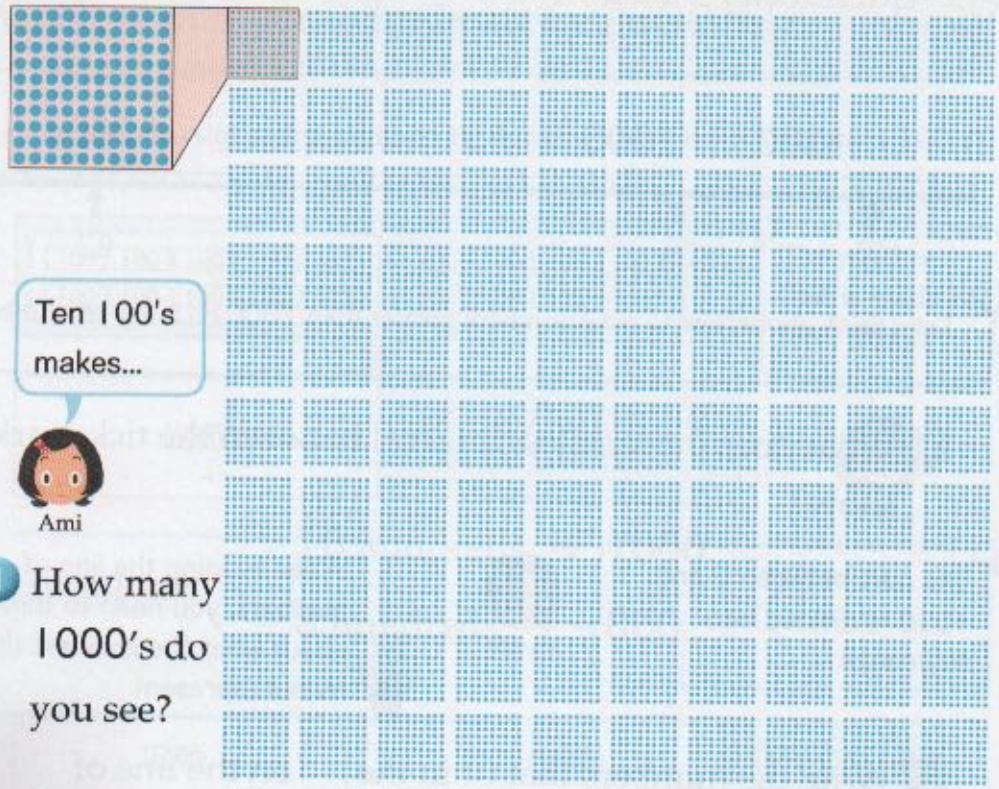


Additional Problems → Page 108 G

Shiho

If you extend the line of numbers to the right, much greater numbers are...

6 How many ● are there?



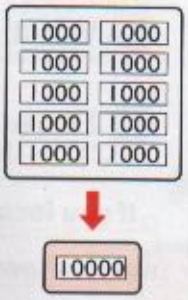
Ten 100's makes...

Ami

1 How many 1000's do you see?

Let's find out about the number made of ten 1000's.

The number that is made of 10 thousands is called **ten thousands** (in Japanese, **one "man"**). You can write it as **10000.**



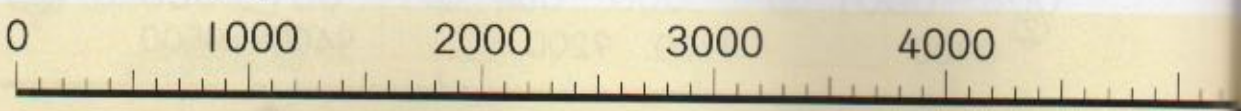
10 hundreds makes 1000, and **10 thousands** makes 10000.

Haruto

2 How many more do you need to add to 9000 to make 10000?

Kota

1, 10, 100, 1000... then 10000!



13 Look at the line of numbers below and answer the questions.

① What does the smallest interval between the tick marks show?

② What numbers do arrows at Ⓐ, Ⓑ, and Ⓒ point to?

③ Draw ⬆ at the places that show 3500 and 7200.

④ How many 100's do you need to make 10000?

14 Fill in the ☐ below with the appropriate sign (< or >).

① 9000 ☐ 8990 ② 9989 ☐ 9991

Additional Problems → Page 108 H

Shiho

If you look at the number line at the bottom...

If you compare the numerals from the highest place...

Riku

15 ① 6500 7000 Ⓕ ☐ ☐ Ⓖ 8500 Ⓗ ☐ 9500 10000

② 9300 9400 Ⓚ ☐ 9600 9700 Ⓛ ☐ ☐ Ⓜ 10000

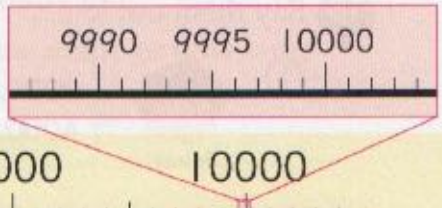
③ 9930 Ⓟ ☐ 9950 9960 Ⓠ ☐ ☐ Ⓡ 9990 10000

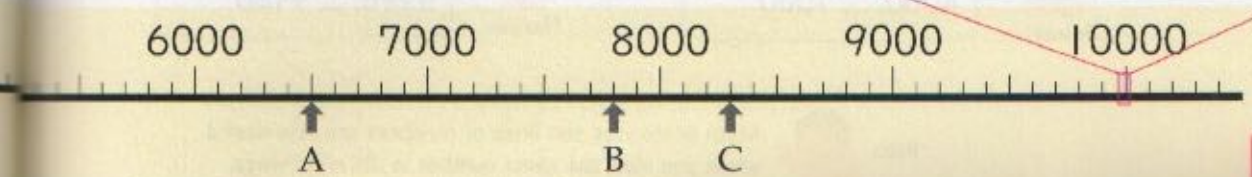
④ 9990 Ⓤ ☐ Ⓥ ☐ 10000

Additional Problems → Page 108 I

Ami

If you look at a line of numbers, you can easily locate numbers around 10000.





7 Explain what 3800 is made of.

Let's think about different ways to view the same number.

1 Draw an ⬆ at the place that shows 3800.

2 Fill in the ☐ with numbers.

Haruto

3800 is made of ☐ and 800.

Ami

3800 is ☐ less than 4000.

Kota

3800 is made of ☐ hundreds.

3 Express Haruto's idea with a math sentence.

Haruto... 3800 = ☐ + ☐

You can view the same number **in different ways**.

Shiho

4 What is 2400 made of?

Just as the three friends did above, try and express the number 2400.

16 Say them out loud.

①

Misaki

3000, 3500, 4000, ..., 7000

②

Haruto

10000, 9998, 9996, ..., 9980

Riku

Math sentences and lines of numbers are also useful when you view the same number in different ways.

Use What You Have Learned

Find out where numerals are used in your daily life.

Ⓐ 200 pieces, Origami papers

Ⓑ Car license plate

Ⓒ

Ⓓ Dry Cleaner Telephone number

Ⓔ clock

Ⓕ Postal code

① Among the numbers from Ⓐ to Ⓕ above, which ones show how many or how large the objects are in number or size.

Misaki: "200" in Ⓐ shows the number of pieces of origami paper.

② Among the numbers from Ⓐ to Ⓕ above, which ones do not show how many or how large the objects are in number or size.

Riku: Postal codes, as in Ⓕ, are not what you think large or small.

③ Find some numerals that are used in your daily life.
Then, explain whether or not they show how many or how large the objects are in number or size.

Check Your Understanding

1 What amount is shown here? Write it using numerals.

Thousands place	Hundreds place	Tens place	Ones place

◀ Can you tell the structure of 4-digit numbers?

Page55 2

2 Express what is written in the ☐ using a math sentence.

3706 is made of 3000, 700, and 6.

3706 = ☐ + ☐ + ☐

◀ Can you show the structure of a number in a math sentence?

Page56 3

3 ① 3700 is made of ☐ hundreds.

② ☐ is made of 54 hundreds.

◀ Can you tell how large numbers are by thinking in terms of hundreds?

Page58 4

4 ① 300+800 ② 900+700

③ 700−300 ④ 1000−400

◀ Can you think of wise ways to calculate?

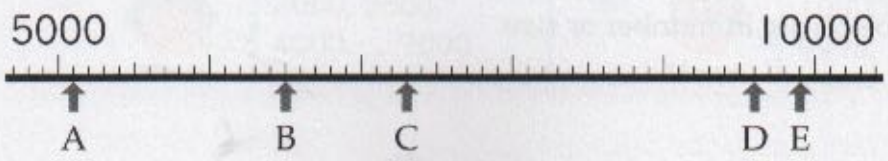
Page58 4

5 What numbers are arrows Ⓐ to Ⓔ pointing to on the line of numbers below?

Also, draw an ⬆ at the place that shows 8700.

◀ Can you read numbers on a number line?

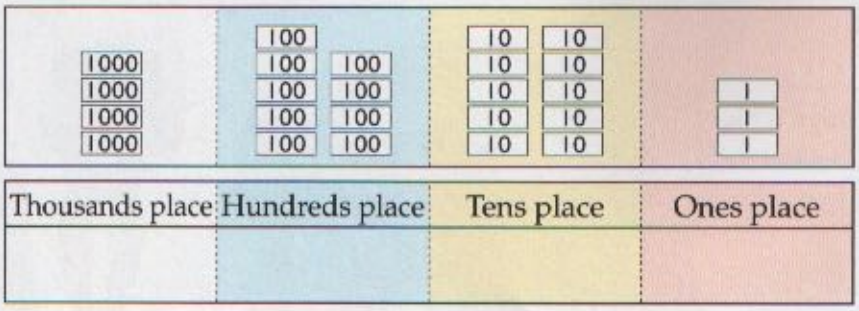
Page60 6



Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on the structure of numbers and think about how to show numbers

A number is shown using number cards.

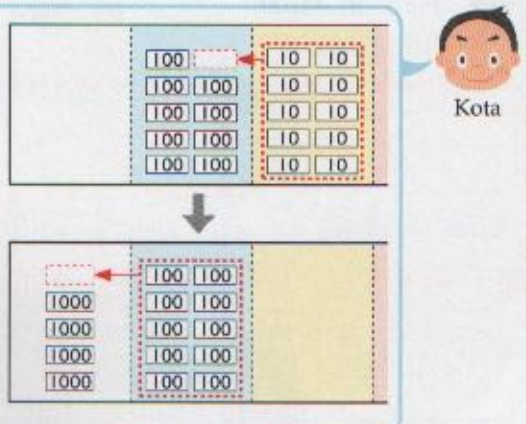


What is the number?

Explain Kota's idea and write a numeral in each place.

In the tens place, there are Ⓐ ☐ 10s, so you put them together into Ⓑ ☐, and move it into the hundreds place.

Now, there are Ⓒ ☐ 100s in the hundreds place. So, you put them together into Ⓓ ☐ and move it into the thousands place.



Look back on what you have learned in "Let's Investigate Numbers Greater Than 1000" and discuss.

Now we know how to read and write numbers greater than 1000.

You can show the structure of a number in a math sentence. Math sentences are useful.

How long are they?

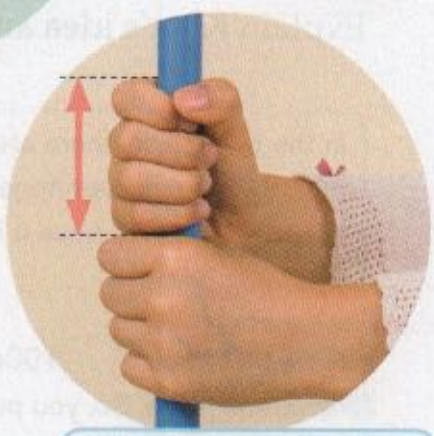
Find the lengths of parts of your body.

Units of Length
Page 115⑤

Kokone

In the old days. This length was called an "Ata" in Japan.

In the olden days, this length was called a "Hiro" in Japan.



In the olden days, this length was called a "Tsuka" in Japan.

Compare your arm span with the other two lengths, and discuss what you notice.

My arm span is much longer than a 30 cm ruler.

Misaki

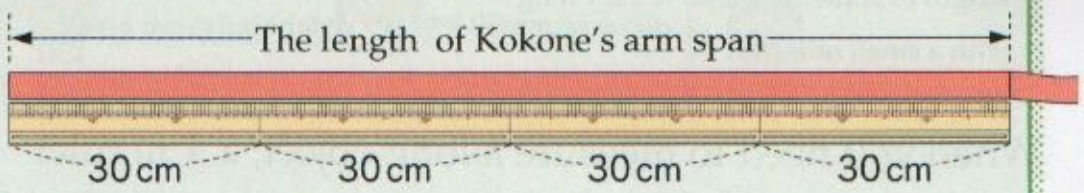
Riku

I wonder if there is a ruler that is long enough to measure my arm span?

Units of Length of Long Objects

14 Let's Measure Long Lengths and Record Them

1 Using a 30 cm ruler, Kokone's arm span was exactly 4 ruler lengths long.
What is the length of Kokone's arm span?



1 How long is Kokone's arm span in cm?

Kota

If you only use cm, the number becomes very large.

Let's think about how to express the length of something that is very long.

Ami

We used mm to express the lengths of short objects.

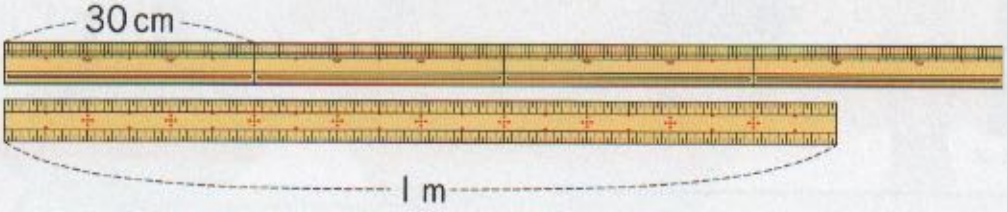
I wonder if there is a unit that is used to express the length of something that is very long?

Shiho

When we express the length of something that is very long, we use a unit that is called a **meter.** Meters are written as m and 1 m is 100 cm.

1 m = 100 cm

1 m



2 Using m and cm, what is the length of Kokone's arm span?

It is 1 m long and 20 cm more, so...

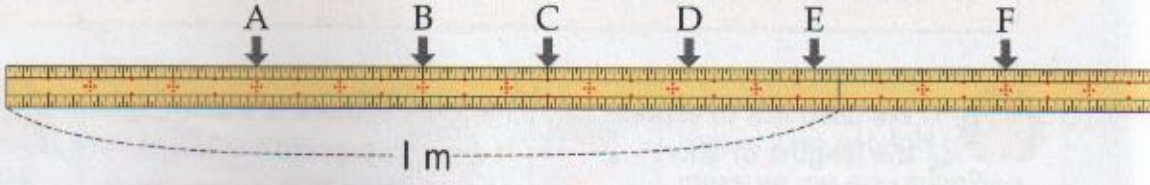
Kota

If you use m, **you can express** the length of something that is very long **with a small number**.

Shiho

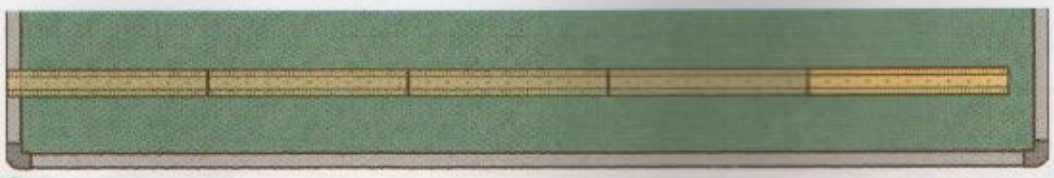
When you need to measure a long object, a 1 m ruler is useful.

1 Measuring from the left edge of the ruler, what are the lengths to points A, B, C, D, E, and F?



Riku

There is a unit of length used to express the length of something that is very long.



2

When we measured the length of a bulletin board using a 1 m ruler, it was five 1 m rulers and 20 cm in length.

What is the length of the bulletin board?

Let's express the same length in different units.

1 How many m and cm is the length of the bulletin board?

Misaki: It's five 1 m and 20 cm, so, ☐ m 20 cm.

2 How many cm is the length of the bulletin board?

5 m 20 cm

☐ cm + 20 cm

Using the relationship 1 m = 100 cm, you can express the same length with these two units.

Haruto

2

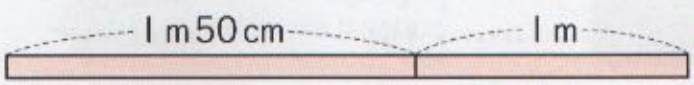
① 8 m = ☐ cm ② 400 cm = ☐ m

③ 7 m 10 cm = ☐ cm ④ 425 cm = ☐ m ☐ cm

⑤ 3 m 7 cm = ☐ cm

Additional Problems → Page 109 J

3 How many cm is the length of the piece of tape below?



First, add numbers in the same unit together.

☐ m ☐ cm

Then...

Ami: I want to measure lengths using a 1 m ruler.

4 Estimate where on your body 1 m from the floor is. Then check the height by measuring with a 1 m ruler.

5 Look for things that you think have a length of 1 m. Then, measure the length using a ruler.

Investigating Length

things you thought were 1 m	Measured length
Height from the floor to the bottom of blackboard	80 cm

6 Fill in the ( ) with appropriate units of length.

① the width of a piece of tape ····· 15( )

② the height of a 5-story building ····· 15( )

③ the length of a pencil ····· 15( )

Use What You Have Learned

How can you measure the length of long objects more easily?

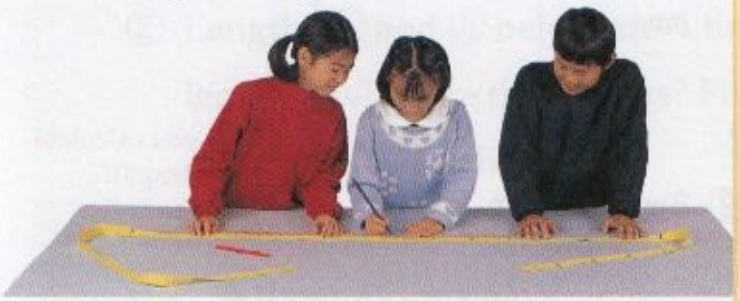
Kota

There are many things that cannot be measured using a 1 m ruler once.

Shiho

If we have a much longer ruler...

- If you make a tape measure like the one below, you can easily measure the length of long objects that cannot be measured using a 1 m ruler once.
  Find the lengths of different things using handmade tape measures.



To make a tape measure:

① Cut a 3 m long piece of tape.
② Using a 1 m ruler, mark every 1 m on the tape with red lines.
③ Next, mark every 10 cm with blue lines.

Before measuring, try to estimate the length.

Check Your Understanding

1 Fill in the ☐ with appropriate numbers.

① 1 m is made of ☐ 1 cm.

② The length made of seven 1 m is ☐ m.

③ The length of 2 m and 30 cm put together is

Ⓐ ☐ m Ⓑ ☐ cm.

Also it is Ⓒ ☐ cm.

④ 103 cm is ☐ m ☐ cm.

Can you describe the structure of the units of length?

① Page67 1
②~④ Page69 2

2 Calculate the following.

① 2 m 50 cm + 3 m ② 3 m 8 cm − 2 m

Can you calculate with length?

Page69 2

3 Fill in the ( ) with the appropriate units of length.

① the height of a cup ..... 10( )

② the width of the hallway at school .... 2( )

③ the thickness of a 500 yen coin ..... 2( )

④ the height of a school building ..... 10( )

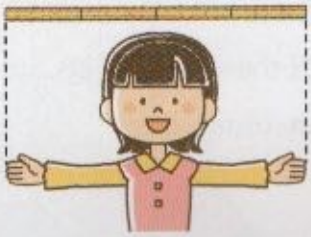
Can you tell how large the units of length are?

Page69 2

Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on units of length and think about how to express length

① Haruto says that if you use the unit of length m, you can express the length of a long object with a small number.

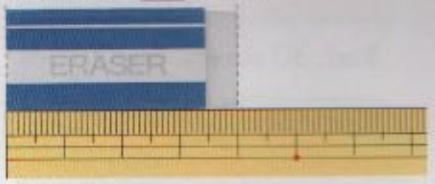


Explain why by filling in the ☐ with appropriate numbers.

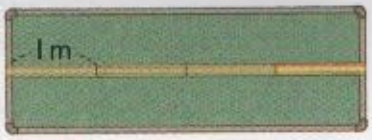
Haruto

120 cm is ☐ cm and 20 cm.
100 cm = ☐ m, so 120 cm can be expressed as ☐ m 20 cm.

② Lengths Ⓐ and Ⓑ below are 4 times as long as certain lengths. What are the lengths? Fill in the ☐ with appropriate lengths.



Ⓐ The eraser on the right is 4 times as long as ☐ and is ☐ in length.



Ⓑ The bulletin board on the right is 4 times as long as ☐ and is ☐ in length.

Look back on what you have learned in "Let's Measure Long Lengths and Record Them" and discuss.

Misaki

Now I know how to express length in m.

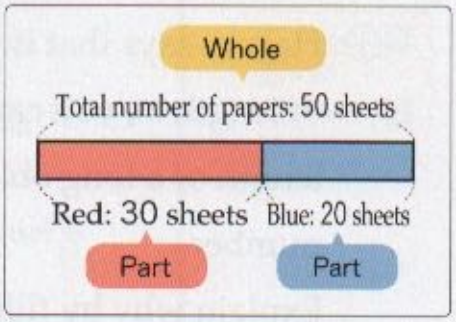
Riku

I wonder if there is a unit that is used to express the length of something that is much longer?

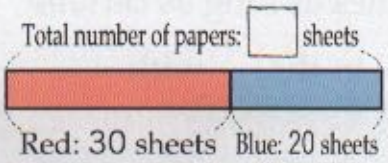
You'll study it in 3rd grade.

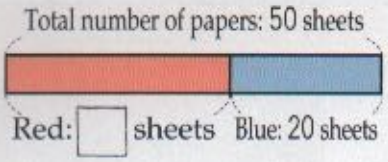
Look at the diagram and think!

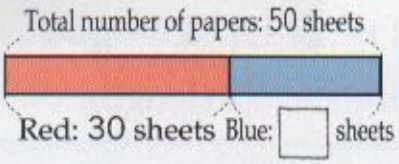
There are 50 sheets of colored paper.
Of these, 30 sheets are red and 20 sheets are blue.



One of the three numbers in the diagram above will be covered □.
Which is the math sentence that is used to find each covered number?
Draw lines to match each diagram with the appropriate math sentence.







- $50-30=\square$
- $30+20=\square$
- $50-20=\square$

In the diagram that matches the addition math sentence, is the number that is covered with □ the whole or a part? In the diagrams that match the subtraction math sentences, are the numbers that are covered with □ the whole or a part?

Riku

In the diagram that matches the addition math sentence, the total number of sheets is □, so...

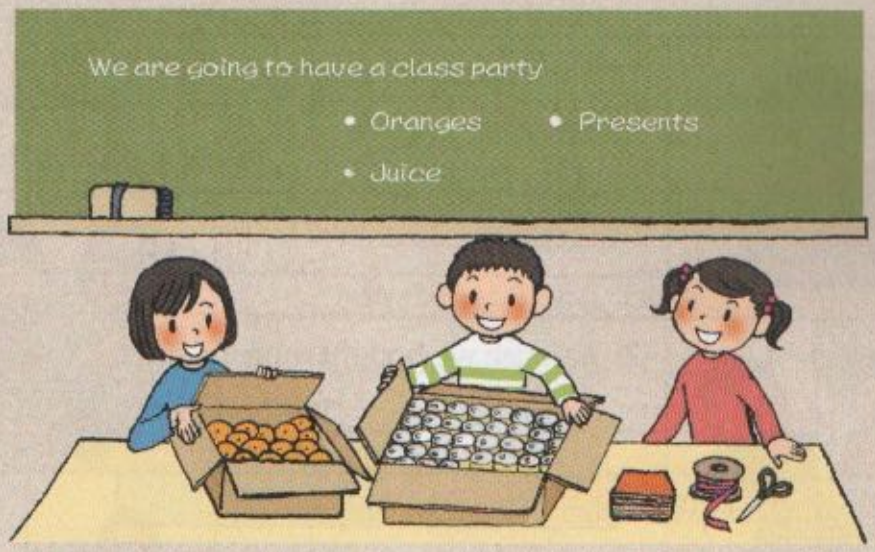
Ami

If the number of red or blue sheets is covered with □, the math sentence is subtraction. In either case, a part is...

Addition and Subtraction

15 Let's Think about Using Diagrams

We are going to have a class party.



1 There were 15 oranges.
We bought more oranges, and now there are 32 oranges altogether.
How many oranges did we buy?

Shiho

The math problem says "altogether," so I wonder if this is addition.

I wonder what diagram I can draw to express this situation?

Haruto

Let's think about what calculation you should use.

Follow this story and express the situation as a diagram.

1 Which do you need to find out, the number that matches the whole diagram or a part of the diagram?

(1) There were 15 oranges.

At first:
15 oranges

(2) Because we bought more oranges,

At first: 15 oranges
We bought: □ oranges

Replace the unknown number with □.

(3) The total became 32 oranges.

At first: 15 oranges
We bought: □ oranges
Total: 32 oranges

Math Sentence ▸ _____ Answer □ oranges

If you pay attention to the whole and the parts in the diagram, you can understand that you need to subtract 15 (a part) from 32 (the whole) to find the number for □ (the other part).

Kota

Misaki: I want to use diagrams to think about other situations.

2

We have some cans of juice. We passed out 26 cans to our friends and we now have 8 cans left. How many cans did we have at first?

Let's think about what calculation you should use.

① Use a diagram to help you write a math sentence and find the answer.

(1) There were some cans of juice.

Number at first: ☐ cans

(2) We passed out 26 cans to friends,

Number at first: ☐ cans

Number passed out: 26 cans

(3) So we have 8 cans left.

Number at first: ☐ cans

Number passed out: 26 cans | Number left: 8 cans

Even though you don't know the exact number of cans, you can create a diagram using the approximate length.

I wonder which I need to find out, the whole or a part?

Misaki

Math Sentence ▶

Answer ☐ cans

If you pay attention to the whole and the parts in the diagram, you can understand that you need to add 26 (a part) and 8 (the other part) to find the number for ☐ (the whole).

Kota

Riku

The math problem says "left," but I looked at the diagram and understood that this was addition.

2

We have some cans of juice. We passed out 26 cans to our friends and we now have 8 cans left. How many cans did we have at first?

Let's think about what calculation you should use.

1 Use a diagram to help you write a math sentence and find the answer.

(1) There were some cans of juice.

Number at first: □ cans

(2) We passed out 26 cans to friends,

Number at first: □ cans

Number passed out: 26 cans

(3) So we have 8 cans left.

Number at first: □ cans

Number passed out: 26 cans | Number left: 8 cans

Even though you don't know the exact number of cans, you can create a diagram using the approximate length.

I wonder which I need to find out, the whole or a part?

Misaki

Answer □ cans

If you pay attention to the whole and the parts in the diagram, you can understand that you need to add 26 (a part) and 8 (the other part) to find the number for □ (the whole).

Kota

Riku

The math problem says "left," but I looked at the diagram and understood that this was addition.

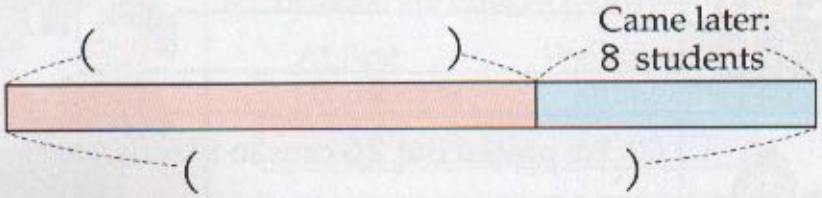
3

There were some students in the classroom. 8 students came later, and now there are 23 students altogether.
How many students were in the classroom at first?

Let's think about what calculation you should use.

1 Use the words from ☐ to complete the diagram.

at first　altogether　23 students　☐ students



2 Use a diagram to help you write a math sentence and find the answer.

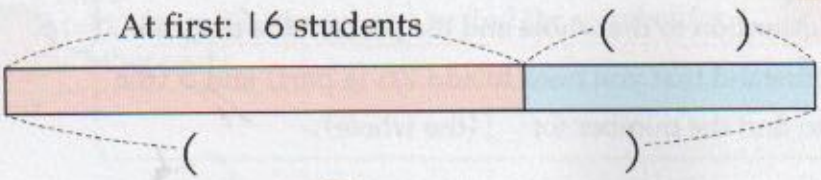
What I need to find out is a part of the diagram, so...

Riku

If you pay attention to the whole and the parts in the diagram, you can easily tell which you should do, addition or subtraction.

Ami

1 There were 16 students in the library. Some students came later, and now there are 25 students altogether.
How many students came later?



Shiho

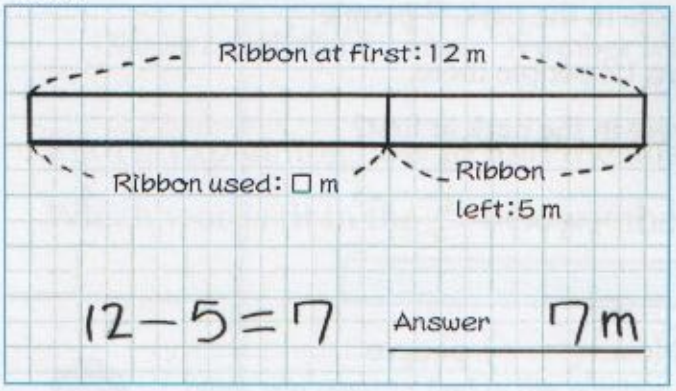
I wonder if I can express a situation as a diagram myself.

4 Pick a number of your choice to fill in the ( ) in the problem below. Express the situation as a diagram, write a math sentence, and find the answer.

There were 12 m of ribbon. A boy used some of it, and there is still ( ) m of ribbon left. How many m of ribbon did he use?

Let's express the situation as a diagram and think.

Misaki: I assumed that 5 m of ribbon was left.

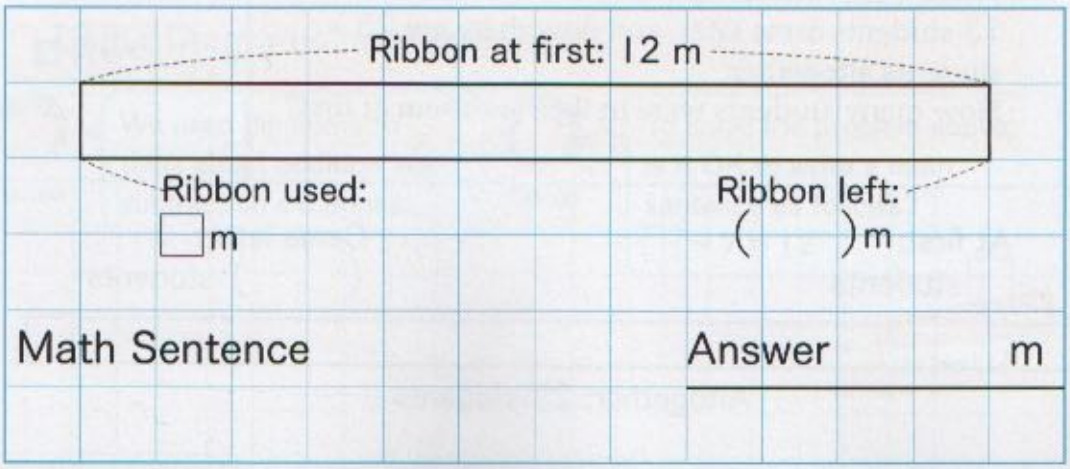


Kota: What does the whole diagram express? What do the parts of the diagram express?

You can draw a diagram **by following the story**.

Haruto

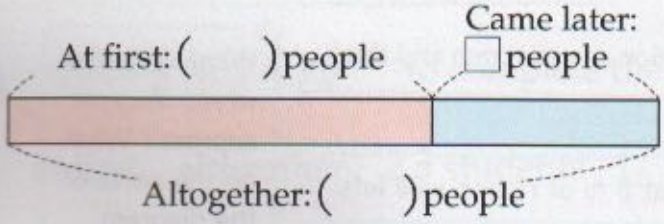
1 Like Misaki did, pick a number of your choice, express the situation as a diagram, write a math sentence, and find the answer.



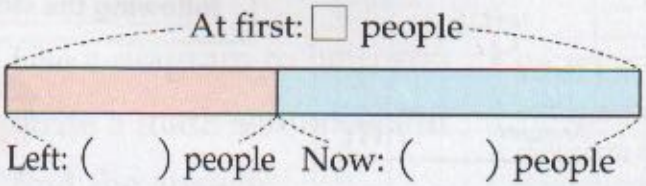
Check Your Understanding

1 Express the following situations as diagrams, write math sentences, and find the answers.

① There were 15 people in the park. Some people came later, and now there are 23 people altogether. How many people came later?



② There were some people in the park. 9 people left, and now there are 12 people there. How many people were in the park at first?



◀ Can you express a situation as a diagram, write a math sentence, and find the answer?

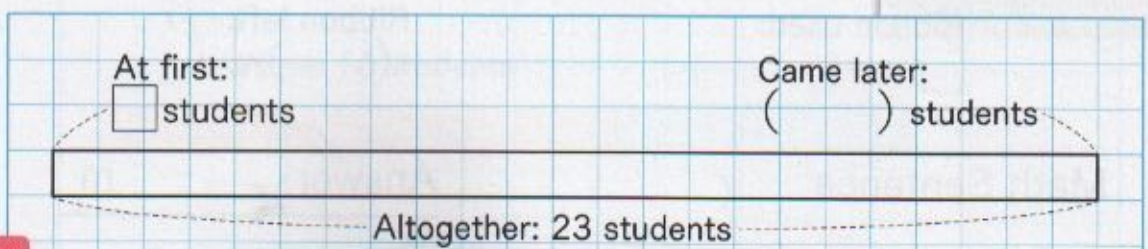
① Page 75 1
② Page 77 2

2 Express the following situation as a diagram, write a math sentence, and find the answer.

There were some students in the classroom. 13 students came later, and now there are 23 students altogether.
How many students were in the classroom at first?

◀ Can you express a situation as a diagram, write a math sentence, and find the answer?

Page 78 3

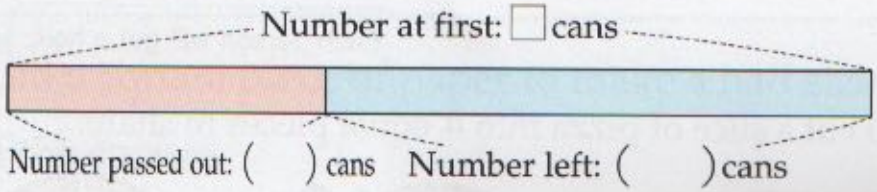


Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on situations and think about the whole diagram and parts of the diagram

Riku is thinking about the following problem.

We have some cans of juice. We passed out 7 cans to our friends and we now have 12 cans left.
How many cans did we have at first?



Riku is explaining how to find the answer.
Which words fit in the □ below, "the whole" or "a part"?

Riku

What you need to find is the number of cans they had at first. The number of cans they had at first is expressed as □ so you will do addition.

Look back on what you have learned in "Let's Think about Using Diagrams" and discuss.

Haruto

We used diagrams to think about addition and subtraction situations.

Misaki

To solve the problem above, is it OK to write a math sentence as follows?
□ − 7 = 12

Challenge Yourself
→Page 111

Have you ever divided something into several equal parts?

If you cut a sandwich into 2 equal pieces to share...

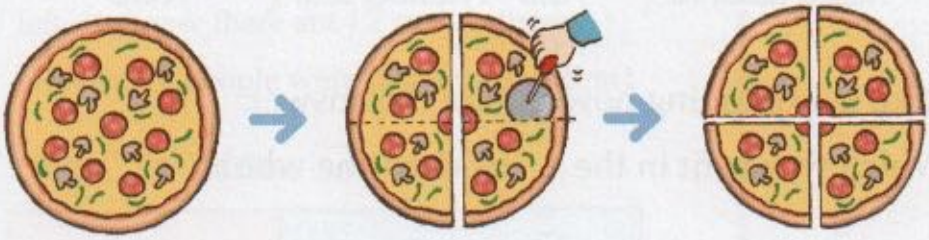
These are not equal.

Kota

Each person will get a half.

Ami

If you cut a slice of pizza into 4 equal pieces to share...



Riku

I wonder what you can call the size of each person's share.

That's a half of a half, so...

Shiho

Discuss how to express the size of each equal part of something.

Haruto

You can say that each person's share of the sandwich is "a half" and that each person's share of the pizza is "a half of a half," but...

If you cut something into 3 equal parts, I wonder what you can call the size of each person's share?

Riku

Misaki

I wonder if there is a way of expressing each person's share with numbers.

Fractions

16 Let's Find out How to Express the Size of Divided Parts

Fold a piece of origami paper into halves.

I wonder how I should fold it.

1 Fractions

1 Fold a square piece of paper to make a half size of the square.

Ami

Haruto

Riku

What shapes were formed? How many?

This is not a half size.

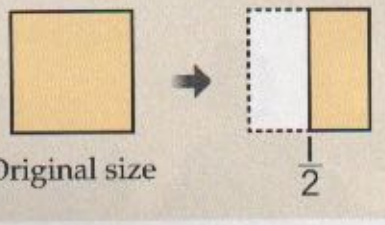
1 Place the 2 shapes on top of each other and check to see if they are the same size.

I wonder if there is a way of expressing a half size with numbers, in addition to the word "half."

Shiho

Let's find out how to express a half size.

When something is divided into two equal parts, the size of one of the parts is called **one half** of the original size and is written as $\frac{1}{2}$.



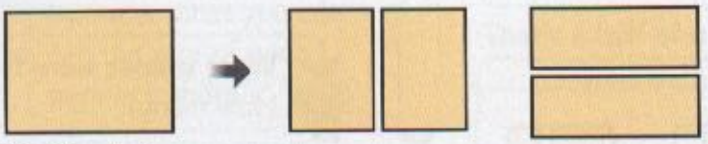
$\frac{1}{2}$ ··· ❸
··· ❶
2 ··· ❷

You can express a half of the original size as $\frac{1}{2}$. **2 means two equal parts, and 1 means one of the parts.**

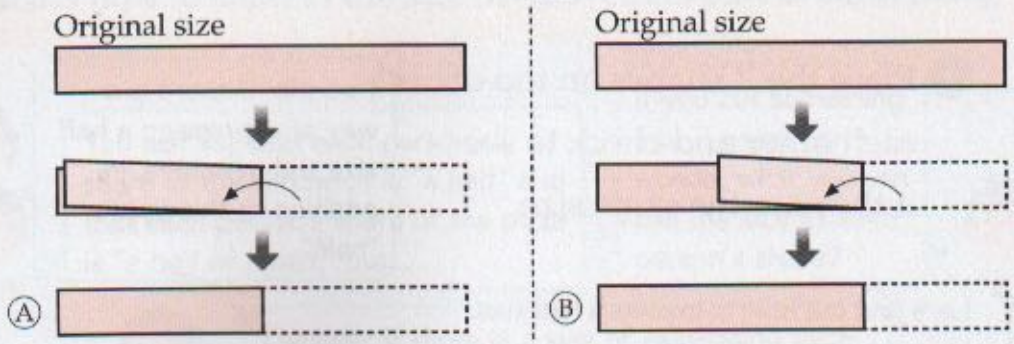
Misaki

❷ How many $\frac{1}{2}$ do you need to make the original size?

❶ Fold a rectangular piece of paper into halves and make $\frac{1}{2}$ of the original size.



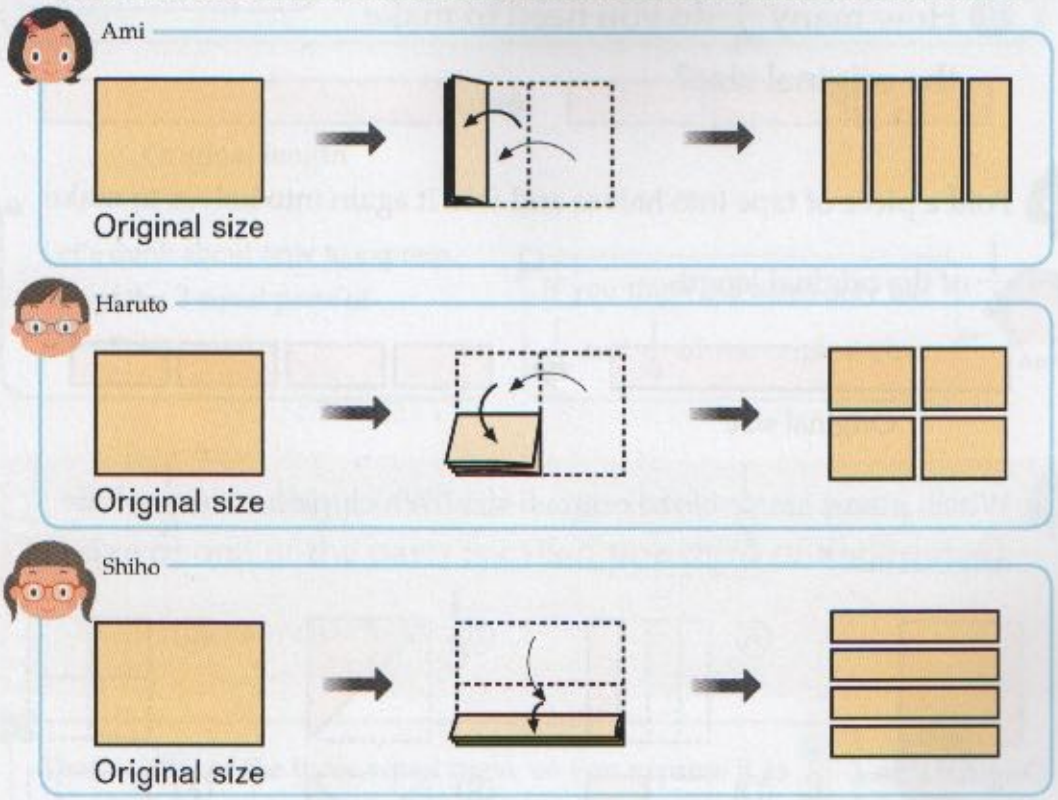
❷ Can we say that Ⓐ and Ⓑ below are $\frac{1}{2}$ the size of the original piece?



Kota

If you halve the half size...

2 Fold a rectangular piece of paper into halves, then fold it again into halves. Cut the paper into the 4 parts.



1 Place the 4 shapes on top of each other and check to see if they are the same size.

Let's find out how to express each size of the 4 equal parts.

That's 1 of the 4 equal parts, so...

Misaki

When something is divided into four equal parts, the size of one of the parts is called **one fourth** of the original size and is written as $\frac{1}{4}$.
The numbers expressed as $\frac{1}{2}$ and $\frac{1}{4}$ are called **fractions**.

You express one of the four equal parts as $\frac{1}{4}$ with numerals 4 and 1.

Kota

one half → $\frac{1}{2}$

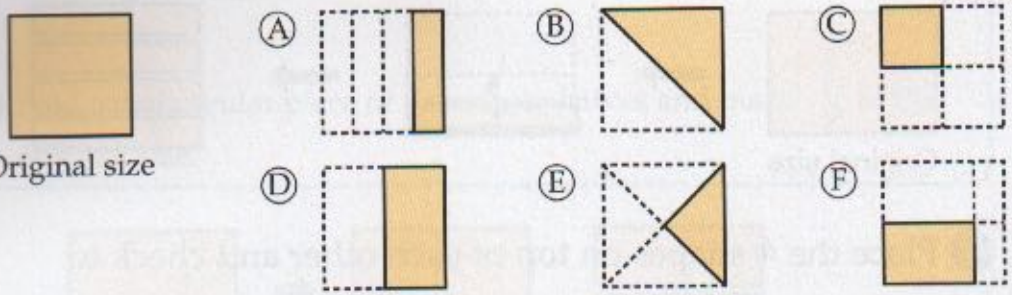
one fourth → $\frac{1}{4}$

2 How many $\frac{1}{4}$ do you need to make the original size?

3 Fold a piece of tape into halves and fold it again into halves to make $\frac{1}{4}$ of the original length.

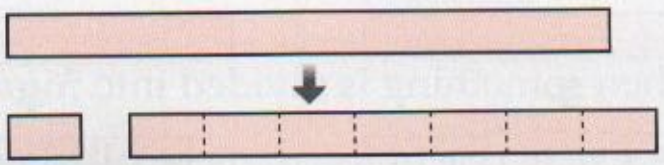
Original size

4 Which pieces are $\frac{1}{2}$ of the original size? Which pieces are $\frac{1}{4}$ of the original size?



5 We fold a piece of tape to make 8 pieces of equal length tape. How long is one of the 8 pieces of this tape compared to the length of the original piece?

Original length



When something is divided into eight equal parts, the size of one of the parts is called **one eighth** of the original size and is written as $\frac{1}{8}$.

Riku

I wonder how you can express one of the 3 equal parts of something?

3

We fold a piece of tape to make 3 pieces of equal length. Use a fraction to express how long one of the 3 pieces is.

There are pieces of tape on page 117.

Original length

Let's think about how to express one of the 3 equal parts of something.

If you think the same way as $\frac{1}{2}$ and $\frac{1}{4}$ of the original size...

Ami

When something is divided into three equal parts, the size of one of the parts is called **one third** of the original size and is written as $\frac{1}{3}$.

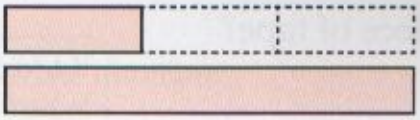
That's one of the three equal parts, so you express it as $\frac{1}{3}$.

Riku

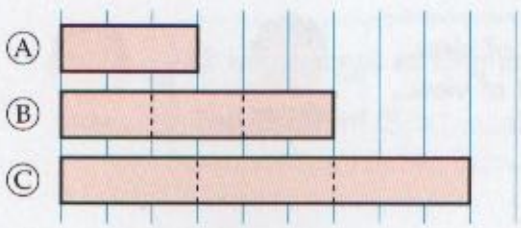
1 How many $\frac{1}{3}$ do you need to make the original length?

$\frac{1}{3}$ of the original length

Original size



6 Ⓐ is one of the 3 equal parts of a piece of tape, and the length of Ⓐ is $\frac{1}{3}$ of the original length. Which is the original length, Ⓑ or Ⓒ?



Additional Problems → Page 109 K

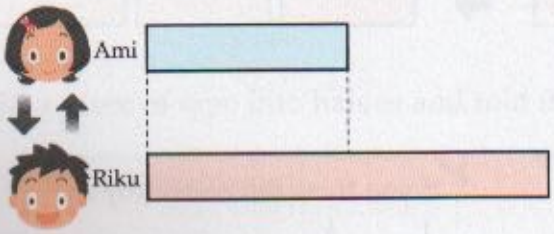
Shiho

You can also say that Ⓒ is 3 times as long as Ⓐ.

2 Times and Fractions

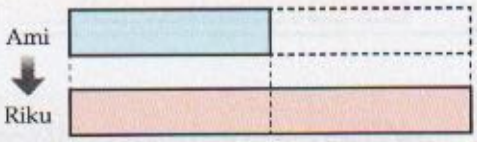
Ami and Riku are comparing the lengths of their pieces of tape.

1 Compare the length of Ami's piece of tape and the length of Riku's piece of tape.



Use your piece of tape to express the length of your classmates' pieces of tape.

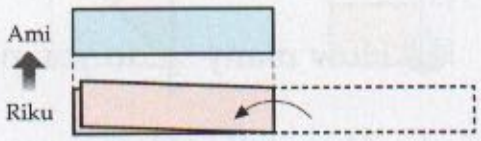
1 How many times as long is Riku's piece of tape as Ami's piece of tape?



Riku's piece of tape is as long as two pieces of the tape I have.

Riku's piece of tape is ☐ times as long as Ami's piece of tape.

2 How long is Ami's piece of tape compared to Riku's piece of tape?



If I fold my piece of tape in half, it will be as long as Ami's piece of tape.

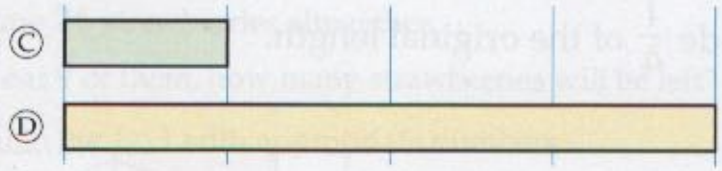
Ami's piece of tape is $\frac{\square}{\square}$ the length of Riku's piece of tape.

From Ami's point of view...
From Riku's point of view...

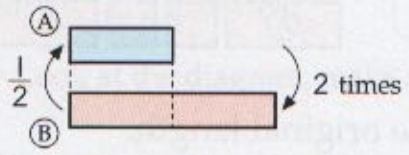
Let's think about times as much and fractions.

Look at other situations.

3 How many times as long is tape Ⓓ below as tape Ⓒ?

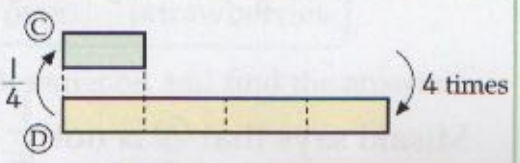


4 How long is tape Ⓒ compared to tape Ⓓ?



Ⓑ is **two times** as long as Ⓐ.

The length of Ⓐ is $\frac{1}{2}$ of the length of Ⓑ.



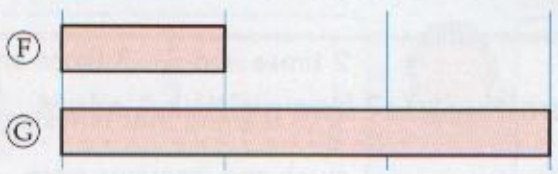
Ⓓ is **4 times** as long as Ⓒ.

The length of Ⓒ is $\frac{1}{4}$ of the length of Ⓓ.

Misaki

1 Two pieces of tape are arranged below. Their lengths are different from each other.

Fill in the ☐ with appropriate numbers.



Kota

Ⓖ is ☐ times as long as Ⓕ.

The length of Ⓕ is — of the length of Ⓖ.

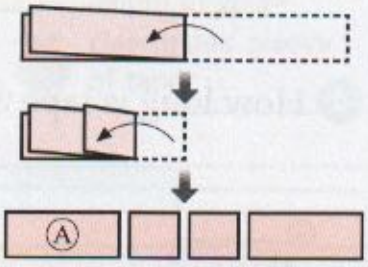
Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on the sizes of divided parts and express the sizes as fractions

Ami folded a piece of tape in the following way and said that she made $\frac{1}{4}$ of the original length.

Ami

Fold a piece of tape in halves, fold it again, and cut it into the four parts. Ⓐ is one of the parts and $\frac{1}{4}$ of the original length.



Misaki says that Ⓐ is not $\frac{1}{4}$ of the original length. Explain why.

Misaki

Ⓐ is not $\frac{1}{4}$ of the original length, because the lengths of the four parts are not ☐.

Look back on what you have learned in "Let's Find out How to Express the Size of Divided Parts" and discuss.

Haruto

Now we know how to express the size of equal parts of something as a fraction.

Shiho

2 times and $\frac{1}{2}$. 3 times and $\frac{1}{3}$, I learned that times as much and fractions were related to each other.

Challenge Yourself
→Page 112

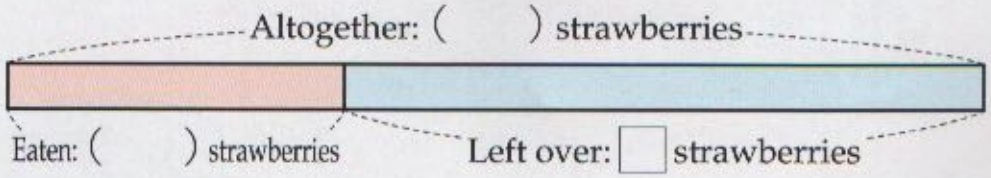
Do You Remember?

Answer → Page 114

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

2 There are 26 strawberries altogether.
If you eat 9 of them, how many strawberries will be left?

① Fill in the ( ) with appropriate numbers.



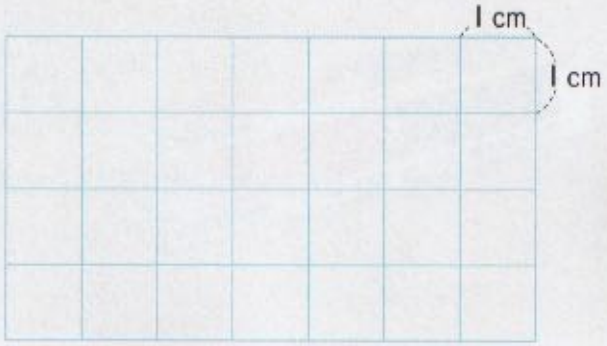
② Look at the diagram, make a math sentence, and find the answer.

Warm-up

3 Draw a rectangle with a 2 cm vertical side and a 3 cm horizontal side.

Rectangles
Page 115④

How many cm is the length around this rectangle?



Playing with Numbers and Calculations

Make Addition and Subtraction Calculations

Place cards 1, 2, 3, and 4 in □ to make an addition and a subtraction calculation with the largest answer possible.

① □□ + □□

② □□ − □□

Look at the shapes of boxes and think!

Look for box shaped objects in our surroundings.

Look at the shapes of these boxes and discuss what you notice with your classmates.

Riku: It's easy to stack them high.

Haruto: Their flat surfaces are all quadrilaterals.

Misaki: I wonder if the corners of the flat surfaces are all right angles.

17

Shapes of Boxes

Let's Investigate the Shapes of Boxes

There are many different shaped boxes around us, aren't there?
Let's make a box.

I want to make a pretty treasure box.

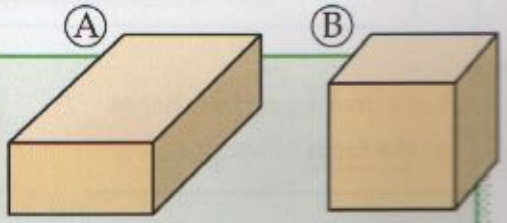
Ririko

Syogo

I want to make a die and play with it.

1

We are going to make boxes that look like Ⓐ and Ⓑ on the right.
Investigate the shape and number of flat surfaces of each box.

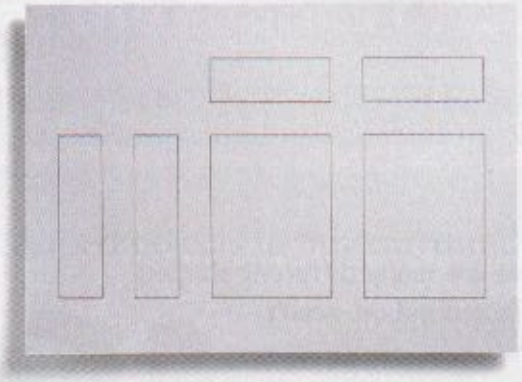


1 Trace the flat surfaces of a box onto a piece of paper.

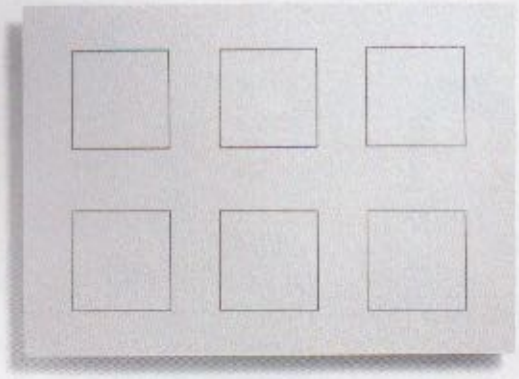
I wonder what the shapes of the flat surfaces are.

Misaki

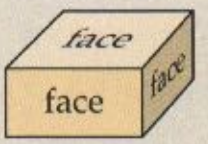
Ririko



Syogo



Let's investigate the shapes of **the faces** of the boxes.



2 What kind of quadrilaterals did you trace?

3 How many faces are there?

Name of quadrilateral
Page 115 ④

4 How many are the same shape?

5 How are the faces that Ririko and Shogo traced the same? How are the faces different from each other?

If you focus on the shapes and number of faces of a box, you can easily understand the shape of the box.

Shiho

The number of faces... the shapes of the faces...

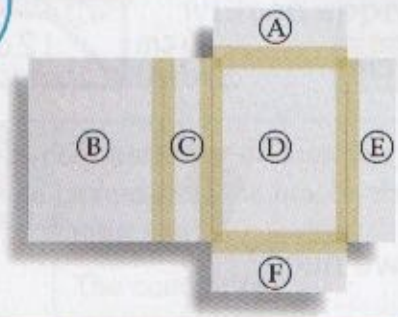
Kota

If you connect the traced faces correctly, you must be able to make a box.

2 Cut out the faces you traced and then tape them together to make a box.

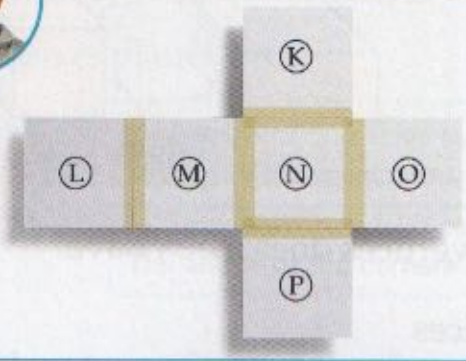
Let's think about how to make a box.

Ririko



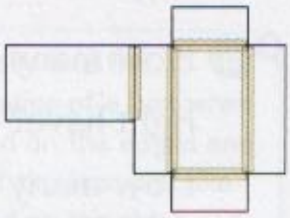
When this box is made, which face will be opposite to face Ⓒ?

Syogo



1 When connecting the faces, what do you need to pay attention to?

2 If Ririko connects the cut faces as shown on the right, can she make a box?



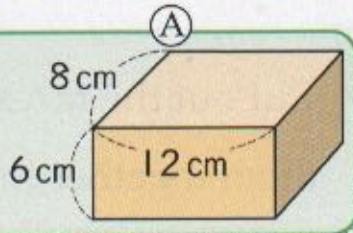
When you connect faces to make a box, you should **focus on the lengths of the sides** of the quadrilaterals.

Riku

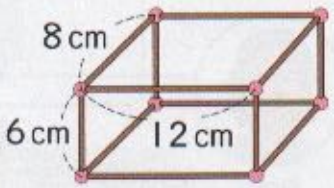
Ami

I wonder if boxes also have sides and vertices.

3 Make a box in the shape of Ⓐ with clay balls and sticks.



1 What length of sticks do we need to prepare? How many sticks do we need for each length?

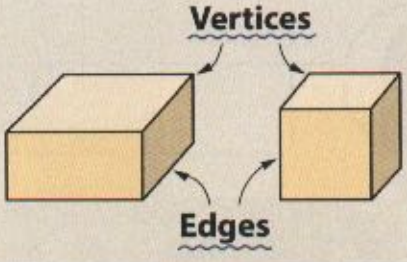


length	6 cm	8 cm	12 cm
Number of sticks			

How many sticks do we need altogether?

2 How many clay balls do we need?

Let's examine the edges and vertices of boxes.

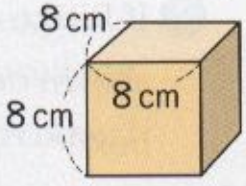


3 How many edges and vertices does a box have?

edges ☐ vertices ☐

4 On box Ⓐ above, how many 6 cm, 8 cm, and 12 cm edges meet at each vertex?

5 How many edges does the box on the right have? How long are the edges? How many vertices does this box have?



If you focus on the number of vertices, and the length and number of edges that a box has, you can find the characteristics of the box more clearly.

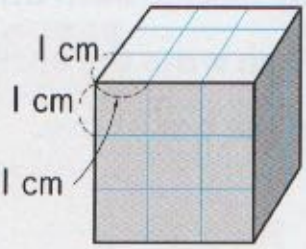
Shiho

Additional Problems
→ Page 109 L

Grow Your "Eyes for Math" — Key Viewpoints and Ways of Thinking

Focus on faces/edges/vertices, and examine the shape of a box

① Haruto is explaining about the shape of the box on the right.
Fill in the ☐ with an appropriate word or number.



Haruto

The number of 3 cm long edges that the box on the right has is ☐.
The number of ☐ that the box has is 8.

What characteristics of the box is Haruto focusing on?

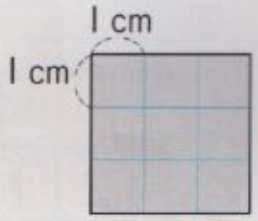
② What type of quadrilateral are the faces of the box above?
Also explain why.

Ami

The number of the sides is...and the length of the sides is...

The shape of the corners is...

Kota



③ How many faces of the shape of ② does the box above have?

Look back on what you have learned in "Let's Investigate the Shapes of Boxes" and discuss.

Riku

It was fun connecting the 6 faces to make a box.

Misaki

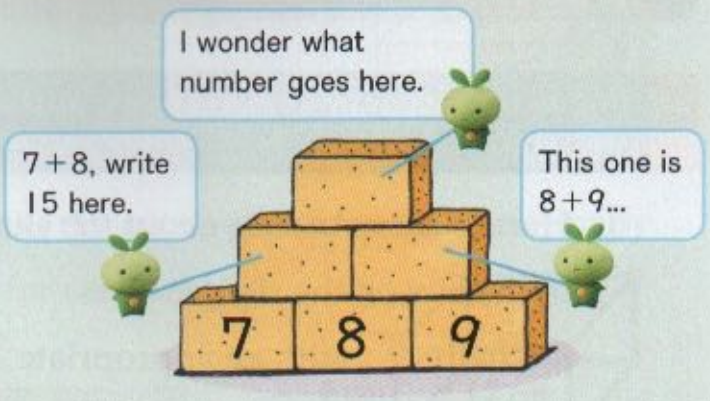
I could easily find the characteristics of a box when we focused on the edges and vertices of the box, just like we focused on the sides and vertices of triangles and quadrilaterals.

Challenge Yourself
→Page 113

Calculation Pyramid

Se Puede Retomar

Add the numbers that are next to each other. Then write the answer in the box above.



1 Write the numbers in the boxes.

① 2 2 2

② 5 5 5

③ 12 13 14

④ 19 38 25

⑤ 34 16 23

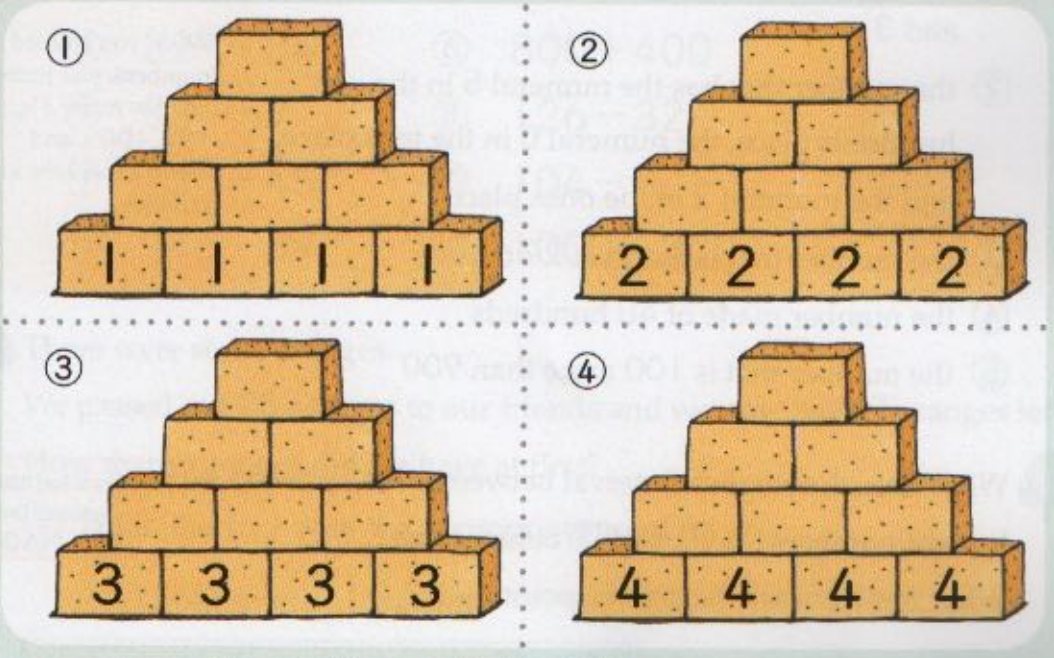
⑥ 32 27 17

⑦ 18 24 19 15

⑧ 112 54 26 12

Se Puede Retomar

2 Put the same number in all 4 boxes at the bottom.
What number will be in the box at the top?

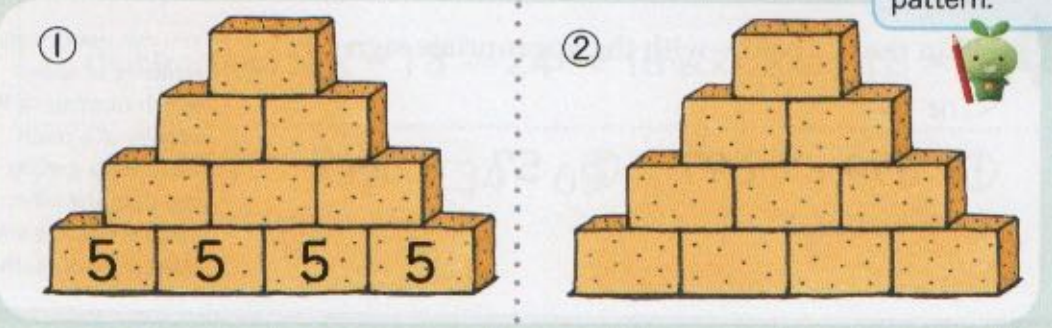


	①	②	③	④
The number in the bottom boxes	1	2	3	4
The number in the top box				

Is there something you noticed? Come up with a pattern.

3 Check the pattern that you found by trying it with different numbers to see if it's correct.

Use a number you like and check your pattern.



Review of 2nd Grade

Answer → Page 114

1 What are the following numbers?

Structure of numbers Page 115 ②

① the number that is made of 7 thousands, 4 tens, and 3 ones

② the number that has the numeral 5 in the hundreds place, the numeral 0 in the tens place, and the numeral 2 in the ones place

③ the number that is made of 29 tens

④ the number made of 40 hundreds

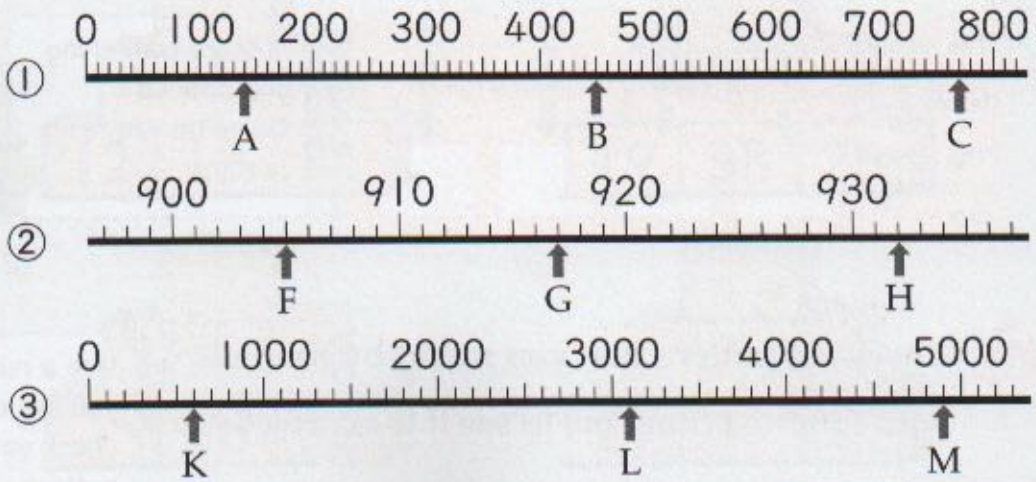
⑤ the number that is 100 more than 900

Sense of Math

- When you studied numbers, you focused on how many 1's, 10's, 100's, and 1000's there are in a number.

2 What does the smallest interval between the tick marks on lines of numbers ①, ②, and ③ below show? What numbers are the arrows pointing to?

How to Read Numbers on a Number Line Page 115 ③



3 Fill in the ☐ below with the appropriate sign (>, <, or =).

① 679 ☐ 697 ② 57 ☐ 8×7

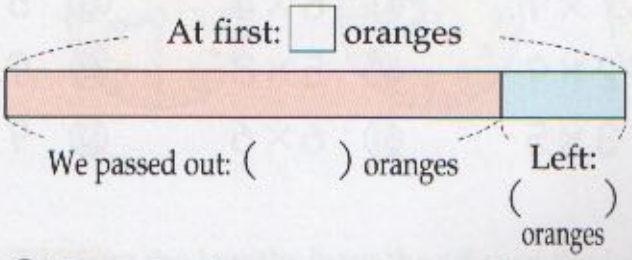
- You can use one math sentence to show which number or the answer of a math sentence is greater or less than the other. Math sentences are the "language of math."

4 ① $25+43$ ② $31+98$
③ $7+96$ ④ $84+79$
⑤ $327+54$ ⑥ $800+400$
⑦ $83-57$ ⑧ $126-32$
⑨ $130-45$ ⑩ $104-8$
⑪ $946-37$ ⑫ $1000-300$

Addition and Subtraction Algorithm
Page 115①

5 There were some oranges.
We passed out 28 oranges to our friends and we now have 7 oranges left.
How many oranges did we have at first?

① Fill in the ( ) with the appropriate numbers.



② From the diagram, write a math sentence, and find the answer.

Sense of Math
- You thought about the problem by wondering which you needed to find out, the whole or a part in the diagram.

6 As shown in the example below, write math sentences that can be used to check the answers of the subtraction calculations.

(Example)
(Subtraction) $42-18=24$ ➡ (check) $24+18=42$

① $85-27$ ② $134-65$

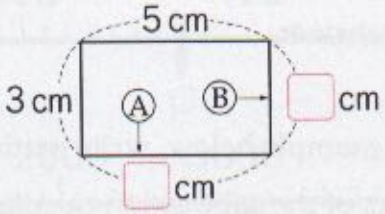
7

① 2×2	② 3×6	③ 5×4	④ 7×4
⑤ 2×4	⑥ 1×2	⑦ 8×7	⑧ 6×3
⑨ 3×3	⑩ 1×6	⑪ 7×2	⑫ 5×5
⑬ 4×6	⑭ 2×3	⑮ 8×8	⑯ 6×1
⑰ 4×2	⑱ 3×7	⑲ 5×3	⑳ 5×6
㉑ 7×3	㉒ 1×1	㉓ 4×3	㉔ 6×5
㉕ 8×4	㉖ 9×2	㉗ 6×7	㉘ 7×8
㉙ 4×4	㉚ 2×5	㉛ 9×9	㉜ 2×1
㉝ 3×9	㉞ 4×1	㉟ 5×9	㊱ 7×1
㊲ 8×2	㊳ 9×7	㊴ 8×5	㊵ 5×7
㊶ 9×3	㊷ 1×9	㊸ 6×4	㊹ 5×1
㊺ 8×3	㊻ 2×9	㊼ 5×8	㊽ 9×8
㊾ 7×7	㊿ 3×5	(51) 6×6	(52) 9×6

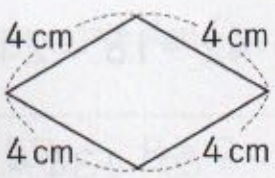
8 Answer the following questions.

Rectangles and square
Page 115 ④

① The shape on the right is a rectangle. What are the lengths of side Ⓐ and side Ⓑ in cm?



② Can the quadrilateral on the right be called a square? Explain.



Sense of Math

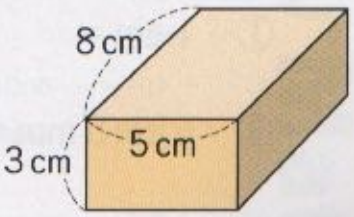
- You investigated shapes by focusing on the shapes of their corners and the lengths of their sides.

9 Answer the questions about the box on the right.

① How many vertices are there?

② How many 8 cm edges are there?

③ How many rectangular faces have 3 cm and 5 cm sides?



10 Tell the time by looking at the clocks below.
Also tell the time that is 30 minutes before and 1 hour after each time shown.

①

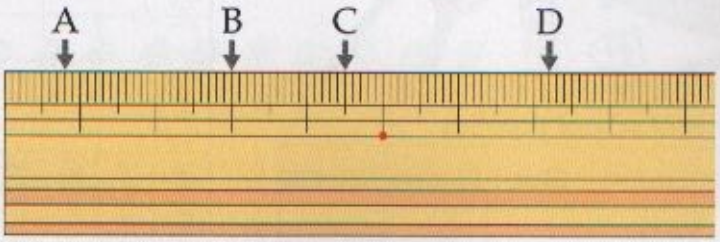
②

③

④

11 What are the lengths from the edge of the left side of the ruler to the arrows, A, B, C and D?

Units of Length
Page 115 ⑤



Sense of Math

- You expressed a length by telling how many mm, cm, and m units fill the length. You expressed an amount of water by telling how many mL, dL, and L units the amount of water is equal to.

Units of Length Units of Amount of Water Page 115 ⑤⑥

12 Fill in the ☐ with appropriate numbers.

① 1 cm = ☐ mm ② 1 m = ☐ cm

③ 4 cm 8 mm = ☐ mm ④ 1 m 6 cm = ☐ cm

⑤ 1 L = ☐ mL ⑥ 1 L = ☐ dL

13 Fill in the ( ) with the appropriate measuring units.

① the amount of water a pot can hold ····· 2( )

② the length of a long jumping rope ····· 4( )

③ the amount of water a cup can hold ····· 200( )

④ the height of the podium used at the morning meeting ··· 80( )

14 We are investigating the number of school supplies.

① Organize the number of each school supply in the graph and in the table.

Number of school supplies

School supplies	Pencils	Erasers	Glue	Scissors	Paper clips
Number	5				

Number of school supplies

	Pencils	Erasers	Glue	Scissors	Paper clips
○					
○					
○					
○					
○					

② Which one of the school supplies do we have the most of?

③ What is the difference in number between pencils and erasers?

New Mathematics 2B Plus

Additional Problems

Need more practice?
Try these!

11 Let's Think about New Calculations 106
12 Let's Make the Multiplication Table 106
13 Let's Investigate Numbers Greater Than 1000 107
14 Let's Measure Long Lengths and Record Them 109
16 Let's Find out How to Express the Size of Divided Parts 109
17 Let's Investigate the Shapes of Boxes 109
● Answers 110

Let's Try WONDERful Problems!

These problems are for you to explore wider and dig deeper. Try them, think hard, and enjoy!

15 Let's Think about Using Diagrams 111
16 Let's Find out How to Express the Size of Divided Parts 112
17 Let's Investigate the Shapes of Boxes 113
● Answers 113

Review Exercises 115
Index 121

Notice to Teachers and Parents

"New Mathematics 2B Plus" is an optional resource for students who want or need to work on additional material. Not all students need to use "New Mathematics 2B Plus."

Additional Problems

Similar Problems Slightly Difficult Problems

11 Let's Think about New Calculations

Answers→ Page 110

Page 21 5 →

A Fill in the ☐ with numbers so that the problem situation can be represented by the math sentence 5×3. Then, make the problem situation 3×5.

Make a math sentence with this structure: number of objects in each group × number of groups = total number of objects.

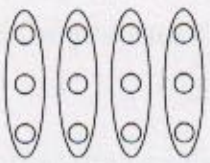
We will give ☐ candies each to ☐ people.
How many candies do we need?

A There are 4 bags and each bag contains 3 balls. How many balls are there altogether?

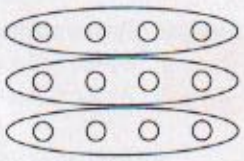
① What is "the number of objects in each group"?

② Which diagram matches this problem, Ⓐ or Ⓑ?

Ⓐ



Ⓑ



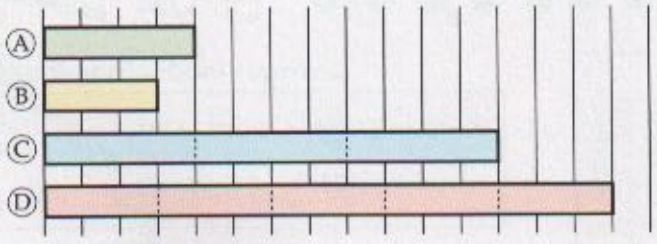
③ Make a math sentence and find the answer.

12 Let's Make the Multiplication Table

Answers→ Page 110

Page 42 1 →

B Which piece of ribbon is 3 times as long as Ⓐ? How many times as long is ribbon Ⓓ as ribbon Ⓑ?



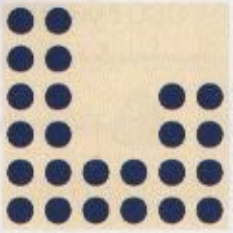
B ① If the length of ribbon Ⓐ in the diagram above is 8 cm, how many cm is the length of ribbon Ⓒ?
Make a math sentence and find the answer.

② If the length of ribbon Ⓑ in the diagram above is 6 cm, how many cm is the length of ribbon Ⓓ?
Make a math sentence and find the answer.

Page45
1 →

C Think of ways to find the number of ●.
Write down your idea in the diagram on the right, write math sentences, and find the answer.

C Hiro found the number of ● on the right by making the following math sentences.



Hiro
$6 \times 2 = 12$
$4 \times 3 = 12$
$12 + 12 = 24$

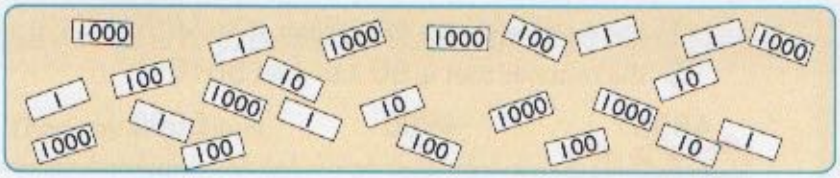
Mark the diagram on the right to show how Hiro thought about the problem.

13 Let's Investigate Numbers Greater Than 1000

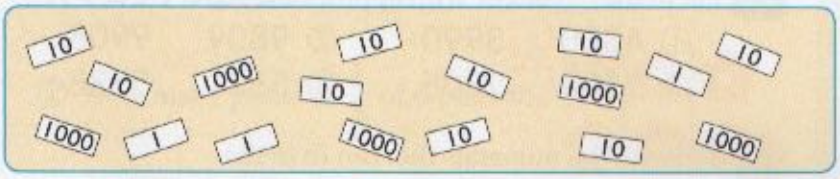
Answers→ Page110

Page55
2 →

D What amounts are shown below? Write them using numerals.



D What amounts are shown below? Write them using numerals.



Page58
10 →

E ① What number is made of 36 hundreds?
② What number is made of 50 hundreds?
③ How many hundreds are in 4200?
④ How many hundreds are in 8000?

E ① What number is made of 217 tens?
② What number is made of 450 tens?
③ How many tens are in 2560?
④ How many tens are in 4300?

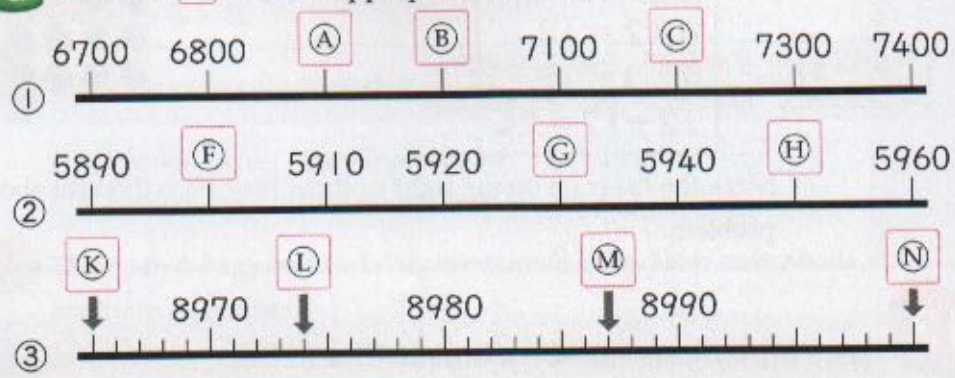
Page58
11 →

F ① 400+700　② 900+900
③ 800−200　④ 1000−700

F Fill in the □ with an appropriate number.
You can calculate 1000−600 just like you calculate 10−6 if you think how many □ are in 1000 and 600.

Page59
12 →

G Fill in the □ with the appropriate numbers.



G Look at the line of numbers below and draw ⬆s on the number line to show where ① and ② are.
① the number that is 10 greater than 4920
② the number that is 50 less than 5010

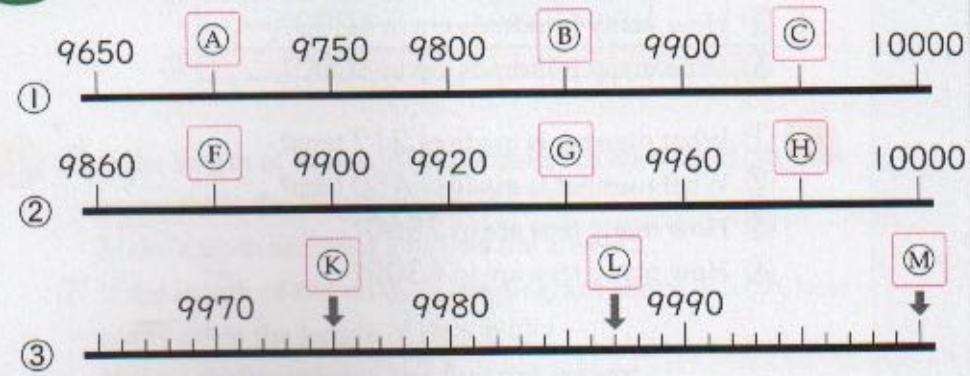
Page61
14 →

H Fill in the □ below with appropriate signs (< or >).
① 4300 □ 3990　② 9809 □ 9908
③ 7334 □ 7305　④ 5531 □ 5538

H Write all the numerals that can fit in the □.
① 2658<2□47　② 4529>□529

Page61
15 →

I Fill in the □ with the appropriate numbers.

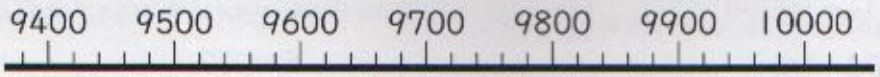


Page 61
15 →

I Look at the line of numbers below and draw ⬆s on the line of numbers to show where ① and ② are.

① the number that is 40 greater than 9600

② the number that is 60 less than 10000



14 Let's Measure Long Lengths and Record Them

Answers → Page 110

Page 69
2 →

J ① 7 m = ☐ cm ② 900 cm = ☐ m

③ 6 m 6 cm = ☐ cm ④ 803 cm = ☐ m ☐ cm

J Arrange Ⓐ, Ⓑ, Ⓒ, Ⓓ, and Ⓔ from the longest to the shortest.

Ⓐ 6 m Ⓑ 610 cm Ⓒ 6 m 2 cm

Ⓓ 5900 cm Ⓔ 600 mm

16 Let's Find out How to Express the Size of Divided Parts

Answers → Page 110

Page 87
6 →

K There are 6 counters.

① How many pieces is $\frac{1}{2}$ of 6 pieces?

② How many pieces is $\frac{1}{3}$ of 6 pieces?

17 Let's Investigate the Shapes of Boxes

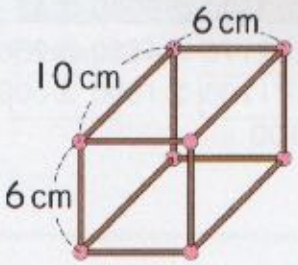
Answers → Page 110

Page 96
3 →

L We are going to make a box like the one on the right with clay balls and sticks.

① What length sticks do we need?
How many do we need?

② How many clay balls do we need?



Additional Problems

Page 106～109

11 Let's Think about New Calculations

A 5×3…[5] candies each to [3] people
3×5…[3] candies each to [5] people

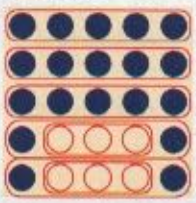
A ①3 ②Ⓐ
③(Math sentence) 3×4 = 12
(Answer) 12 balls

12 Let's Make the Multiplication Table

B The ribbon that is 3 times as long as Ⓐ…Ⓒ
Ribbon Ⓓ…5 times as long as ribbon Ⓑ

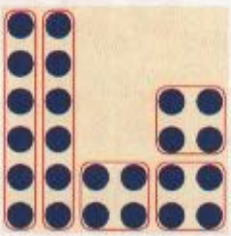
B ①(Math sentence) 8×3 = 24
(Answer) 24 cm
②(Math sentence) 6×5 = 30
(Answer) 30 cm

C (Example)



(Math sentences) 5×5 = 25
3×2 = 6
25−6 = 19
(Answer) 19 pieces

C (Example)



13 Let's Investigate Numbers Greater Than 1000

D 8547

D 5093

E ①3600 ②5000 ③42 ④80

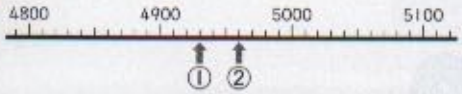
E ①2170 ②4500 ③256 ④430

F ①1100 ②1800 ③600 ④300

F 100

G ①Ⓐ6900 Ⓑ7000 Ⓒ7200
②Ⓕ5900 Ⓖ5930 Ⓗ5950
③Ⓚ8965 Ⓛ8974 Ⓜ8987
Ⓝ9000

G

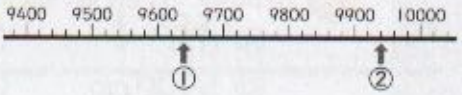


H ①> ②< ③> ④<

H ①7, 8, 9 ②1, 2, 3

I ①Ⓐ9700 Ⓑ9850 Ⓒ9950
②Ⓕ9880 Ⓖ9940 Ⓗ9980
③Ⓚ9975 Ⓛ9987 Ⓜ10000

I



14 Let's Measure Long Lengths and Record Them

J ①700 ②9 ③606
④8, 3 (in this order)

J Ⓓ, Ⓑ, Ⓒ, Ⓐ, Ⓔ

16 Let's Find out How to Express the Size of Divided Parts

K ①3 pieces ②2 pieces

17 Let's Investigate the Shapes of Boxes

L ①10 cm sticks: 4 sticks
6 cm sticks: 8 sticks
②8 clay balls

Let's Try WONDERful Problems!

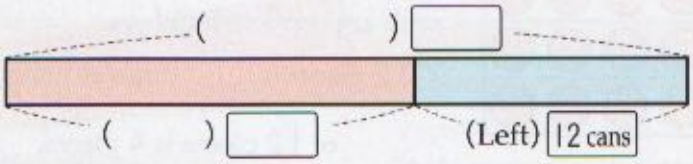
15 Let's Think about Using Diagrams

Answers → Page 113

1 Saori's family bought a box of cans of beverage.
There were 30 cans in the box. They drank some cans of the beverage and now have 12 cans left. How many cans of the beverage did they drink?

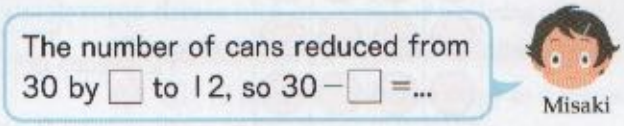
① Express this story as a diagram.
From [ ], select the appropriate words to fill in the ( ) and the appropriate numbers of cans to fill in the [ ]. The unknown number is replaced with □.

At first　Drunk　Left　30 cans　12 cans　□ cans



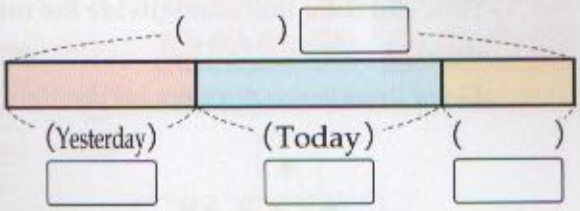
② Make a math sentence and find the answer.

③ Write a math sentence that expresses the story.



2 Yesterday, Naoki read some pages of a 60-page book. He read 26 pages today, and now he has 14 pages left. How many pages did he read yesterday?

① Express the story as a diagram. Replace the unknown number with □.
Fill the ( ) with words and [ ] with numbers of pages.



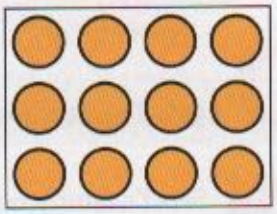
② Make a math sentence and find the answer.

③ Write a math sentence that expresses the story.

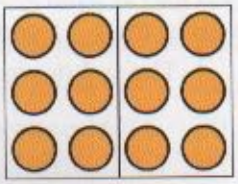
16 Let's Find out How to Express the Size of Divided Parts

Answers→ Page 113

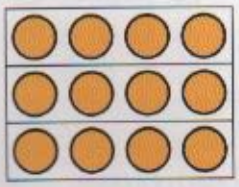
1 12 cakes are in a box as shown on the right.
Look at the number of cakes in many ways.



If you divide the cakes in the box as shown below and look at the cakes, you may notice the following:

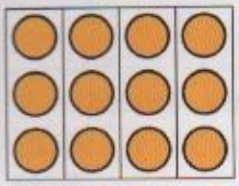


- 12 cakes is 2 times as many as 6 cakes.
- $\frac{1}{2}$ of 12 cakes is 6 cakes.

① 

Look at the drawing on the left and fill the ☐ with appropriate numbers.

- 12 pieces is ☐ times as many as 4 pieces.
- ☐ of 12 pieces is 4 pieces.

② 

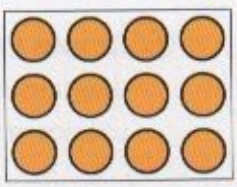
Look at the drawing on the left and fill the ☐ with appropriate numbers.

- 12 pieces is ☐ times as many as 3 pieces.
- ☐ of 12 pieces is 3 pieces.

③
Riku

- 12 pieces is 6 times as many as 2 pieces.
- $\frac{1}{6}$ of 12 pieces is 2 pieces.

How did Riku think and divide the number of cakes?
Draw lines in the drawing on the right.



17 Let's Investigate the Shapes of Boxes

Answers→ Page 113

Advanced 4th Grade

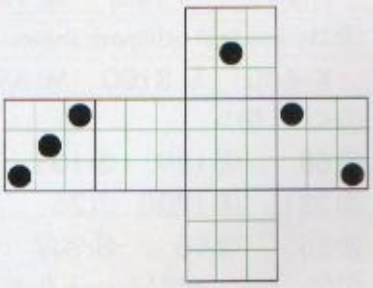
1 Make a die out of paperboa

Se Puede Retomar

Teacher

The numbers of pips on the opposite faces of a die always add up to 7.

To make a die as shown above, draw pips in the drawing on the right.



Shiho

When you build a die out of the drawing on the right, I wonder which faces will be opposite each other.

Answers

Let's Try WONDERful Problems!

Page 111 ~ 113

15 Let's Think about Using Diagrams

1 ① (At first) 30 cans

(Drunk) □ cans (Left) 12 cans

②(Math sentence) 30 − 12 = 18

(Answer) 18 cans

③ 30 − □ = 12

Think This Way ③ If you subtract □ drunk cans from the original 30 cans, the answer is 12 cans that are left.

2 ① (Total) 60 pages

(Yesterday) □ pages (Today) 26 pages (Remainder) 14 pages

②(Math sentence) 60 − 14 − 26 = 20

or 60 − 26 − 14 = 20

(Answer) 20 pages

③ 60 − □ − 26 = 14

Think This Way ③ If you subtract □ (the number of pages that he read yesterday) and then 26 (the number of pages that he read today) from 60 (the number of pages of the book), the answer is 14 (the number of remaining pages).

16 Let's Find out How to Express the Size of Divided Parts

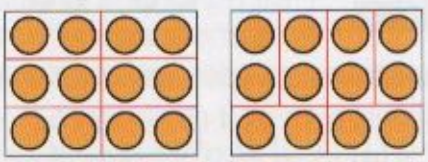
1 ① · 12 pieces is 3 times as many as 4 pieces.

· $\frac{1}{3}$ of 12 pieces is 4 pieces.

② · 12 pieces is 4 times as many as 3 pieces.

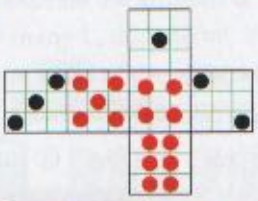
· $\frac{1}{4}$ of 12 pieces is 3 pieces.

③(Example)



17 Let's Investigate the Shapes of Boxes

1



Think This Way The faces with 1, 2, and 3 pips are the faces with 6, 5, 4 each.

Answers Review of 2nd Grade

Page 100 ~ 104

1 ①7043 ②502 ③290
④4000 ⑤1000

2 ① The smallest tick mark shows 10.
A: 140 B: 450 C: 770
② The smallest tick mark shows 1.
F: 905 G: 917 H: 932
③ The smallest tick mark shows 100.
K: 600 L: 3100 M: 4900

3 ①< ②>

4 ①68 ②129 ③103 ④163
⑤381 ⑥1200 ⑦26 ⑧94
⑨85 ⑩96 ⑪909 ⑫700

5 ①(We passed out) 28 (oranges), (Left) 7 (oranges)
②(Math sentence) 28+7=35 (Answer) 35 oranges

6 ①58+27=85 ②69+65=134

7 ①4 ②18 ③20 ④28 ⑤8
⑥2 ⑦56 ⑧18 ⑨9 ⑩6
⑪14 ⑫25 ⑬24 ⑭6 ⑮64
⑯6 ⑰8 ⑱21 ⑲15 ⑳30
㉑21 ㉒1 ㉓12 ㉔30 ㉕32
㉖18 ㉗42 ㉘56 ㉙16 ㉚10
㉛81 ㉜2 ㉝27 ㉞4 ㉟45
㊱7 ㊲16 ㊳63 ㊴40 ㊵35
㊶27 ㊷9 ㊸24 ㊹5 ㊺24
㊻18 ㊼40 ㊽72 ㊾49 ㊿15
(51) 36 (52) 54

8 ①Ⓐ 5 cm Ⓑ 3 cm
② It can't, because not all 4 corners are right angles.

9 ①8 ②4 ③2

10 ①8:30 (half past 8), 30 minutes before…8:00
1 hour after…9:30 (half past 9)
②10:40, 30 minutes before…10:10
1 hour after…11:40
③2:45, 30 minutes before…2:15
1 hour after…3:45
④4:50, 30 minutes before…4:20
1 hour after…5:50

11 A 8 mm B 3 cm (30 mm)
C 4 cm 5 mm (45 mm)
D 7 cm 2 mm (72 mm)

12 ①10 ②100 ③48
④106 ⑤1000 ⑥10

13 ①L ②m ③mL ④cm

14 ①

Number of school supplies

School supplies	Pencils	Erasers	Glue	Scissors	Paper clips
Number	5	6	3	2	1

② Erasers

③ 1

Answers Do You Remember?

Page 51

1 ①126 ②113 ③106
④91 ⑤44 ⑥73

2 ⑪

3 ①cm ②mm

4 ①64 ②1000

Playing with Numbers and Calculations

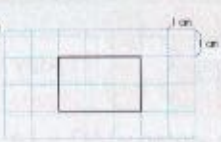
① 10 times ② 5 times ③ 2 times ④ 4 times

Page 91

1 ①8 ②28 ③27 ④42
⑤56 ⑥56 ⑦12 ⑧48

2 ①(Altogether) 26 (strawberries), (Eaten) 9 (strawberries) eaten
②(Math sentence) 26−9=17 (Answer) 17

3 (Example)



(the length around the rectangle)
10 cm

Playing with Numbers and Calculations

① 41+32 42+31 32+41 31+42

② 43−12

Review Exercises

1 Addition and Subtraction Algorithm (2A)

◆ How to calculate using the algorithm

① Line up the numbers vertically in each place

② Start calculating from the ones place

◆ 35 + 12

$$\begin{array}{r} 35 \\ +\ 12 \\ \hline 47 \end{array}$$

3+1 | 5+2

◆ 83 + 46

$$\begin{array}{r} 83 \\ +\ 46 \\ \hline 129 \end{array}$$

8+4 | 3+6

◆ 47 − 15

$$\begin{array}{r} 47 \\ -\ 15 \\ \hline 32 \end{array}$$

4−1 | 7−5

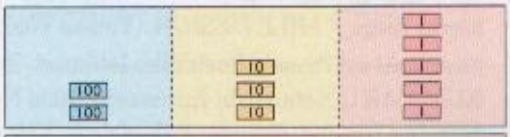
◆ 129 − 53

$$\begin{array}{r} 129 \\ -\ 53 \\ \hline 76 \end{array}$$

12−5 | 9−3

2 Structure of Numbers (2A)

◆ 235



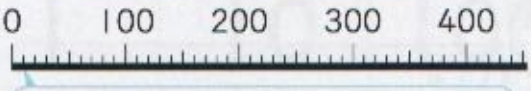
Hundreds place	Tens place	Ones place
2	3	5

◆ 306

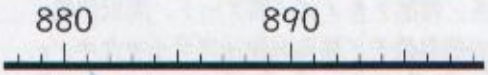
Hundreds place	Tens place	Ones place
3	0	6

3 How to Read Numbers on a Number Line (2A)

When reading a number on a line of numbers, first think about what the smallest interval between the tick marks shows.



The part between 0 and 100 is divided into 10 segments, so the smallest interval between the tick marks shows 10.



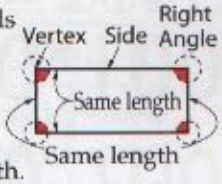
The part between 880 and 890 is divided into 10 segments, so the smallest interval between the tick marks shows 1.

4 Rectangles and Squares (2A)

Rectangles

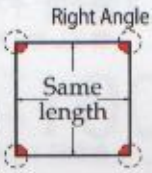
Rectangles are quadrilaterals with 4 corners that are all right angles.

The opposite sides of a rectangle are the same length.



Squares

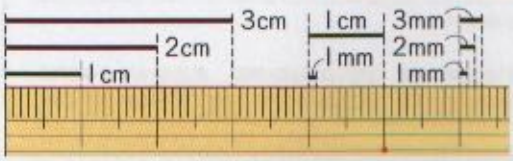
Squares are quadrilaterals with 4 corners that are all right angles and 4 sides that are all the same length.



5 Units of Length [cm, mm] (2A)

You express a length by telling how many cm and mm fill the length, and cm and mm are **units** of length.

1 cm = 10 mm



6 Units for Amount of Water [L, dL, mL] (2A)

You express the amount of water by telling how many L, dL, and mL it is, and L, dL, and mL are **units** of the amount of water.

1 L = 10 dL

1 L = 1000 mL

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●翻訳：高橋昭彦 ディポール大学准教授／Tad Watanabe ケネソー州立大学教授

新しい算数 2 下 考えるって おもしろい！
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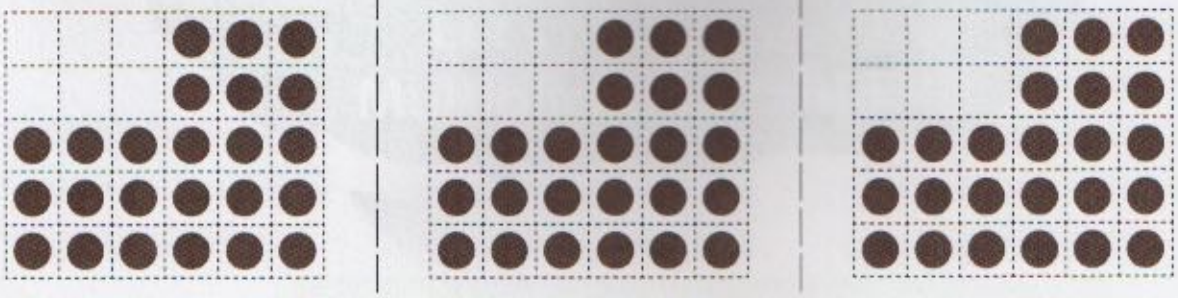

Used on page 43.

1	10	10	100	100	1000
1	10	10	100	100	1000
1	10	10	100	100	1000
1	10	10	100	100	1000
1	10	10	100	100	1000
1	10	100	100	100	1000
1	10	100	100	100	1000
1	10	100	100	100	1000
1	10	100	100	100	1000
1	10	100	100	100	1000

Used on pages 54–56 and 58.

Used on page 87.

1000 100 100 10 10 1
1000 100 100 10 10 1
1000 100 100 10 10 1
1000 100 100 10 10 1
1000 100 100 10 10 1
1000 100 100 100 10 1
1000 100 100 100 10 1
1000 100 100 100 10 1
1000 100 100 100 10 1
1000 100 100 100 10 1

Let's Make the Multiplication Table

Multiplicands \ Multipliers	1	2	3	4	5	6	7	8	9
1	●	●	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●	●	●
3	●	●	●	●	●	●	●	●	●
4	●	●	●	●	●	●	●	●	●
5	●	●	●	●	●	●	●	●	●
6	●	●	●	●	●	●	●	●	●
7	●	●	●	●	●	●	●	●	●
8	●	●	●	●	●	●	●	●	●
9	●	●	●	●	●	●	●	●	●

Use this as you go over each set of multiplication facts.

Name

Congratulations!

MASTER OF MULTIPLICATION FACTS

CERTIFICATE

_____ Elementary School

Name _____

You have worked hard to memorize multiplication facts.

You are a MASTER OF MULTIPLICATION FACTS!

Date: _____

Teacher: _____

Index

This index lists the terms and signs you study in 2nd grade. Use the index to review or confirm your study.

If you use these terms and symbols correctly, you will find it easier to think and explain your ideas to others.

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