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Grade 4



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Issued free to schools by the Department of Education

First Edition

Published in 2019 by the Department of Education, Papua New Guinea.

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ISBN 978-9980-905-10-9

Acknowledgements

The Grade 4 National Mathematics Textbook was developed by the Curriculum Development Division in partnership with the Mathematics specialists from Japan through the Project for Improving the Quality of Mathematics and Science Education also known as QUIS-ME Project.

The Mathematics curriculum officers, textbook writers, pilot teachers from NCD and Central Provinces and the Subject Curriculum Group (SCG) are acknowledged for their contribution in writing, piloting and validating this textbook.

The Curriculum Panel members, members of the Subject Advisory Committee (SAC) and the Basic Education Board of Studies (BEBOS) are also acknowledged for their advice, recommendation and endorsement of this textbook.

A special acknowledgement is given to the People and the Government of Japan for the partnership and support in funding and expertise through Japan International Cooperation Agency (JICA) - QUIS-ME Project with Curriculum Development Division (CDD).

National Mathematics Textbook

Grade 4





Minister's Message

Dear Grade 4 Students,

I am honoured to give you my message in this National Mathematics Textbook.

The Government of Papua New Guinea has been working to improve students' learning of mathematics. This textbook was developed by our excellent Curriculum Officers, Textbook Writers and Pilot Teachers, who have worked together with Japanese specialists for three years. This is the best textbook for grade 4 students in Papua New Guinea and is comparable to international standards. I would like to thank the Government of Japan for its support in improving the quality of learning for children in Papua New Guinea.

I am excited about this textbook because it covers all topics necessary for learning in grade 4. You will find many photographs, illustrations, charts and diagrams that are interesting and exciting for learning. I hope they will motivate you to explore more about mathematics.

Students, Mathematics is a very important subject. It is also very interesting to learn. Do you know why? Because mathematics is everywhere in our lives. You will use your knowledge and skills of mathematics to calculate cost, to find time, distance, weight, area, and many more. In addition, mathematics will help you to develop your thinking skills, such as how to solve problems using a step-by-step process.

I encourage you to be committed, enjoy and love mathematics, because one day in the future you will be a very important person, participating in developing and looking after this very beautiful country of ours and improving the quality of living.

I wish you a happy and fun learning experience with Mathematics.

Hon. Nick Kuman, B.ApSci.UWSyd, MP Minister of Education



Message from the Ambassador of Japan

Greetings to Grade 4 Students of Papua New Guinea!

It is a great pleasure that the Department of Education of Papua New Guinea and the Government of Japan worked together to publish national textbooks on mathematics for the first time.

The officers of the Curriculum Development Division of the Department of Education made full efforts to publish this textbook with Japanese math experts. To be good at mathematics, you need to keep studying with this textbook. In this textbook, you will learn many things about mathematics with a lot of fun and interest, and you will find it useful in your daily life. This textbook is made not only for you but also for the future students.

You will be able to think much better and smarter if you gain more knowledge on numbers and diagrams through learning mathematics. I hope that this textbook will enable you to enjoy learning mathematics and enrich your life from now on. Papua New Guinea has a big national land with plenty of natural resources, and a great chance for a better life and progress. I hope that each of you will make full use of knowledge you obtained and play an important role in realizing such potential.

I am honoured that, through the publication of this textbook, Japan helped your country develop mathematics education and improve your ability, which is essential for the future of Papua New Guinea. I sincerely hope that, through the teamwork between your country and Japan, our friendship will last forever.

anthe

Satoshi Nakajima Ambassador of Japan to Papua New Guinea

Share ideas with your friend!







Let's learn Mathematics, it's fun!

Secretary's Message

Dear students,

This is your Mathematics Textbook that you will use in Grade 4. It contains very interesting and enjoyable activities that you will be learning in your daily Mathematics lessons.

In our everyday lives, we come across many Mathematical related situations such as buying and selling, making and comparing shapes and their sizes, travelling distances with time and cost, and many more. These situations require mathematical thinking processes and strategies to be used.

This textbook provides you with a variety of mathematical activities and ideas that are interactive and allow you to learn with your teacher or on your own as an independent learner. Key concepts for each topic are highlighted in the summary notes at the end of each chapter.

The mathematical skills and processes are expected to be used as learning tools to understand the concepts given in each unit or topic and apply these in solving problems.

You are encouraged to be like a young Mathematician who learns and is competent in solving problems and issues that are happening in the world today. You are also encouraged to practice what you learn everyday both in school and at home with your family and friends.

I wish you all the best in studying Mathematics using this textbook.

Dr. Uke Kombra, PhD Secretary for Education



Symbols in this textbook

- Discovered Important Ideas
- Important definition or terms.
- What we will do in the next activity.
- When you lose your way, refer to the page number given.
- You can use your calculator here.
- Practice by yourself. Fill in your copy.
- New knowledge to apply daily life
- Exercise

6=

- Let's do the exercise.
- Let's do mathematical activities by students
- Let's fill numbers in and complete the expression to get the page number







Large Numbers



of various Pacific countries and other countries. How do we read the numbers of their populations? Which countries have the population that is in hundred thousands? Read the population of these countries.

& hundred thousands
9 ten thousands
2 thousands
0 hundreds
0 tens
0 ones





nineteen thousand." It is written 8 219 000 with space in every

three-digits so it is easier to read.

2 The following number represents the estimated cost of hosting

the South Pacific Games held here in Papua New Guinea.

Estimated cost: 30 000 000 kina

- In which place value does 3 represent in the number?
- 2 How many 10 million are there in the Let's consider numbers large

Let's consider how to read and write numbers larger than the millions place.

③ Read the number below that shows the estimated cost of

hosting the South Pacific Games in Papua New Guinea.





The total number of the people in the Pacific Islands is 39771000. It is read as "thirty nine million, seven hundred and seventy one thousand".

It is written as 39 771 000 with space in every three-digits.

100 sets of 1 million is hundred million.

5 Fill in the population of Japan and read it.



The number of population of Japan, 126900000, is written as

126 900 000 and read as one hundred twenty six million and

nine hundred thousand.

The number that is 100 sets of 1 million is written as 100 000 000, and is read as **hundred million**. It is also written as 100 million. 100 million is a number with 100 sets of one million.



Write the following in numbers.

 $oldsymbol{0}$ The number that is the sum of 10 sets of 100 thousand is

1 million, written as _____.

2 The number that is the sum of 10 sets of 1 million is

10 million, written as

- 3 The number that is the sum of 100 sets of 1 million is
 - 100 million, written as



- Large Numbers to Billion
 - The map above shows the population in figures of various countries around the world.
- Write the population below and read them.

Countries	?			Millions			Thousands			Ones			Can we	
				100 millions	10 millions	millions	100 thousands	10 thousands	thousands	hundreds	tens	ones	Creac	
PNG													People	
Australia													People	
Japan													People	
Indonesia													People	
China													People	
World													People	



- Let's consider how to read the population of China
 - 1 371 900 000 people. In which place value is 3?
- How many hundred millions are there in the value of 1?
 (1371 900 000)
- 2 Let's consider how to read and write numbers larger than the hundred millions place.



3 Let's use the billions place for reading 137190000000 people.



The number above is written 1 371 900 000 as "one billion, three hundred, seventy one million and nine hundred thousand.

Let's consider how to write the population of the World,

7 336 000 000 people.

A large number is read by every 3-digit number grouped from right such as ones, tens, hundreds place with naming for the unit of one, thousand, million, billion and so on. For writing large numbers, we give space for every three-digits.

Read the following numbers.

- ① 8 750 000 000 kina (The amount of exports in PNG in 2005).
- ② 4 161 290 323 kina (The amount of imports in PNG in 2005).





English Numeration











Probl	e m s 💌 🔍				
 Fill in the with appropriate nur Understanding the place value system of large numbers. The 6 in 36 495 000 000 is in the 465 billion is sets of 1 billion 	mbers and words. place value.				
 3 1 million is equal to times 2 Let's read the following numbers. • Reading large numbers. 1 The distance from the Sun to the E 149 600 000 km 2 Total budget for PNG Government 	10 thousand. Earth. in 2016.				
 14 209 000 kina Let's write the following in numbers. Interpreting the explanation of numbers. The number that is 100 times 340 The number that is the sum of 3 set 48 sets of 100 million. 	s. million. ets of 1 billion and				
How to use your exercise b	ook!				
Write in your exercise book what you have learned about large numbers.	the 20 Friday				
 What I understood. What was interesting for me. What was too difficult. 	1 Large Numbers O What I understood. • I can read a large number easily if I to it as groups of 4-digit numbers.				
 What was good for me about my friend's ideas. What I want to do next. 	 What I am interested in. We can express any large numbers by using 10 numbers from 0 to 9. What I felt difficult. 				

. It is difficult to read a large number

What I want to do next.



Rules of Division

There are 24 Iollies. They are divided equally among children.

How many lollies will each child receive?

O Put various numbers into the and find the answer.

If lollies are divided among 4 children, how many will each

child receive?

- If there are 8 children, how many lollies will each child receive?
- 2 If Iollies are divided among

4 children,

24÷4=

3 If lollies are divided

among 8 children, 24 \div 8 =



for each child



If the number of children becomes 2 times, the number of lollies for each child will be reduced into half.

Let's find the rules of division.

- What rules are there between the divisor and the answer (quotient)?
- Oneck this with some other division problems.



When the divisor is multiplied by a number, the answer (quotient) is divided by the same number.

If there are 6, 12 or 18 lollies and each child receives 3.

How many children can have lollies in each case?

1 Write a mathematical sentence for each of them.



 What rules are there for the dividend and the answer (quotient)? Check this with some other division problem.
 If the divisors are the same, the dividends are multiplied or divided by a number ____, quotient is given by multiplying or dividing by the same number ____.

- 3 If you cut meach from mof tape, you will get exactly 3 tapes.
 - There is a 24 m length of tape. If this is cut into parts of 8 m each, how many parts are there?



2 Let's write this as a division sentence using the _____ and the _____. The length can be less than 27 m.



Let's find the correct numbers for the _____ and the ____.
 Are there any rules for the relationship between the mathematical sentences?



4 Line up the cards $12 \div 4 = 3$ and $6 \div 2 = 3$, and compare.



Check this with some other division problems.



In division, the answers (quotients) are the same if the dividend and divisor are multiplied or divided by the same number.

Let's use the rules of division to find the correct numbers for the _____.
32÷8=8÷ _____2 14÷2= ÷8

& Let's Use the Rules of Division







You must divide 1200 papers into bundles of 300.

How many bundles can you make?

Think about how to find the

answer by using the answer

(quotient) of 12÷3.
Calculating by rules of division.

3



If you were to divide 600 coloured papers equally between3 friends, how many will each friend get?

① Write a mathematical expression.

(2) How many sheets of paper do we need in each group which are represented by the expression $8 \div 2$?

Thinking about How to Calculate

Rules of Division

1

There are 4 packets with 12 lollies each. All 48 lollies are divided equally among 3 children.

How many lollies will each child receive?

1 Write a mathematical expression.

Total number of lollies

Number of children

2 Think about how to calculate the answer

by using what you have learned.



Think about how to calculate your answer in different ways and explain your ideas using figures or mathematical expressions.

	¢	*	*	}@@	
	*	*	* 33	\$630	
	*	*	*	¢@@\$	*
	\$ 633 3	**** *	**** *	\$633 0	*
	*	*	\$ <u>6</u> 93	**** *	*
	\$ 6339	÷	***** *	**** *	*
	****	¢@94	}@@	*	\$ <u>6</u> 93
'	\$ 633 3	*	*	*	*
	¢@@\$	\$	}	*	*
	¢	*	*33	}@3 0	*

Lollies

Lollies

Lollie

Lollies

Ambai's idea

Firstly, distribute a packet to each child.

Then, distribute the

12 Iollies to 3 children.

 $12 \div 3 = 4$ There are 12 lollies in each packet, so the amount of lollies for each child will be 12+4=16.



Will the answer be larger than 10?







I used the rule of division. Because the dividends are the same, dividing the divisor in half will make the answer to be multiplied by 2.



Let's think about how to calculate $56 \div 4$.

Let's Report after exploring.

Explain your findings to your classmates in the following.



- How did you explore? Methods and Ideas.
- What did you understand? Explain with examples.
- What did you find? Write down the pattern.









- Look at the open mouth of the animal from A \sim E.
- Which animal has opened its mouth the widest?
- 2 Which animal has opened its mouth the narrowest?




The amount of space formed by rotating one side of a line from another side is called the **size of an angle**.



Name the above animals in order from small to big angles of their open mouth.

Let's think about how to compare?



Let's investigate how to measure and construct an angle.



4 right angles are called "angle of one revolution" and2 right angles are called "angle of a half revolution".





30 = 🗆 × 🗔





How to Draw Angles

- Let's draw a 50° angle.
- Draw a straight line from a point that will become the vertex of the angle.
- Place the centre of a protractor over the vertex of the angle.
 Place the 0° line over one side of the angle.
- 3 Write a point at the 50° mark.
- Oraw a line between the vertex and the point to make the other side of the angle.





Let's draw the angle 210° in various way.



The Angles of Triangle Rulers

- 1 Inv
 - Investigate the angles
 - of triangle rulers.
 - Use a protractor to





measure the angles of triangle rulers.

2 Two different triangle rulers are used to measure angles as shown below.

Find the angles (a), (b), (c) and (d).







3 Use triangle rulers to make new angles.

Experiencing the Angles

Use student and teacher's protractors to find the measurement of different angles of various slopes around you.





	Normal Problee ms Normal Strategy Strat
1	Let's summarise what you learned in this chapter.
	Fill in the with the most appropriate word or number. • Understanding the representation of the size of an angle.
	The unit is used to measure the size of an angle.
	To make 1°, the angle of one revolution is divided equally
	into parts.
2	Let's measure angles (a), (b) and (c). • Using a protractor to measure the angle.
3	Let's draw angles of 100° and 270°.
4	Two triangle rulers are used to form new angles.
	Let's get angles (a), (b), (c) and (d).
	$ \begin{array}{c} $

730			
	you rem	emper	
1 Let's calc	ulate the follow	ing division.	
(1) 24÷3	2 30÷5	③ 14÷2	④ 56÷7
(5) 32÷8	⑥ 16÷4	⑦ 28÷7	(8) 72÷9
(9) 14÷2	10 25÷5	(1) 42÷7	(12) 28÷4
13 24÷6	(14) 63÷7	15 64÷8	(16) 3÷1
17) 2÷2	(18) 0÷4	(19) 4÷1	20 9÷9
21) 16÷4	22 49÷7	23 28÷7	2∰ 54÷9
25 72÷8	26 7÷1	27)3÷3	280÷6
29 2÷1	30 5÷5		

2 Let's calculate and check the answers. 1) 28÷5 2) 32÷6 ③ 17÷4 ④ 42÷8

(5) 33÷9

 \bigcirc Let's find the number which applies to the \bigcirc . 1)3× 27× =15 =63 Ďo you 38× =24 **4** 4 × remember =28 the rules of division? 5 $\times 7 = 42$ $\times 6 = 54$ 6 $\times 4 = 24$ $\times 8 = 64$ \bigcirc 8

6)54÷7

36 = 🗌 🗙 🗌

Division by 1-digit Numbers



Division can be done in vertical form just as with subtraction and multiplication.









З Т

The boy below is dividing 92÷4 in vertical form. What is his mistake? Correct the mistake and finish the problem.



When doing division in vertical form start from the highest place value. Subtraction is part of the calculation in vertical division, so we do not always write the subtraction sign.

Exercise

Let's divide in vertical form.

1) 54÷2
 2) 68÷4
 3) 34÷2
 ④ 84÷3

Let's explain how to	_24	_34_
divide in vertical form.	3) 74 — 6	2) 69 — 6
	14	9
	<u> </u>	8
Let's write and explain how to	2	1

divide $92 \div 3$ in vertical form in your exercise book.



Exercise

1 Let's divide in vertical form.

1 85÷7	(2) 94÷4	③ 86÷3	④ 75÷6
(5) 68÷3	6)45÷2	⑦ 85÷4	⑧ 56÷5
9 54÷5	1 82÷4	(<u>1</u>) 61÷2	(12) 42÷4

2 6 children went to gather shells.

They found 90 shells.

If they divide them equally, how

many shells will each child receive?









5 The answers of these 2 division problems were calculated as follows.



How to find the answers in vertical form.

2 Check the answers as follows.







2 Write what is known in the diagram and find the answer.

🔆 🚾 🔚 E 🛛 X 🖉 e 🛛 r 🔤 c 🔤 i 🖉 s 🖉 e 🖉 💯

Let's cal	culate.		Pages 37 ~ 42	The
① 78÷3	2 96÷8	③ 38÷2	④ 55÷5	
⑤ 48÷4	⑥ 77÷6	⑦ 56÷3	(8) 90÷7	
(9) 83÷2	10 65÷3	(1) 98÷9	(2) 81÷4	
				A
 Let's cal 	culate.		Pages 43 ~ 46	AX .

(1) 548 ± 4	(2) 259 ± 7	(3) 624 - 3
⑤ 457÷6	⑥ 543÷5	⑦ 963÷8

 Salomie and her 5 friends are going to fold 360 paper flowers.
 If everybody folds the same number of paper flowers,
 how many paper flowers will
 each child make?



(4) **367÷9**

(8) 728÷6

There are 436 pencils as prizes for a school competition.
 The pencils are divided into sets of 3.
 Page 47
 How many sets of pencils are there? How many more pencils are needed to make 150 sets.







② If they make a group with the remainder, how many children are there in that group?



• Understanding the relationship between divisor, dividend and remainder.



Quadrilaterals





 On the dotted paper like the one on the left, make various quadrilaterals by joining the dots with four lines.
 Making various quadrilaterals

using these dots.







▶ Let's categorise the shapes you made.





Let's consider the names, ways to draw and the characteristics of various quadrilaterals.



The two lines (2) and (3) are perpendicular.



If the extended line of one line intersects perpendicularly with the other line, even if we cannot see the intersection point itself, the two lines are perpendicular.



Let's explore how to draw a perpendicular line.



5







- 6 Draw a line that is:
- **1** Perpendicular to line (a) and passes through point A.
- 2 Perpendicular to line a and passes through point B.





In the diagram below, line (a) and (b) are parallel.

Let's consider the following.



- Compare distances of AB and CD.
- 2 If you extend lines a and b, will they intersect?
- When you place a triangle ruler on line (b), it intersects line (a) at E. If you slide the ruler on line (b), what will happen with point E?

The distance between 2 parallel lines is equal at every point and they never cross no matter how far they are extended.

Let's find pairs of parallel lines from the quadrilaterals on page 52.





Let's explore how to draw parallel lines.

Read Mero and Vavi's methods and explain the reason why their methods are appropriate.



- Let's draw parallel lines.
- and b which are 2 cm apart
- 2 ⓒ and ⓓ which are 4 cm apart

Exercise

(a)

Let's draw lines with the following conditions.

- ① Draw a line which passes points A and parallel to line ⓐ.
- (2) Draw two lines that are parallel to (a) and 2 cm apart.







Let's use a pair of parallel lines to draw a trapezoid.
















- 7 Let's confirm the properties of parallelograms.
 - **1** The lengths of opposite sides.
 - 2 The size of opposite angles.







In a parallelogram, the opposite sides are equal in length and the opposite angles are equal in size.

O What is the sum of two adjacent angles in a parallelogram?







Let's compare the four sides of quadrilaterals \bigcirc and \bigcirc on page 52.



10 The figure below shows two arcs of circles with their centres at point A and C and the radius is same.

The two arcs intersect at B and D.



Connect the points

A B C D A to draw

a quadrilateral.

2 Check the lengths of the sides and the angles.

What quadrilateral is this?





12 Let's think about how to

draw a rhombus.



Exercise

Let's look for rhombuses in our surroundings.





Relationships of Quadrilaterals





Diagonals of Quadrilaterals

Let's connect the opposite vertices of these quadrilaterals.



Each line that you drew by connecting the opposite vertices is called a **diagonal**.

There are 2 diagonals in each quadrilateral.

- 2 Look at the parallelogram, rhombus, rectangle and square on the previous page 1 and match them with the following characteristics.
 - Quadrilateral(s) with 2 diagonals that have a perpendicular intersection.
 - 2 Quadrilateral(s) with 2 diagonals that are equal in length.

Quadrilateral(s) with 2 diagonals that are equal in length and have a perpendicular intersection.

- Quadrilateral(s) with 2 diagonals that are divided in half where they intersect.
- 3 Draw the following quadrilaterals by using the characteristics listed in 2.
- A rhombus with 4 cm and
 - 3 cm diagonals.



2 A square with 4 cm

diagonals.



8 What Shapes Can You Make?

- Look at the figure on the right. What quadrilateral can you make by connecting the following four points?
 - B, C, E and F.
 - 2 G, I, J and L.
 - \delta G, C, J and F.
 - 🕘 A, H, D and K.





K

F

L

A

G

В

С









70 = 🗌 – 🗌





(5) Opposite angles with equal size. (6) No parallel sides.

Division by 2-digit Numbers





The division of $80 \div 20$ can be reduced to $8 \div 2$.

2 There are 140 apples. If 30 apples are put in each box, how many boxes are needed and what is the remainder?
140 ÷ 30 = remainder
Is the remainder
Is the remainder
2 or 20?
There are 2
groups of 10 left.
Exercise
1 60 ÷ 30
2 160 ÷ 40
3 70 ÷ 20
4 320 ÷ 60



How many pencils will each child receive?

Let's think about how to calculate $84 \div 21$ in vertical form.



How to Make a Temporary Quotient (1)

Let's think about how to divide $96 \div 33$ in vertical form.

Estimate the quotient of $96 \div 33$ by thinking of

33)96

 $90 \div 30$ whose answer is the same as $9 \div 3$.



The first estimation of the quotient is called **temporary quotient**. If the temporary quotient is too large, we have to replace it with a quotient that is smaller by 1.



- 1 Make a temporary quotient.
- 2 Multiply the divisor and the temporary quotient.
- Replace it with a number that is smaller by 1.
- Make the temporary quotient smaller by 1 again.





How to Make a Temporary Quotient (2)

- Think about how to divide 170÷34 in vertical form.
- In which place value is the quotient written?





How to Make a Temporary Quotient (3)

Think about how to divide $326 \div 36$ in vertical form.

In which place value is the quotient written?

2) Think of $320 \div 30$ and make a temporary quotient.



Division by 2-digit Numbers (2)

There are 322 sheets of coloured paper. They are to be divided equally among 14 children. How many sheets of paper will each child receive?



receive?



To do division we decide the place of the quotient, write a number there, multiply, subtract and bring down, then repeat these steps.

Let's divide $980 \div 28$ in vertical form. In which place value is the quotient

written?

2	8)	9	8	0

3 851÷26

6) 578÷23

Remember to bring down the 0 in the dividend.



Divisions Where 0 is the Quotient

- 3 Let's think about how to divide 607 ÷ 56 in vertical form.
 - In which place value is the quotient written?
 - 2 What number is written in the ones place of the quotient?



The division of $859 \div 21$	A	B
in vertical form is shown	40 21)859	40 21)859
on the right.	84	84
Explain the division methods		15
in \widehat{A} and \widehat{B} .	19	

Exercise

1	Let's divid	de in vertical form.	
1	705÷34	② 913÷13	③ 856÷42

 $(4) 531 \div 26 (5) 576 \div 56 (6) 942 \div 47$

2 If there are any mistakes in the following divisions, let's correct them.

 $(\mathbf{1})$ 2 (2) 21 3 10 57)704 22)446 31)645 44 62 57 6 25 34 31 6

Rules of Division and Multiplication

Do these calculations by using the rules of division.

When we do division problems, the quotient remains the same even if the dividend and divisor are **multiplied** by the same number. The quotient remains the same even if the dividend and divisor are **divided** by the same number.



2 Let's compare two mathematical sentences to find rules about multiplication.



🌠 📶 E x e r c i s e 🦾 🏧 🥸





 1) 40 ÷ 20 	2 240÷60	③ 130÷40	④ 96÷32
⑤ 97÷27	6)738÷24	⑦ 344÷43	(8) 385÷56
9 411÷45	10 672÷28	(1) 453÷17	12 85÷19

There are 113 eggs. If you divide them equally amongst
 12 children. How many will each child get and what will
 be the remainder?

From a tape which is 7 m 60 cm long, how many 5 cm long tapes can you take out and how many cm will remain?

The table below represents the data of vehicles which drove past the front of the school from 9 o'clock to 10 past 9 in the morning. Let's represent it on the bar graph.

> Vehicle Data (9:00 am to 9:10 am in the morning)

Type of Vehicles	Number of vehicles
Car	++++- +++-
Bus	
Truck	++++-++++-
Others	
Total	



Page 81

 1 Let's summarise how to divide by 2-digit numbers. 1 The quotient is written from the place value. 2 The quotient in the tens place is calculated from . 32)768 3 The calculation for the quotient in the ones place is <u>calculated from <u>i</u> ÷ <u>i</u>.</u> 3 The calculation for the quotient in the ones place is <u>calculated from <u>i</u> ÷ <u>i</u>.</u> 2 Let's calculate in vertical form. 0 de ÷ 21 <u>i</u> 2 74 ÷ 15 <u>i</u> 5 505 ÷ 55 4 715 ÷ 42 <u>i</u> 5 567 ÷ 28 <u>i</u> 736 ÷ 36 3 Uncle Stanley bought plywood pieces for his house that cost 75 kina each at the total cost of 900 kina. How many pieces did he buy? 0 vertepring represion from an expression and calculating the answer. 4 Let's explain why the calculation 320 ÷ 40 can be done by 32 ÷ 4. 1 Et's find the numbers for each of the empty slots so that the products of all three numbers in each direction, vertical horizontal and diagonal are the same. 			o b l e	m	S	~	O
 2 Let's calculate in vertical form. •nderstanding division by 2-digit numbers in vertical form. 1 64 ÷ 21 (2) 74 ÷ 15 (3) 505 ÷ 55 (4) 715 ÷ 42 (5) 567 ÷ 28 (6) 736 ÷ 36 (7) 746 ± 75 (7) 746 ± 7	(1) (2) (3)	Let's summarise • Understanding division by 2-digit) The quotient is w) The quotient in the from ::) The calculation for place is : 3	how to divide by 2-d mumbers in vertical form. written from the ne tens place is calcu]. or the quotient in the 2.	ligit nu place ulated	mbers value 3	s. 9. 2)768	
 3 Uncle Stanley bought plywood pieces for his house that cost 75 kina each at the total cost of 900 kina. How many pieces did he buy? • Developing expression from an expression and calculating the answer. 4 Let's explain why the calculation 320÷40 can be done by 32÷4. • Explaining using rules of division. 5 Let's find the numbers for each of the empty slots so that the products of all three numbers in each direction, vertical horizontal and diagonal are the same. 	2 1 4	Let's calculate in • Understanding division by 2-digit) 64 ÷ 21) 715 ÷ 42	vertical form. anumbers in vertical form. ② 74 ÷ 15 ⑤ 567 ÷ 28	3 50 6 73)5÷55 36÷36	5	
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 Let's find the numbers for each of the empty slots so that the products of all three numbers in each direction, vertical horizontal and diagonal are the same. Image: Constant of the products of the products of all the pr	4	Let's explain why by 32÷4. • Explaining using rules of division.	the calculation 320	÷40 c	an be	done	
Using multiplication and division in different ways	5	Let's find the num empty slots so the three numbers in horizontal and dis	nbers for each of the at the products of al each direction, verti agonal are the same) I ical).	2 ®	۵ 6 ©	2 36 ©



- 2 Takale who is an athlete jumped 8 m 50 cm in a long jump competition. His height is 170 cm. How many times more than his height did he jump?
- A frog can jump 40 times of its length.
 The length of a frog is 5 cm.
 How many m can it jump?
 If you are able to jump 40 times your
 height, how many m and cm can you jump?





Ghandi is 135 cm tall.

He jumped twice the amount of his original height.

How many cm did he jump?





5

A grasshopper jumped about 10 cm high.

The distance of the jump was 120 cm.

How many times more than its height did the grasshopper jump?



6

Wangi jumped 5 m 40 cm in a long jump using a trampoline during a class game.

His height is 180 cm. How many times more than his height did he jump?



Line Graphs



Temperatures in Port Moresby and Tokyo (°C									(°C)			
Month	1	2	3	4	5	6	7	8	9	10	11	12
Port Moresby	28	28	27	27	27	26	25	26	26	27	28	28
Tokyo	6	7	10	15	20	22	25	27	24	18	11	9

Let's find out how the temperature changes and the differences

between the two places.

- Using the table above, let's explore the changes in temperatures of the 2 places from month to month and explain their differences.
- 2 The bar graph on the next page shows the temperature of each month in Port Moresby. Looking at the graph, explain the way the temperature changes for each month.



Line Graphs

The tops of the bars in the page 87 were connected with lines to make the line graph below.



What is represented by the vertical axis and horizontal axis?

A graph that uses lines to show changes like in monthly temperatures is called **line graph**.

O What is the temperature in March?

In which month is the temperature 26 degree Celsius?

- Let's draw a line graph of the temperature changes of Tokyo into the graph of temperatures in Port Moresby on page
 88 and compare them.
- In each place what is the highest temperature and in which month?
- 2 How does the temperature change? Compare the differences in the temperature change between Port Moresby and Tokyo.
- OBETWEEN Which consecutive months does the temperature change the most and in

which place?

4 Let's talk about the advantages of using line graphs.

We can easily compare the differences if we draw them on the same graph sheet.

Significant

Increase

Slight

Significant

Decrease Decrease

Slight

Increase



No

Change

Exercise

For which of the following situations $\triangle \sim \bigcirc$ is it better to use a line graph?

- (A) Your body temperature taken at the same time every day.
- B The types and numbers of vehicles that passed by your school in a period of ten minutes.
- © The numbers of children in your class with their favourite fruits.
- D The temperature recorded every hour at one place.
- E The heights of the children in your class.
- (E) Your height that was measured on each birthday.

How to Draw Line Graphs

- 1
- The table on the right shows the data of the temperature in a day. Draw a line graph from this table.

Temperature (16th of September)

Time(hours)	Temperature(°C)
9:00 am	18
10:00 am	20
11:00 am	22
12:00 pm	23
1:00 pm	24
2:00 pm	24
3:00 pm	23



Exercise

The table shows daily temperatures

at 1 pm for Manus which was recorded for 5 days.

Draw a line graph from this table.

5

Afternoon

Morning

Ideas for Drawing Line Graphs

 Ruth caught a cold. She took her body temperature and expressed it on a line graph.
 What was her temperature in (°C), at 8 o'clock in the morning?
 Ruth redrew the graph as shown below to make the change in her temperature easier to see.

What was her idea?





6 o'clock in the morning and

8 o'clock in the morning?



- Between which times did her temperature change the most?
- 6 How did Ruth's temperature change?



- The table on the right shows the amount of used papers and collected papers.
- Let's draw line graphs on the left by considering the scales on the vertical axis.
- 2 What can you read from the graph?

The Amount of Used and Collected Papers

(10 thousand tons)						
Year	Amount of used	Collected papers				
1996	3076	1577				
1997	3119	1654				
1998	2998	1657				
1999	3062	1706				
2000	3176	1833				
2001	3107	1912				
2002	3065	2005				
2003	3093	2044				
2004	3138	2151				
2005	3138	2232				
2006	3154	2283				
2007	3130	2332				

Exploring the Lengths of Shadows

Elijah recorded the length of the shadow and kept the data. The table below shows the records of the lengths of the shadows of a 30 cm stick measured in June and December. Let's show the data in the line graph on the next page.

	L	ength	of Sha	dows (June 2	21)		
Time (hours)	8	9	10	11	12	13	14	15
Length of shadows (cm)	51	27.8	20	16.8	16.3	18.1	23.1	36.1

207

Length of Shadows (December 21)

Time (hours)	8	9	10	11	12	13	14	15
Length of shadows (cm)	12.1	7.9	4.9	2.8	2.1	3.5	6	9.3





The table below shows how the temperature changed. Draw a line graph from the data in the table.

Page 94

Temperature					
Time(hours)	Temperature(°C)				
9:00 am	3				
10:00 am	4				
11:00 am	6				
12:00 pm	7				
1:00 pm	8				
2:00 pm	10				
3:00 pm	10				
4:00 pm	9				
5:00 pm	8				



1



 Consider the conditions A ~ D and decide which ones are better expressed as line graphs.

Understanding the advantages of line graphs.

- (A) The heights of the children in your class in April.
- B Your height as it was measured every April.
- © The temperature that was recorded at a particular time every day.
- D Temperatures that were recorded in different places at the same time.



- ② How is the second graph different from the first graph?
- ③ Let's find as many differences as possible.

Between which consecutive months did his weight increase the most? And between which consecutive months did his weight increase the least?



Decimal Numbers 1



How to Represent the Remaining Parts



Let's investigate how to represent the remaining part.

 Let's develop the smaller unit scale by dividing a 1 dL measuring cup into 10 equal parts.

2 How can we represent the amount of water in these cups by using dL?



2 How many decilitres of water are there in the following containers?
1 Clay Coffee cup

1 dL
1 dL
1 dL
1 dL

2 Ordinary Coffee cup

1 dL
1 dL
1 dL
1 dL
1 dL


Let's colour in the following amounts of water.





- 1 There are 2 dL and how many decilitres in the remaining parts?
- Oclour the scale on the right to show the amount of water in the water container.



8 How many units of 0.1 dL are equal to 2.4 dL.

On the number line, which amounts are expressed by
 ①, ②, ③ and ④ in dL? How many sets of 0.1 dL are their amounts of water?



Exercise

ก

 How many decilitres are the following amounts of water? Let's answer in decimals.

(1) 9 sets of 0.1 dL. (2) Amount of 3 dL and 0.5 dL.

- 2 Fill in the with a number.
- ① 2 dL and 0. 7 dL make _____ dL.
- 2 1 dL and dL make 1.8 dL.

④ 21 sets of 0.1 dL is equal to _____ dL.

(5) Amount of 2 sets of 1 dL and 3 sets of 0.1 dL make _____ dL.





Addition and Subtraction of Decimal Numbers



- 2 There are 2.5 dL of juice in a large cup and 1.3 dL of juice in a small cup. How many decilitres are there altogether? 2.5+1.3
 - 1 Let's think about how to calculate.
 - 2 Let's think about how many sets of 0.1 are there.

Addition of decimal numbers in vertical form can be done if we line up numbers according to their place value just like whole numbers.



The 0.9 m tape and the 0.3 m tape are put together.



of water in the container, how much water in L do we have?
2 Let's add in vertical form.

1 0.4+0.8	2 0.6+0.7	③ 3.2+1.9	④ 4.7+3.4
(5) 2.9 + 0.3	6 7.3+0.7	⑦ 0.1+0.9	(8) 6+3.5

- 5 There is a 2.5 dL of milk. 1.2 dL
 - is used to make soup.

How many litres are left?

2.5 - 1.2

- Think about how many sets of 0.1 are there.
- 2 Let's subtract in vertical form.

 Kekeni has a 1.9 m ribbon and Ambai has a 3.5 m ribbon.
 Which ribbon is longer and by how many metres?
 3.5 – 1.9

- Think about how many sets of 0.1 are there.
- 2 Let's calculate in vertical form.







I need to borrow. 15-9 sets of 0.1, then...

Exercise

Let's subtract in vertical form.

1 0.7 - 0.3	2 0.9-0.6	③ 3.9-1.5	④ 6.7 – 1.4
(5) 2.8 – 0.5	6 4.1 – 1.7	(7) 5.4 - 2.5	(8) 2.8 - 0.9



When to Use Your Exercise Book !

Let's write in your exercise book what you have learned about

the meaning of decimals

and how to calculate.

 \bigcirc What I understood.

 \bigcirc What was interesting to me.

○ What I felt was difficult.

 \bigcirc What was good to me

about my friend's ideas.

How do you

express things

using decimals?

 \bigcirc What I want to do next.

12. Decimal Numbers 3 1. What I understood. O Decimal and Whole Numbers · In whole numbers, every number multiplied by 10 moves to the next higher place. · Numbers which is in the ones places divided by 10 moves to the tenths places. · Write a decimal point between the ones place and the tenths place. 2. What was interesting for me. · I can express any number smaller than 1 the same as the whole numbers. · Quantities expressed by dL and mm can be expressed by L and m using decimals. · I can do the addition and subtraction of decimals in vertical form the same as for calculating them with whole numbers. 3. What I want to do next. · I want to represent any decimal number smaller than decimal numbers with the tenths places. To represent them, I think of dividing them into 10 equal parts.

Date: / / ()

Exercise • • •
1 Let's fill in the with a number.
① The sum of 3 dL and dL is 3.4 dL.
② 2.3 dL is sets of 0.1 dL.
③ The sum of 1 m and 0.7 m is m.
④ 27 sets of 0.1 cm is cm.
\bigcirc 2.5 is the sum of 2 and \bigcirc .
6 sets of 0.1 is 4.3.
2 Let's write the numbers that each t is pointing at. Page 101
0 1 2 3
3 Which number is larger? Fill in the with a correct
$(0.8 \ 1.1 \ 2 \ 2.3 \ 3.2 \ 3 \ 5.1 \ 5$
(1) 3.4 + 1.5 (2) 0.2 + 0.9 (3) 5.7 + 2.6 (4) 4.3 + 0.7
(5) 5.8 - 3.3 (6) 4.6 - 2.7 (7) 6.2 - 5.8 (8) 5 - 4.1
 Let's draw the following shapes. ① A circle with radius 4 cm. ② A circle with diameter 6 cm. ③ An equilateral triangle with 6 cm sides. ④ An isosceles triangle with sides of 7 cm, 7 cm and 5 cm.

Problems R 🕅 🔊	
When some children measured the amount of water in a bottle with a 1L measuring cup, they found that	ining art
there was 1 litre and a remaining part. Fill in the with a number. • Understanding how to represent the remaining part.	
unit, we need to divide the 1 L measuring cup equally into	IS THE
 ② The amount of water in the remaining part is L. ③ The amount of water in a bottle is L. ④ This amount is sets of 0.1 L. 	
 2 Fill in the with a number. • Understanding the system of decimal number. 1 1.4 is sets of 0.1. 2 sets of 0.1 is 1. 3 4.3 is the sum of 4 and . 	
3 Let's calculate. • Calculating addition and subtraction of decimal numbers. 1 $0.6 + 5.2$ 2 $1.5 + 3.8$ 3 $3.6 + 1.4$ (4) $4.7 - 1.6$ (5) $6.3 - 5.9$ (6) $7 - 0.7$	
4 There are 0.8 L of coconut oil in a small bottle and 1.1 L of	f

There are 0.8 L of coconut oil in a small bottle and 1.1 L of coconut oil in a large bottle. How many litres are there altogether? And how many litres is the difference? • Write the expression with decimal numbers and find its answer.

Round Numbers



>> The following family members (Father, Mother, Julie and Wally)

went to a car dealer yard and had the following discussion.

Let's think about the ways in which they are talking about the price of a car selling at 26 300 kina.





Let's think about how to express and use approximate numbers.

Rounding

1

In the scale of 10 thousand, is the price of the car, 26300

kina, closer to 20 thousand kina or 30 thousand kina?





An approximate number is also called **round number**. If a number is more or less than 30 thousand, it is said to be **about 30 thousand**.

The table below shows the total number of students for enrollment to Elementary schools for 3 provinces.

About how many students are there in each province in

terms of ten thousands?

	Madang Province	Simbu Province	Oro Province
Number of students	71238	39562	33695

Expressing Numbers as Round Numbers

Let's think about how to express the numbers of Elementary

school students in 2 as round numbers in the ten thousands

place value.



Which place value should we consider?

Expressing a Number as a Round Number

When we want to express a number as a round number to the nearest ten thousand, we have to look at the thousands place and the number on the right.

Because 3695 in 33695 is smaller than 5000, we can think of it as 0.

 $33695 \rightarrow 30000$ About 30 thousand If the number in the thousands place is 0, 1, 2, 3, or 4 as less than 5 we can leave that number unchanged and replace the numbers to the right with 0000. As 9562 in 39562 is larger than 5000, we can think of it as 10000.

 $\begin{array}{c} 10000\\ 39562 \rightarrow \textbf{40000}\\ \textbf{About 40 thousand} \end{array}$ If the number in the

thousands place is 5, 6, 7, 8, or 9 as greater than or equal to 5 we add 1 to the number in the ten thousands place and replace the numbers to the right with 0000.

The method shown above for expressing round numbers is called **rounding or round off**. Greater than or equal to 5 means "Just 5 or greater (larger or more) than 5." Less than 5 means "smaller than 5 and not equal to 5." Less than or equal to 5 means "Just 5 or smaller than 5." Just 5 or smaller than 5."

Less and equal to 5 includes 5.

Let's show the price of the car, 26300 kina by rounding to the thousands place using the scale below.



rounding by using the terms of "greater and equal to" and "less than". Round the following numbers to the first place and second place from the largest place value. Let's think about which place value should we round and write the round number in the table below.

The first highest place 7869The second highest place

	7869	4139	52630
Round number by the first highest place	8000		
Round number by the second highest place	7900		





- Let's round the following numbers to the nearest place value indicated below.
- ① 361 (Hundreds place)
- 2 4782 (Hundreds place)
- ③ 53472 (Thousands place)
- ④ 425000 (Ten thousands place)
- Let's round the following numbers to the nearest ten thousands.
- (1) 46719
 (2) 570814
 (3) 458341
- **3** Fill in the ____ with round numbers.

(1) The number rounded in the hundreds place become 34000

is larger than and smaller than

Rounding Up and Down



There are 876 sheets of papers. If bundling in 100 sheets,

how many bundles can we have?



Here, we take down the numbers less than 100, it is called **rounding down** to the 100s place.

2 823 people went on a trip. One ship could take 100 people.

How many ships are used?



Here, we consider the rest to add one more 100, it is called

rounding up to the 100s place.

There are several ways to get to approximate numbers : rounding numbers, rounding down numbers and rounding up numbers.

Exercise

Let's get the second highest place number by rounding down.

Let's get the first highest place number by rounding up.

① 28138② 3699③ 42500④ 9810





- The table on the right shows the number of spectators in the PNG Games in a day in 2018.
- About how many people in terms of thousands were spectators on that day?

2018 PNG Games, WNBP

The Number of spectators in the PNG Games

Morning	2784
Afternoon	3428



I add the numbers of people in the morning and afternoon. 2784 + 3428 = 6212 I round the number to the nearest thousands and got 6000 spectators.



Vavi's idea

I round the numbers for the morning and afternoon to the nearest thousands. $2784 \rightarrow 3000$ $3428 \rightarrow 3000$ Then I add the 2 numbers. 3000 + 3000 = 6000(Spectators)

A number calculated by using round numbers is called **rough estimate**.

- 2 How many more people watched the games in the afternoon than in the morning, in terms of hundreds?
 - Primary school teachers in Madang Province will attend the EQUITV Project workshop together. Their expected expenses are shown on the right. About how much money should they prepare?



To which place value

should we round?









- Rose's family went shopping before
- going to the camp.
- If they spend more than 1500 kina
- in the store, they can receive a
- free mobile phone.
- The table on the right shows the
- shopping list.
- Can they receive a free mobile phone?

Which approximation method should we use to determine if they get a free mobile phone or not?

Shopping List		
Item	Amount (Kina)	
Sleeping bag	128	
Tent	150	
Small generator	1320	



315 women from Buka planned to go for a crusade in Rabaul.
Ship tickets cost 190 kina per person.
How much do they need for all the women in terms of ten thousands?
315 × 190



- In order to approximate the cost, how should we consider 190 kina in terms of hundreds? How should we consider 315 women in terms of hundreds?
- 2 Let's estimate the cost by approximating numbers.
 We will approximate the number to the hundreds place.
 315 × 190 → 300 × 200
- 3 Calculate 190×315 by using a calculator and compare your answer with the estimation.







Let's estimate the product to the highest place value.

1) 498×706

2 2130 × 587

The weight of a semi-tralier is 6270 kg.
The weight of Ayaki is 38 kg.
By how many times is the weight of a semi-tralier to Ayaki's weight?
6270÷38

 Estimate the size of the quotient by rounding the dividend and divisor to their highest places.



$$\begin{array}{cccc} 6000 \div 40 \\ \hline \div 10 \\ 600 \div 4 \end{array}$$

2 Calculate 6270 ÷ 38 by calculator.

Exercise

 How many times is the Statue of Liberty in New York City to the radio tower?

- 2 Let's estimate the quotient.
- (1) $37960 \div 78$
- ② 90135÷892



27 m

87 m

87m

6 Jane's class discussed about the Malaria cases in PNG.

The table below shows the numbers of Malaria admissions

for all ages in PNG.

Let's draw a line graph.

- For drawing, let's round numbers to the nearest thousand on the table.
- 2 Let's identify the highest and lowest rounded number of cases.

lowest rounded number of cases.

Output the rounded numbers and draw

a line graph considering the scale.



The Number of Malaria admissions (all ages)

Years	Number of admission	Rounded Numbers (cases)
2001	18255	
2002	18398	
2003	18602	
2004	21701	
2005	19821	
2006	19030	

Exercise Se Se
1 Let's do the following rounding problems.
① Round the following numbers to the nearest ten thousands.
(A) 47560 (B) 623845 (C) 284999
② Round the following numbers in the hundreds places to
thousands.
(A) 38500 (B) 513291 (C) 49781
③ Round the following numbers to the second highest place.
(A) 67325 (B) 748500 (C) 195000
2 Answer the following questions.
38478, 37400, 38573, 37501
38500, 37573, 38490, 37499
1 Which numbers become 38000 when rounded to the
nearest thousands?
② Which numbers become 37000 when rounded down to
the nearest thousands?
③ Which numbers become 39000 when rounded up to
the nearest thousands?
Apply the rule of rounding in 1 Consider the case of how we round up and down in 2 and 3



Expressions and Calculations





A

Jimmy's mother and sister went shopping with 500 kina.

They bought a fork set for 120 kina and a rice cooker for 360

kina at a supermarket. How much change do they have left?



Let's write Jimmy's sister's idea as a mathematical sentence.





The Order of Calculation



6

Let's find the number, but we must be

careful about the order of calculation.

 $12 + 15 \div (5 - 2)$

Let's calculate this expression in numerical order (1), (2) and (3).





If you write the expressions in order using an equal sign like the above, the calculations can be easier.





Let's calculate.

(1) $12 \div 2 + 3$ (2) $12 \div (2 + 3)$ (3) $(5+4) \times (6-2)$ (4) $5+4 \times (6-2)$ (5) $90-50 \div (4+6)$ (6) $(90-50) \div 4+6$

Rules for Calculations

Multiplication

Calculate the following expressions (A), (B), (C) and (D) in an easier way. Let's think about why we can calculate them as shown below.

- (A) 5+397 → 397+5
- (B) 389+234+266 → 389+(234+266)

 $\times = \times \times$

(

- © 55×248 → 248×55
- D 18×25×4 → 18×(25×4)



 When 2 numbers are multiplied, the product is the same even if the multiplicand and the multiplier are reversed.

② When 3 numbers are multiplied, the product is the same even if the order of multiplication is changed.

 $\times \land$) $\times \bigcirc = \checkmark \times (\land \times \bigcirc$)



3 A store sold mattresses for 200 kina each and gives a 20 kina discount for each mattress, so I bought 6 mattresses.

How much is the total cost? Let's represent this as

expressions using 2 methods.



Calculation of Whole Numbers

Let's summarise how to do calculations of whole numbers.



Multipication and Division

2 Boat fares were given to all 315 children during the school excursion. One return boat fare costs 436 kina for each member.



2 Let's find the product for 436×315 .

A principal wants to buy as many library books as possible with 5000 kina. One science book is sold at 68 kina at a discount store. How many science books can the principal





Let's make mathematical stories using the sentences below and exchange stories and answers with each other.

Athletic festival at Lae city.

The awards were given to the participants of the competition. The budget for the participation awards was 120000 kina and 500 participation awards were prepared. 480 lunch boxes for the participants and officials at 25 kina each were also prepared. 1758 men and 1564 women came to the festival that day, including the spectators. Various events were held in the morning and the 100-metre sprint attracted the most number of participants, 18 groups of 7 took part. Stalls were also opened. 147 Aigir packs at 15 kina and 184 fish and chips at 20 kina each were sold. When the festival ended they were still short of 43 participation awards. It seems that they should prepare more participation awards for next year.

How much did all lunch boxes cost? Expression : 480 × 25 = 12000 Answer 12000 kina

Exercise

Let's calculate.

3064 + 1987
 5006 - 3997

(5) 383×247

- ④ 4000 3016
- $(7) 2652 \div 26$ (8) $6432 \div 67$
- 3 6102 2938
- ⑥ 738×952

💒 🗶 📓 E X e r c i s e 🏂



- (3) There are 100 sheets of coloured papers. 18 students received 4 sheets of papers each. How many sheets of papers are left? $-4\times$
- ④ Father paid 500 kina for 150 soft drinks that costed 3 kina each. How much is the change in kina?
- ⑤ Pain killer medicine that costs 20 kina each and a cough medicine that costs 50 kina each make one set. There are 15 sets. How much is the total cost?

(+)×15

X





12

0

2

>>> Which one is larger?





Scarfs





Kerema Mats





3



We are going to make rectangular and square flower beds with 20 blocks around the edges. Are the areas same or different?







Let's think about how to compare the areas of rectangles and squares and how to represent the areas with numbers.




Area can be represented by the number of unit squares.

The area of a square with 1 cm sides is called **one square centimetre** and is written as 1 cm². The unit cm² is a unit of area.



Let's measure the areas of various things by using some 1 cm² papers as shown below.







What is the area in cm² of these shapes?





5 What is the area in cm² of the coloured figures below?



Area of Rectangles and Squares



The area of a rectangle is found using length and width.

Area of a rectangle = length × width









140 = 🗌 ÷ 🗌





Let's make a square with

1 m sides.

Let's see how many children can stand on this square.





The area of a square with a side of 1 m is called **one square metre** and is written as **1 m**². The unit m² is also a unit of area just like cm².



What is the area in m² of a flower garden with a length of 3 m and a width of 6 m?



2 Let's find the area of the figures below.



3 Let's see how many cm^2 are there in 1 m^2 .

- How many 1 cm² can be lined up vertically?How about along the width?
- 2 What is 1 cm² in m²?



4

Make a newspaper poster with a length of 2 m and a width of 80 m.

What is the area of the poster in cm²?

To find the area, we need to express all the lengths using the same unit.

200×80=

- 5 There is a rectangular field with a length of 30 m and a width of 40 m.
 - **1** How many m² is the field?
 - 2 How many 10 m squares can be placed in the field?





O What is the area in a of the field?





What is the area in m^2 of the rectangular plaza with a length of 60 m and a width of 80 m? What is this in a?



- What is the area of the farm in m²?
- 2 How many squares with 100 m sides can be placed in the farm?

The area of a square with a side of 100 m is called **one hectare** and is written as **1 ha**. The unit **ha** is used to show large areas of plantations, farms and forests.

What is the area in ha of the plantation?







The photograph below shows PNG LNG site at Papa village

in Central Province. The white line area is a square with 3 km sides.

 How many squares
 with 1 km sides can be placed inside the figure?



LNG Plant, Papa, Central Province

The area of a square with a side of 1 km is called **one square kilometre** and is written as **1 km²**. The unit km² is used to show large areas such as islands, provinces and countries.

2 What is the area in km² of the photograph?



Palm oil Plantation, Kimbe, WNBP





of 5 cm can be found by 3×5 . Let's explain the reason.



▶▶ How can we express two units as one unit?



Mary and John each poured this much water.

How many litres is in each kettle?









Let's investigate how to represent the remaining part that is smaller than 0.1 L.

 Let's measure the amount of water that is less than 0.1 L through making the smaller unit scale by dividing 0.1 L into 10 equal parts.



Output the amount of 1 small unit scale?



The amount that is obtained by dividing 0.1 L into 10 equal parts is written as 0.01 L and is read as **one hundredth litre or "zero point zero one litre"**.

The amount of John's water	1 of 1 L	is 1 L
is 1.36 L and is read as	3 of 0.1 L	is 0.3 L
"one point three six litres".	6 of 0.01 L	is 0.06 L
	Total	1.36 L



Noko flies her paper plane. The length of flying the paper plane is 2 m 83 cm. Write this length by using only metre as the unit.





Let's represent 1 kg 264 g by using kilogram as the unit.



Exercise

100 g is $\frac{1}{10}$ of 1 kg \rightarrow 0.1 kg 10 g is $\frac{1}{10}$ of 0.1 kg \rightarrow 0.01 kg $1 \text{ g is } \frac{1}{10} \text{ of } 0.01 \text{ kg} \rightarrow 0.001 \text{ kg}$

Let's represent the following quantities by using the unit shown in (). ① 1435 cm (m) ② 42195 m (km) ③ 875 g (kg)





Addition and Subtraction of Decimal Numbers

There is 2.25 L of water in a tank. When 1.34 L of water is poured, how much water is there altogether? Write a mathematical expression. 2 Let's think about how to add. 1 1 I'll add the 10 100 numbers according to their place values. 5 If there is no decimal point, it's the same as whole +numbers. Addition Algorithm for 2.25 + 1.34 in Vertical Form 2.25 2.25 2.25 + 1.34+ 1.3 4 1.34 359 3.59 Put the decimal Align the numbers Calculate each according to their place value in the point of the sum in place values. same way as the same position whole numbers. as the decimal points above.

For adding decimal numbers in vertical form, we align the numbers according to their place values in the same way as whole numbers.



4 Let's think about	t how to	1.2 5
subtract 1.25-0.	67.	- 0.6 7
Exercise		·
Let's calculate.		
1 5.78 - 3.44 (2) 1	.54-0.23 ③ 8	.37 – 2.09 ④ 6.48 – 1.92
5 Let's think about	t how to subtrac	t the following.
1.82 - 1.82	2	6.71-3.9
2.3 2 - 1.8 2		6.71
3 6−0.52	4	5.03-4.25
6 There is a 2.15	m tape. Cut off 8	35 cm of the tape.
How much tape	is left?	
7 Let's explain the	rules of calcula	ations in decimals and why
the following me	thod is appropr	iate,
when 🔜 = 3.8, 🔺	= 2.3 and $= 2$	2.7.
2 + + = +	· (▲ + ●)	
Exercise		
Let's calculate.		
1 0.54 - 0.34	② 1.96 – 0.56	3 7.28 - 2.4
④ 9.15 - 8.6	5 4 – 1.26	(6) 3.4 – 1.84
7 7.08 - 0.29	⑧ 4.07 – 1.98	(9) 2.03 – 1.65





Kila's class holds a paper plane competition.

The group with the longest combined distance is the winner.

For group D to win, how long must Nick throw a paper plane

in metres?

5

• Calculating decimal numbers.

Grou	ID A		Group B			Group C			Grou	ıp D
Kila	2.57		Sam	3.26		Vagi	2.85		Risa	2.68
Sane	2.69		Mata	2.85		Ireen	2.96		Rex	3.2
Ben	2.7		Paul	3.17		Raka	2.8		Nick	

Thinking about How to Calculate



160 = 🗌 + 🛄



Think about how to calculate 1.5×3 using the above ideas.

We can change the order of multiplication, so $1.5 \times 3 = 3 \times 1.5$

















Arrangement of Data

Hello First Aid

Can I have the

record of injuries for this month?

teacher!

Samuel was injured during sports day. He wants to make a poster to tell children to be more careful.



Yes, I have

some records



Samuel's school.

Record of Injuries

Grade	Locations	Type of injury	Grade	Locations	Type of injury
5	Basketball court	Bruise	7	Volley ball court	Scratch
4	Soccer field	Cut	8	Soccer field	Scratch
5	Basketball court	Bruise	6	Classroom	Cut
7	Volley ball court	Scratch	6	Soccer field	Sprained finger
3	Classroom	Scratch	5	Volley ball court	Sprain
3	Soccer field	Fracture	5	Classroom	Scratch
6	Classroom	Scratch	6	Basketball court	Bruise
5	Volley ball court	Cut	4	Classroom	Cut
4	Soccer field	Scratch	8	Soccer field	Bruise
5	Classroom	Scratch	6	Volley ball court	Scratch
3	Classroom	Bruise	4	Basketball court	Bruise

Let's think about how to make a table to see the locations and the types of injuries.

Arrangement of Table

- Let's arrange the data in the above table and check the injuries at the school.
- **1** Check where the injuries

happened.

A Where do injuries happen most frequently?

Draw a table and check.

B Tell everyone what you have discovered.

Number of Children and Locations

Locations of injury	Numbers of childre		
Soccer field	+++++	6	
Basketball court			
Volley ball court			
Classroom			
Total			

- 2 Check the types of injuries.
 - What types of injuries

 happen most frequently?
 Let's draw a table and check.

 B Tell everyone what you have noticed.



What kind of table can we draw to see the locations and types of injuries at a glance?

Number of Children and Injury

Type of injury	Numbe child	rs of ren
Cut		
Bruise		
Scratch		
Fracture		
Sprained finger		
Sprain		1
Total		

2

Let's check to see where the injuries happened and the types of injuries. Fill in the table with a number for the location and types of injuries.

Туре	C	ut	Bruise	Scr	atch	Frac	ture	Spro fing	ained ger	Spr	rain	Total
Soccer field					, ,							
Basketball court					 							
Volley ball court					 							
classroom		2	I I									
Total												

Locations and Types of Injuries

- What is the most frequent injury by location and type?
- 2 Where did the largest number of injuries happen?
- What can you conclude from the table above?



Arrangement of Data



Morea asked her classmates to draw a \bigcirc (circle) to see if

they have any cats or dogs at home.



- What kind of groups can they make from the way they are marked?
 - A How many children drew 2 O and what kind of group is this?
 - B How many children drew 1 O and what kind of group is this?

 - D How many children drew nothing and what kind of group is

	this? Handeper (Gewa cat dog)										
2 (Complete the tables below.										
A		Cat &	Cat	Dog	Nothing		D	Yes	2		
		Dog	only	only			ρο	No			
	Number of Children	2					Т	otal			
3 H	How many children have dogs only?										

4 How many children have cats?



Gima investigated the traffic accidents in her town.

From her data, make the table below and explain what you noticed to your friends.

When	Cause	When	Cause
Playing	Running into the street	Playing	Crossing in front of cars
On the way to or from friends house	Outside the crosswalk	On the way to or from friends house	Running into the street
Playing	Running into the street	Shopping	Running into the street
Playing	Running into the street	Playing	Crossing on red light
On the way to or from school	Outside the crosswalk	Playing	Running into the street
Playing	Crossing on red light	On the way to or from school	Crossing in front of cars
Shopping	Crossing in front of cars	On the way to or from school	Running into the street
Playing	Running into the street	Playing	Outside the crosswalk
On the way to or from school	Running into the street	Playing	Running into the street
Shopping	Outside the crosswalk	On the way to or from school	Running into the street
Playing	Crossing on red light	On the way to or from school	Outside the crosswalk

Accidents with Primary School Children (Gima's City for One Year)

Accidents with Primary School Children





Take extra care when travelling on the road side to avoid accidents.

168 = 🗌 – 🗌

1



The table below is a record of injuries for the grade 4 children

in Robert's school. Complete the table below.

Sprained finger

• Understanding how to make a table to show two things at once.

Volleyball court



Scratch

Place Name Place Type of injury Name Type of injury Kara Soccer field Soccer filed Bruise Scratch Sasa Ted Classroom Cut Yema Soccer filed Cut Karo Wena Classroom Scratch Volleyball court Scratch Ziko Volleyball court Volleyball court Bruise Sprain Yaga Sete Basketball court **Bruise** Dada Classroom Scratch

Locations and Types of Injuries

Manu

Volleyball court

Record of Children Who Had Injuries

			-	
Type of Injury Place	Scratch			Total
Volleyball court				
Total				



5D

Nina

Julie made a record about the brothers and sisters of her

classmates. There are 36 children in the class.

• Making and reading a table. Children who have older brothers...12

Children who have older sisters...6

Children who do not have any older

brothers or older sisters...18

Complete the table on the right.

			Older I	Total		
			Yes	/es No		
Cine		Yes				
טוטופו	cictor	No				
	Total				36	



Multiplication and Division of Decimal Numbers

Calculations of (Decimal Number) × (Whole Number)





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






Calculations of (Decimal Number) + (Whole Number)





0 as the Quotient in the Ones Place

When we divide a 4.5 m tape equally among 9 children, how many metres will each child receive? 4.5÷9



- Let's think of ways on how to calculate.
- 2 Let's think about how to divide in vertical form.
 - We put the decimal point of the quotient in the same place as the decimal point of the dividend and write 0 in the ones place of the quotient because 4 is smaller than 9.
 - ② Since 4.5 is 45 sets of 0.1, we can calculate by using the same method that we used for whole numbers.

4 Let's explain how to divide $1.61 \div 7$ in . 7)161 7)161 7)161 14 21 21 21 21 21 0

Let's divide in vertical form.

Exercise

1 3.5÷5	(2) 4.8÷6	③ 5.4÷9
④ 1.62÷3	(5) 2.45÷5	6 3.96÷4



9)4.5

Dividing Continuously



Division that is continued until the remainder is 0 is called "**dividing continuously**".





Exercise

There is a 47.6 m of ribbon. If we cut it into 3 m each,

how many 3 m ribbon are there and what is the remainder in m?

2 We divide a 2.3 L of juice equally among 6 children.				
How many litres does each one receive?	÷6			
Let's write a mathematical expression.	L ? 2.3 Children 1 6			
2 Let's think of ways on how to calculate.	÷0			
On the right, we can divide continuously.	0.383			
How can we say the answer?	<u> </u>			
Output the quotient to the hundredths	5 0 <u>4 8</u>			
place and give the answer to the 20				
nearest tenths.	2			
When the dividend is not divisible by the divisor or when the number of places become too long, the quotient is rounded.				
Exercise				
Let's calculate. Round the quotient to the hundredths place				
and give the answer to the nearest tenths.				
1 5.5÷8 2 9.9÷7 3 67.8÷79 4 4	2.9÷14			

2 Divide a 16.3 m tape equally into 3 sections. How many metres is one section? Round the quotient to the hundredths place and give the answer to the tenths place.



is each section?



	r 🕺 🖈	o b l e	m s	N 😻 📂		
1	Let's summarise the multiplication and the division of					
1	decimal numbers. • Understanding how to calculate multiplication and division of decimal numbers. 1) Since 2.7×5 represents $27 \times 5 = 135$ as the unit of, the					
	answer 2.7×5 is					
2	Since $6.48 \div 9$ re	presents $648 \div 9 = 72$	as the u	nit of, the	9	
	answer 6.48 \div 9 i	s		2		
3	Since 13 in A m	eans 13 sets of	shown	4)9.3		
	on the right, 9.3	4=2 remainder].	<u>o</u> 13 ← A		
2	Let's calculate in • Calculating multiplication and div	vertical form.				
1	2.4×3	2 2.8×12	30).12×5		
4	7.2÷4	(5) 41.6÷26	63	3.78÷6		
3	There is a book w	vith a length of 14.8 of	cm and w	idth of 21 cm.		
	What is the area of this book's cover in cm ² ?					
4	Divide 36.5 cm o	f wool equally into 5	sections.	How long in		
	• Understanding the situation of di	ection? vision problem.		m		
5	Sophie and Alfie into two areas sh When the two are fill in the with • Understanding the situation and	divided the area own on the right. eas are the same, a number.	3 m Soph	nie 9 Alfie 9	\ 9.5 m /	



What are the amounts of water in Molly's bottle and Steven's bottle in litres, respectively?





Let's think about how to represent fractions larger than 1 and how to calculate.







Equivalent Fractions

Let's investigate the following by using this fraction wall.



- 1 Let's read out the following fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{7}$, $\frac{1}{8}$, $\frac{1}{9}$ and $\frac{1}{10}$ from smallest to largest.
- 2 Let's replace the numerators in 1 with 2 and read them again from the smallest to the largest.

When the numerator is the same and the denominators become larger, the fraction becomes smaller.



3 Let's look at the number line on the previous page,

write the fractions that are equal to the following fractions.



- Let's look at the number line and find other fractions that are equal to the fractions in (3).
- 6 Let's talk about what you have learned and summarise the results.





2 Let's explain how to calculate $1\frac{3}{6} + 2\frac{3}{6}$ by using the diagram.



Let's think about how to calculate $3\frac{4}{7} + \frac{3}{7}$.

When adding mixed fractions, add the sum of the whole number parts and the sum of the fraction parts. When the sum of the fraction parts becomes improper fractions, carry up a part of the whole number.

$$\begin{array}{c} 1 \\ 1 \\ \frac{1}{3} + 2 \\ \frac{1}{3} \\ 4 \\ 2 \\ \frac{2}{6} + 4 \\ \frac{3}{6} \\ \hline \end{array} \\ \begin{array}{c} 2 \\ 3 \\ \frac{2}{7} + 1 \\ \frac{3}{7} \\ \hline \end{array} \\ \begin{array}{c} 3 \\ 4 \\ \frac{3}{8} + 2 \\ \frac{4}{8} \\ \hline \end{array} \\ \begin{array}{c} 3 \\ 4 \\ \frac{3}{8} + 2 \\ \frac{4}{8} \\ \hline \end{array} \\ \begin{array}{c} 6 \\ 3 + 3 \\ \frac{5}{6} \\ \hline \end{array} \\ \begin{array}{c} 7 \\ 1 \\ \frac{2}{3} + 2 \\ \frac{2}{3} \\ \hline \end{array} \\ \begin{array}{c} 7 \\ 1 \\ \frac{2}{3} + 2 \\ \frac{2}{3} \\ \hline \end{array} \\ \begin{array}{c} 8 \\ 1 \\ \frac{5}{7} + 1 \\ \frac{3}{7} \\ \hline \end{array} \\ \begin{array}{c} 8 \\ 1 \\ \frac{5}{7} + 1 \\ \frac{3}{7} \\ \hline \end{array} \\ \begin{array}{c} 9 \\ 2 \\ \frac{1}{5} + 3 \\ \frac{4}{5} \\ \hline \end{array} \\ \begin{array}{c} 9 \\ 2 \\ \frac{1}{5} + 3 \\ \frac{4}{5} \\ \hline \end{array} \\ \begin{array}{c} 9 \\ 2 \\ \frac{1}{4} + 2 \\ \frac{3}{4} \\ \hline \end{array} \\ \begin{array}{c} 1 \\ \frac{2}{7} + 4 \\ \frac{6}{7} \\ \hline \end{array} \\ \begin{array}{c} 1 \\ \frac{2}{7} + 4 \\ \frac{6}{7} \\ \hline \end{array} \\ \begin{array}{c} 1 \\ \frac{1}{4} + 2 \\ \frac{3}{4} \\ \hline \end{array} \\ \end{array}$$

Evercise



Let's explain how to calculate $3\frac{2}{5} - 1\frac{3}{5}$ by using the diagram.



When the numerators of the fractional parts cannot be subtracted, calculate by regrouping from the whole number parts of the minuend.





difference in km?



Rectangular Prisms and Cubes

▶ Let's look for various types of solid shapes in our daily lives.

Categorise them by investigating the faces of the solid shapes.





Joyce categorised them as follows.

How did she categorise them?





Let's investigate the characteristics of the solid shapes and how to make them.



About Rectangular Prisms and Cubes. Fill in the blanks in the table below with numbers or words.



		Rectangular prism	Cube
Face	Shape	Rectangle or square	
	Number of faces		
Edge	Length		
	Number of edges		
Vertex	Number of vertices		



- Nets of Rectangular Prisms and Cubes
 - A rectangular prism is shown on the right.
- Turn and trace it along its edges,

respectively.





Output the figure above on the right, let's make the rectangular prism.



- 2 Let's make a rectangular prism box for storing cards.
 - Draw six faces and arrange them for folding.
 - Let's fold the shape.



Output: Out



- Let's fold the net as shown on the right.
- Colour the face opposite to the blue face BGJM.
- Oircle the points that overlap point L.
- Olour the side that

overlaps with the edge EF.





box as shown on the right.

 Draw the rest of the net as shown below.





2 Copy the net on a sheet of paper and fold it.





2 Let's draw different nets that make cubes.





- Relationships between Faces and Faces, Edges and Edges
 - Take off the top of a rectangular prism and put the right angle of a set-square against the inner faces.



- 2
- Place a tool to measure the right angles on the outer faces of a cube as shown on the right.



Any adjacent two faces of a rectangular prism and cube are **perpendicular** to each other.

.



on the right.

Which faces are perpendicular to one another?



Which faces are not

perpendicular to one another?

Two faces are parallel when they never intersect each other such as b and d, and c and e.

- The figure on the right shows a rectangular prism box.
 Let's find the pairs of parallel faces.
- 5 The figure on the right shows a rectangular prism box.
 - Which edges are perpendicular to edge AB?.





2 Which edges are parallel to edge AB?





Let's check the cubes in the same way as

you did in 🛐, 🚺 and 🚺.





Relationship between Faces and Edges

- 7 The figure on the right shows a rectangular prism.
- Is edge BF perpendicular to face EFGH? Explain the reason.
- What other edges are perpendicular to face EFGH?





- 8 The figure on the right shows a rectangular prism.
 - Is edge AB parallel to face EFGH?
 Explain the reason.
 - What other edges are parallel to face EFGH?





Look for edges that are perpendicular to the floor in your classroom. Look for edges that are parallel to the floor.





How to Represent Positions

The figure on the right shows the position of a game called checkers when a piece is moved on the board. This movement is called "6 , 4". "6 , 4" tells the position of a piece that is moved. The position of the piece can be represented by writing two numbers.



There are blue circles in \triangle .

Remove 2 blue circles and design a symbol of 8.



The positions of the blue circles that have been removed are represented as (2,2), (2,4).

- 2 Remove a blue circle at (1, 2) on ^B. What symbol do the blue circles show?
- Which blue circle on (B) can you remove to design the symbol 0?
- 4 Let's design different symbols to show different numbers.



On the grid paper, the vertical and horizontal axis are numbered as follows.

Point A is represented as (6, 20). Let's plot the points below in order and connect them with lines.






Based on the standing position of the flag, let's represent the position of animals using numbers.



Every position in the space is represented by a list of three numbers.

The position of the pig is Width 3, Length 1 and Height 2. We represent it by (3, 1, 2).

1 Let's express the position of the animals below.







Quantities Change Together



Let's look for quantities that change together in (A), (B), (C) and (D). How are they changing together?



	Things which change together	How they changed
A	and	
B	and	
\bigcirc	and	
\bigcirc	and	

In our surroundings, there are some quantities that change as another quantity changes.

.....



- Let's look for two quantities which change together from the above.
- 2 Let's investigate how to change the number of equilateral

triangles and straws.

Number of Equilateral Triangles and Straws

Number of equilateral triangles					
Number of straws					

When we look for the rule on how 2 quantities change together, we draw the table to find the rule easily.

Output the number of equilateral triangles increases by 1,

by how many does the number of straws increase?

When we make 10 equilateral triangles, how many

straws do we need?

Changing Quantities and Graphs



The table below shows how the amount of water and the

time change as a small water tank is filled.

Time and amount of water when filling a small water tank

Time (minutes)	0	2	4	6	8	10	12	14	
Amount of water (L)	0	З	6	9	12	15	18	21	

- Let's plot the points on the graph by using the numbers on the table.
- 2 Let's connect the points with a line.
- What is the amount of water in 7 minutes after filling the water tank?
- 4 How many litres of water will there be after 20 minutes?



- 6 Another water tank was filled
 - with water as shown in
 - the table on the right. Let's draw a graph by

nme (minutes)	0	4	8	12
Amount of water (L)	0	3	6	9

Time (minutes)

using the information from the table above. Compare the 2 graphs and tell everyone what you observed.

Time and amount of water when filling a water tank

4

~

16

12

Mathematical Sentence Using
and

- Shama's school has stairs to go to the playground. The children decided to use the stairs to measure the height at ground level to the top of the stairs.
- As the number of steps increases, how does the height from the playground change?



2 There are 20 steps from the playground to the classroom. Let's write the number of steps and the height of the

classroom in the table.



Number of Steps and Height

Output: Let's look at the table and find a rule for the number of steps and height.

When the number of steps is $\hfill\square$ and its height is \bigcirc , let's write

a mathematical sentence by using \square and $\bigcirc.$

Height of each step × Number of steps = Height from floor



4 Let's find the height when there are 20 steps.



Arrange a square paper with 1 cm side and make the

following shapes.



- **1** How many cm are the length around 1 stair and 2 stairs?
- 2 Let's study how the number of stairs and the length around the stairs change.

Number of Stairs and the Length Around the Stairs

Number of stairs	1	2	3	4	5	6	7	
Length around the stairs (cm)	4	8						

- OWE WE AND A STATES AND A ST
- When the number of stairs is and the length around the stairs is , let's show the relationship by a mathematical sentence.
- When the number of stairs is 8, how many cm is the length around the stairs? When the length around the stairs is 40 cm, what is the number of stairs?

Exercise

Belinda bought a ream of drawing paper for 20 kina. When the number of reams is \Box and the cost is \bigcirc . Let's express the relationship between \Box and \bigcirc in a mathematical sentence.



Problems Legender											
1 Let's look at the relationships between the 2 quantities shown											
below. In which, are "both increasing" and in which is "one											
increasing and one decreasing?"											
• Understanding the relationship between 2 quantities. (1) Day time and night time in a day.											
② The number of times phone calls are made and the fees											
Summarise the 2 quantities that change together											
• Understanding the relationship between 2 quantities from a table.											
A string is cut at several points. Check the relationship between the number of cuts and the pieces of string.											
1 When the number of cuts increase, what else increases?											
2 Make a table and find the relationship.											
Number of Cuts and Pieces of String											
Riccos of string											
Pieces of string											
3 Let's investigate the relationship between the length of one											
 side and the perimeter of a square. Understanding the relationship between 2 quantities from a table. 1 Let's fill in the table. Length of One Side and Perimeter of a Square 											
Length of one side (cm) 1 1.5 2 3 4 5											
Perimeter (cm) 4											
2 Let's represent the relationship by the mathematical											
sentence when one side is \Box cm and the perimeter is \bigcirc cm.											
③ What is the length of the side of the square when the											
perimetre is 36 cm?											

Line graphs

The table below shows the production of Coconut soap and Noni soap in a local factory. Let's use the data to draw line graphs. What does the graph tell you?



Year	Coconut production	Noni production
2008	271034	201730
2009	275751	216549
2010	265541	214107
2011	283402	234522
2012	292392	242908
2013	297047	243071
2014	303169	260965
2015	301558	276427
2016	298641	271387
2017	301451	279406

Amount of Production for Coconut and Noni Soaps



Numbers and Calculations



- Let's read the following numbers. Round them to the place as shown in ().
- **1** 3 824 901 (ten thousand)
- 2 64 098 172 (million)
- 3 2 715 205 860 432 (ten billion)



Let's write the following numbers in numerals. 300 sets of 100 million and 68 sets of 10 thousand. 2 100 times 80 billion. 8 250 million divided by 10. 4 5 sets of 1 and 3 sets of 0.1. 6 12 sets of 0.1. 6 4 sets of $\frac{1}{5}$. **7** Mixed fractions and improper fractions for 11 sets of $\frac{1}{7}$. 13 17 6 Let's write the following numbers on the number line. $2\frac{6}{10}$ $0 1 \frac{1}{10}$ 0.2 **③** 1.6 **4** 2.1 **b** 3

- 4 Let's arrange these numbers from the largest to the smallest.
 - 0.08 8 0.8 0.808 0





There are 144 packages that must be put on 3 trucks, with each truck carrying the same number of packages. How many packages are placed on each truck?

7 Look at the following calculations. Find the errors and correct them.



- 8 127 grade 4 children are going to Loloata Island by boat. Only 25 children can go at a time.
 - How many trips will it take to carry all children to the Island?
 - 2 We want to carry the same number of children in 6 trips. How should the number of children be divided?





Why Are the Degrees of a Circle Equal to 360 Degrees?

About 6000 years ago in ancient Babylonia, people divided a circle into 6 equal sections and then divided each part into 60 equal parts that they called "one degree". The degrees of a circle equal 360°.



At that time in Babylonia, people used a method of counting that was based on 60. They defined a circle as 360 degrees because 1 year is approximately 360 days.





A rectangular prism box is set as follows.

Let's answer the questions.



1 Vertices A, E, F, G and H are represented as follows;

A (1, 1, 3)	E(1,1,0)
F(6,1,0)	G(6,5,0)
H(1,5,0)	

Let's write the positions of vertices B, C and D. Explain why.

When the unit scale is 1 cm for the length, the width and the height. Find the area of figure below.

- A Rectangle EFGH
- B Rectangle AEFB
- © Rectangle BFGC

Using Graphs to Show Changes



The line graph on the right shows changes in the temperatures



- in Tokyo and Sydney in a year.
- In which month(s) is the temperature in Tokyo higher than that in Sydney?
- In which city is the change in temperature larger?

Shown below is a rectangle with a length of 4 cm.

See how the area changes as the width of the rectangle increases.



Length of width (cm)	1	2	3	4	5	
Area of rectangle (cm ²)	4	8				

- 1 Each time the width of the rectangle increases by 1 cm, by how many cm² does the area increase?
- When the area of the rectangle is 36 cm², how many cm is the width?

The Secret of the Calendar

On the calendar, choose a group of any 9 numbers as shown on the right and calculate the sum of those numbers. Now try another location. Do you find the secret? Do other

Sun ***	Mon	Tue	Wed	Thu	Fri ***	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24		26	27
<i>2</i> 8	29	30	31			
_	_	_	_	0	_	

locations on the calendar have the same secret?



Answers





2	(1) 3 r 1 (2) 4 r 14 (3) 9 r 10
	④ 17 r 1 ⑤ 20 r 7 ⑥ 20 r 16
3	12 pieces
4	(A) 9 (B) 1 (C) 4 (D) 3
C	hapter 8 Excercise: Page 94
1	See teacher.
C	hapter 8 Problems: Page 95
1	(\mathbb{B}) and (\mathbb{C})
2	(1) (A) 30 (B) 29 (C) 28 (D) 27
	② See teacher.
	3 Between 5 month and 6 month.
	Between 8 month and 9 month.
C	hapter 9 Excercise: Page 106
1	1 0.4 2 23 3 1.7 4 2.7 5 0.5 6 4.3
2	(1) 0.1 (2) 0.6 (3) 1.5 (4) 2.8 (5) 3.1
3	(1) < (2) < (3) >
4	(1) 4.9 (2) 1.1 (3) 8.3 (4) 5
	(5) 2.5 (6) 1.9 (7) 0.4 (8) 0.9
D	o you remember?: Page 106
See	e teacher.
C	hapter 9 Problems: Page 107
1	(1) 10 (2) 0.7 (3) 1.7, 17
2	1 14 2 10 3 0.3
3	(1) 5.8 (2) 5.3 (3) 5 (4) 3.1 (5) 0.4 (6) 6.3
4	Sum = 1.9 L , Difference = 0.3 L
C	hapter 10 Excercise: Page 119
1	(1) (A) 50 000 (B) 620 000 (C) 280 000
	② (Å) 39 000 (B) 513 000 (C) 50 000
	③
2	(1) 38478, 37501, 37573, 38490
	(2) 37400, 37501, 37573, 37499
	③ 38478, 38573, 38500, 38490
C	hapter 10 Problems: Page 120
1	(1) Incorrect (2) Correct.
2	1 36 000, 40 000 2 44 000, 40 000
	(3) 24 000, 24 000

Chapter 7 Problems: Page 83

1 (1) tens (2) 76÷32 (3) 128

- 3 (1) 5 000, 4 600 (2) 60 000, 62 000 (3) 800 000, 830 000
- 4 780 kina
- **(5)** 0, 1, 2, 3, 4,

(Chapter 11) Excercise: Page 130)

- 1 (1) 170 (2) 280 (3) 630 (4) 90 (5) 15 (6) 11 7 105 8 9 9 36 10 36 11 13 12 34 (13) 80877 (14) 42537 (15) 71955 (16) 288
- (1) 15, 20, 25 sheets (2) 12, 40, 20 pencils (3) 100, 18, 28 sheets
 - (4) 500 ,150 , 3, 50 kina (5) 20, 50, 1050 kina
- Chapter 11 Problems: Page 131
- (1) (1) 430 sheets (2) 60 kina
- 2 (1) 44 (2) 36 (3) 200 (4) 40
- 3 (1) 100, 100, 2450 (2) 4, 100, 600 (3) 100, 100, 6, 630 (4) 100, 100, 891
- 4 See teacher.

Chapter 12 Excercise: Page 146

- (1) (1) m^2 (2) cm^2 (3) km^2 (4) a
- (2) (1) 75 cm² (2) 49 km² (3) 50 m² (4) 61 cm² (5) 26 cm²

Chapter 12 Problems: Page 147

- 1 (1) 60 cm² (2) 16 m² (3) 40 km²
- (2) 18 m²
- 3 (1) 12 (2) 4
- 4 See teacher.

Chapter 13 Excercise: Page 158

- (1) Three point nine two litre
 - (2) Five point one seven metre
 - (3) Zero point zero five litre
 - (4) Eight point zero zero four kilogram
- (1) 2.24 L (2) 3.07 L
- **3** 6.493
- 4 (1) 4.6 , 0.046 (2) 27.9 , 0.279 (3) 188.3 , 1.883
- **(5)** (1) 4.98 (2) 10.04 (3) 14.25
 - (4) 0.7 (5) 2.44 (6) 1.56

- Do you remember?: Page 158 Perpendicular lines: (a) and (d), (f) and (h) Parallel lines: (b) and (c), (e) and (9) Chapter 13 Problems: Page 159 1 10, 1, 0.1 2 10, 1, 0.001 (2) (1) 8.695 kg (2) 0.32 L (3) 3670 m **(3)** (1) > (2) < 4 (1) 4.5 (2) 6.04 (3) 5.14 (4) 2.45
- **(5)** 3.4

Shopping

Total

(Chapter 15) Excercise: Page 168)

1	Accidents with Primary School Children											
	When Cause	Running into street		Outside crosswalk		Crossing on red light		Crossing in front of cars		Total		
	Playing	##1	6	1	1	11	3	1	1	11		
	On the way to or from friends house	1	1	1	1					2		
	On the way to or from school	111	3	Ш	2			1	1	6		

2 6

3

Chapter 15 Problems: Page 169

Place Iype of Injury	Scra	atch	C	ut	Spr	ain	Bru	ise	Spraine	d finger	Tota
Volleyball court	11	2			1	1	1	1	1	1	5
Soccer field	1	1	1	1			T.	1			3
Classroom	11	2	1	1				1			3
Basketball court							1	1			1
Total		5		2		1		3		1	12

1		Older	Tatal		
_	1	Yes	No	Total	
Older	Yes	0	6	6	
sister	No	12	18	30	
Total		12	24	36	

Chapter 16 Excercise: Page 181

- 1 (1) 37.1 (2) 450.8 (3) 5156.5 (4) 26.08
 - (5) 2.08 (6) 2.3 (7) 1.3 (8) 1.8
 - (9) 0.9 (10) 2.6 (11) 2.43 (12) 0.48
- 2 (1) 0.9 (2) 6.7 (3) 2.2 (4) 0.1
- **3** 5.7m
- 4 0.9kg
- (5) 0.35kg

(Do you remember?: Page 181)

- (1), (2) See teacher.
- Chapter 16 Problems: Page 182
- 1 (1) 0.1, 13.5 (2) 0.01, 0.72 (3) 0.1, 1.3
- 2 (1) 7.2 (2) 33.6 (3) 0.6
 - (4) 1.8 (5) 1.6 (6) 0.63



Chap	oter 19 Excerc	ise:	Pa	ge 2	216						
1 (1) Both distance	and	l us	ing	fue	l inc	rea	sing	g		
② Time increasing, distance decreasesing											
③ Quantity consumed increasing, amount											
	left decreasing	J									
2 (1) 19 cm										
2											
C	Numbe	r of P	Piece	s of	Гаре 4	and	Total	Leng	th		
	Number of piece of tape	1	2	3	4	5	6	1	8	9	
6		10	19	20	37	40	55	04	13	02	
3) 91 cm	_									
Do y	ou remember?: I	Page	e 2 [.]	16							
1) 58	4.8 ② 1612 ③	3.9	95	4	1.7						
$54.6 ext{ } 60.95 ext{ } 71\frac{4}{9} ext{ } 82\frac{2}{4}$											
9) 10	$(10)\frac{4}{6}$ $(11)1\frac{6}{8}$ (11)	$\frac{1}{2}$	<u>,</u>								
Char	oter 19 Proble	ms:	Pa	ae 2	217						
) One increase	othe	ər d	ecr	eas	e					
• ©) Both increase	0		001	ouo	0					
ے م											
) Pieces of strin	g									
(2)Numb	er of	Cuts	and	Piec	es of	Stri	ng	_	_	
	Number of cut	s	1	2	3	4	5	6	7	8	
	Pieces of string	g	2	3	4	5	6	7	8	9	
(3) 9 times										
3 (1) Length of One	Cido	and	Dorin	aatar	ofo	Caus				
• •	Length of one side (cm)	1	1.5	2	3	Squa 4	5	٦		
	Perimeter (cm)	,	4	6	8	12	16	20)		
6			_		1		_		_		
(2	/4×=()	(3)	9 C	m							

Approximate is almost but not exact.	
Angle is simply the size of an angle.	
Angle of one revolution are 4 right angles (4 right an	ngles=360°) · · · · · 29
Angle of a half revolution are 2 right angles (1 right a	angle=90°) · · · · · 29
Are is a unit. 1 are (1a) is the area of square with a side	de of 10 m. · · · · · · 143
Area is the amount of space surrounded by lines and	it is represented
by a number.	134
Area of rectangle is expressed as width × length (W ×	< L). • • • • • • • • 138
Area of a square is expressed as Side \times Side (S \times S).	138
Cube is a shape covered only by squares.	196
Decimal numbers are numbers like 2.6, 0.6 and 0.1	
Decimal point is referred to as "."	
Degree is a unit to express the size of angles.	29
Diagonal is formed when connecting lines from the op	pposite
vertices/corners.	
Difference is the result of subtracting one number from	m another. · · · · · · · · 11
Dividing continuously is division that is continued un	ntil the remainder is 0.
Dividing continuously is division that is continued un	ntil the remainder is 0.
<i>Dividend</i> = divisor × quotient + remainder.	ntil the remainder is 0. 177 178
<i>Dividend</i> = divisor × quotient + remainder. <i>Formula</i> is a mathematical sentence or rule expresse	ntil the remainder is 0.
Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mil	ntil the remainder is 0.
Dividing continuously is division that is continued un Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one million Hundredths place ($\frac{1}{100}$ place) is 2 places to the right	ntil the remainder is 0.
Dividing continuously is division that is continued un Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mill Hundredths place ($\frac{1}{100}$ place) is 2 places to the right the decimal place.	ntil the remainder is 0.
Dividend = divisor × quotient + remainder. Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mill Hundredths place ($\frac{1}{100}$ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral	ntil the remainder is 0.
Dividend = divisor × quotient + remainder. Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one million Hundredths place ($\frac{1}{100}$ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator.	ntil the remainder is 0.
 Dividing continuously is division that is continued un Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mill Hundredths place (¹/₁₀₀ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator. Intersecting lines are 2 lines that cross over each other intersection. 	ntil the remainder is 0.
 Dividing continuously is division that is continued un Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mill Hundredths place (¹/₁₀₀ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator. Intersecting lines are 2 lines that cross over each oth Line graph is a graph that uses lines to show change 	ntil the remainder is 0.
Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresses Hundred million is a number with 100 sets of one million Hundredths place ($\frac{1}{100}$ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator. Intersecting lines are 2 lines that cross over each oth Line graph is a graph that uses lines to show changed temperatures.	antil the remainder is 0.
 Dividing continuously is division that is continued under the divisor × quotient + remainder. Formula is a mathematical sentence or rule expresses Hundred million is a number with 100 sets of one million the decimal place (¹/₁₀₀ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator. Intersecting lines are 2 lines that cross over each oth Line graph is a graph that uses lines to show changed temperatures. Mixed fractions are fractions that are the sum of a whother the sum of a	antil the remainder is 0.
 Dividing continuously is division that is continued under the deviation of the dev	antil the remainder is 0.
 Dividing continuously is division that is continued un Dividend = divisor × quotient + remainder. Formula is a mathematical sentence or rule expresse Hundred million is a number with 100 sets of one mill Hundredths place (¹/₁₀₀ place) is 2 places to the right the decimal place. Improper fractions are fractions in which the numeral larger than the denominator. Intersecting lines are 2 lines that cross over each oth Line graph is a graph that uses lines to show change temperatures. Mixed fractions are fractions that are the sum of a whand a proper fraction Net (or development) is a figure drawn on a sheet of 	antil the remainder is 0.

One billion is a number with 1 million sets of one the	ousand
One hectare (1 ha) is the area of a square with a sid	le of 100 m. · · · · · · 144
One hundredth litre or zero point one litre is 0.01 L	<u> </u>
One million is a number with 1 000 sets of one thous	sands 3
One square centimetre is the area of a square with 1	cm sides (1 cm ²). · · 135
One square metre is the area of a square with a side	e of 1 m (1 m ²). \cdots 141
One square kilometre is the area of a square with a	side of
1 km (1 km²).	145
Two lines are <i>parallel</i> when a third line crosses at rig	ht angle 57
Parallelogram is a quadrilateral with two pairs of para	allel sides. · · · · · · · 62
Perpendicular lines are two lines which intersect (mee	et) at a right angle. $\cdot \cdot$ 53
Product is the result of multiplying numbers.	12
Proper fractions are fractions in which the numerato	r is smaller than
the denominator.	185
Protractor is used to measure the size of angles more	re accurately. · · · · · 29
Quotient is a result of dividing numbers.	12
Quotient and a remainder is the answer for division	with remainder. \cdots 38
Rectangular prism is a shape covered by rectangles	or by squares
and rectangles.	196
Rhombus is a quadrilateral with four equal sides.	
Round number is also called approximate.	109
Size of an angle is determined by the amount of spa	ce between one side to
another and not the lengths of the sides.	
Sketch is a picture that is drawn to give a quick view	of the whole shape.
	204
Sum is the result of adding numbers.	11
Temporary quotient is the first estimation of the quot	tient 76
Ten million is a number with 10 sets of one million.	
Tenths place $(\frac{1}{10} \text{ place})$ is 1 place to the right of the	decimal point. · · · · · 98
Thousandths place ($\frac{1}{1000}$ place) is 3 places to the	right of
the decimal point.	153
Trapezoid is a quadrilateral that has one pair of paral	lel sides. · · · · · · · · 61

National Mathematics Grade 4 Textbook Development Committee

The National Mathematics Textbook was developed by Curriculum Development Division (CDD), Department of Education in partnership with Japan International Cooperation Agency (JICA) through the Project for Improving the Quality of Mathematics and Science Education (QUIS-ME Project). The following stakeholders have contributed to manage, write, validate and make quality assurance for developing quality Textbook and Teacher's Manual for students and teachers of Papua New Guinea.

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