



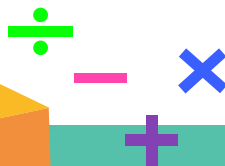
NEW

MATHS

CHAMPION



**Singapore Methodology with
100% alignment to the Indonesian
syllabus (Kurikulum 2013)**



© 2011 Marshall Cavendish International (Singapore) Private Limited

© 2014 Marshall Cavendish Education Pte Ltd.

This English edition is licensed to Mentari Books.

Exclusively distributed in Indonesia by:

MENTARI BOOKS

Rukan Sentra Niaga Puri Indah

Block T1 – 14, Puri Indah

West Jakarta 11610

Tel: (021) 5890 1900

☎: 0855 888 1948

Fax: (021) 5890 0818

E-mail: contact@mentaribooks.com

Website: www.mentarigroups.com

First published 2018

First reprinted 2019

All rights reserved.

© 2018, Marshall Cavendish Education Pte Ltd. This English edition licensed to Mentari Books. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, or stored in any retrieval system of any nature without the prior written permission of Marshall Cavendish Education Pte Ltd.

New Maths Champion Textbook 6

Aligned with Indonesian syllabus (Kurikulum 2013)

Preface



is specially designed to meet the requirements of Kurikulum 2013 for Primary 1 to Primary 6 in Indonesia. The topic coverage in each level is arranged to address all the basic competencies (Kompetensi Dasar) of the level prescribed in the syllabus. This series uses the Singapore approach to teaching mathematics, which is internationally recognised as one of the best in the world.



uses Concrete-Pictorial-Abstract (CPA) approach, which is proven to be a very effective method. The content development of each topic matches the child's developmental age and is carefully designed in spiral progression. Extra contents with (*) are added to maintain this spiral progression.



gives special emphasis on the development of conceptual understanding and creative/critical thinking skills to build a firm foundation in mathematics. After the introduction of new concepts, students are invited to apply what they have learnt through hands-on activities and collaborative games. The textbook offers a number of engaging and fun activities that will stimulate students' interest in the topic and consolidate their knowledge and understanding.



commits to nurture young Indonesians to be efficient problem solvers who are competent to face the changing world in the future.

Be a maths champion!

Using This Book



has some special features. Find out what they are for and use them to help you learn as you use this book.

Engaging and highly scaffolded **Ready, Set, Go!** introduces concepts, skills or problem solving strategies.

New important mathematical terms are emphasised.

Maths Reflection allows students to grow awareness of their own mathematical thinking by sharing what they have learnt or by creating their own Maths questions.

Summary provides a list of key concepts students have learnt in the current chapter, while **Let's Revise!** provides worked examples that cover the key concepts for ease revision.

Carry out this activity offers hands-on and active learning that involves the use of mathematics.

Questions allow for immediate assessment of concepts or skills learnt.

Thinking questions to stimulate creative and critical thinking skills during the interactive teaching-learning process.

Lesson 2 Circumference Of A Circle

Ready, Set, Go!

1. The circumference of a circle is its perimeter.

A bicycle wheel has the shape of a circle. The distance around the wheel is called its circumference.

Carry out this activity.

2. Yani uses a string to measure the circumference of each circle to 1 decimal place and records it in the table below. Copy the table, divide the circumference of each circle by its diameter correct to 1 decimal place, and fill in the answers. What do you notice?

Circle	Diameter	Circumference	Circumference ÷ Diameter
A	2 cm	6.2 cm	
B	3 cm	9.4 cm	
C	4 cm	12.5 cm	
D	5 cm	15.6 cm	

The circumference of any circle divided by its diameter always has the same value. This number is called π .

Chapter 4 Circles 77

We usually take the value of π to be 3.14 or $\frac{22}{7}$. Since circumference = diameter $\times \pi$.

Circumference = $\pi \times$ Diameter

π is a Greek letter. We read it as pi.

I can find the circumference of a circle when I know its diameter.

Can you find the circumference of a circle if you know the radius?

3. The radius of a circular plate is 10.5 cm. Find its circumference. (Take $\pi = \frac{22}{7}$)

Diameter of plate = $2 \times$ Radius = $2 \times 10.5 = 21$ cm

Circumference of plate = $\pi \times$ Diameter = $\frac{22}{7} \times 21 = 66$ cm

4. The diameter of a bicycle wheel is 60 cm. Find the circumference of the wheel. (Take $\pi = 3.14$)

Circumference of wheel = $\pi \times$ Diameter = $3.14 \times 60 = 188.4$ cm

5. Taking $\pi = \frac{22}{7}$, find the circumference of a circle of:
 a diameter 14 cm
 b radius 21 cm

6. Taking $\pi = 3.14$, find the circumference of a circle of:
 a diameter 20 cm
 b radius 8 cm

78 Chapter 4 Circles

Review 1

1. Express the numbers in figures.
 a Six million, two hundred thousand and twelve
 b Five hundred and eighty-nine thousand, one hundred and seventeen

2. Express the numbers in words.
 a 130 706
 b 3 405 625

3. What is the value of the digit 2 in each of the numbers below?
 a 145 729
 b 982 153
 c 2 890 316
 d 3 219 860

4. Find the value of each of the following. Give your answer in decimals where necessary.
 a $6300 \div 900$
 b $370 \div 20$
 c $1000 \div 400$
 d $5300 \div 500$

5. a 9 is a factor of 27. Find another number that has 9 as a factor.
 b Find a factor of 24, which is more than 10 and is also a multiple of 6.

6. Find the value of:
 a $\frac{1}{8} + \frac{2}{3}$
 b $\frac{7}{8} - \frac{3}{5}$
 c $\frac{3}{4} \times \frac{8}{9}$
 d $\frac{3}{4} \div 6$

7. Find the missing number in each box.
 a $7.2 - \square = 0.72$
 b $7200 \div 100 = \square$

Review 1 153

A set of cumulative **Reviews** for further practice to help students consolidate the concepts learnt across topics and levels, including higher-order questions marked with *.

Think It Through comprises higher order questions from various topics with solutions. It provides opportunities to understand problem-solving strategies (heuristics).

Maths Reflection

Write a story for each of the following number sentences:
 a $65 + 9 \times 12$
 b $(65 + 9) \times 12$

Summary

You have learnt to:

- work out a number sentence using the correct order of operations involving whole numbers, fractions and decimals

Let's revise!

Eunice bought 48 packets of red balloons, 66 packets of blue balloons and 35 packets of yellow balloons. Each packet cost Rp 3,000.00 and contained a dozen balloons. She mixed them up and gave away 213 balloons. Then she repacked the remainder into packets of 25 balloons each.

a How many balloons did Eunice buy altogether?
 $(48 + 66 + 35) \times 12 = 149 \times 12 = 1788$
 She bought 1788 balloons altogether.

b How many packets of balloons did she repack?
 $(1788 - 213) \div 25 = 1575 \div 25 = 63$
 She repacked 63 packets of balloons.

c If she sold each re-packed packet of 25 balloons at Rp 10,000.00 each, how much money did she make?
 $63 \times \text{Rp } 10,000.00 = 149 \times \text{Rp } 3,000.00 = \text{Rp } 630,000.00 - \text{Rp } 447,000.00 = \text{Rp } 183,000.00$
 She made Rp 183,000.00.

72 Chapter 3 Order Of Operations

Think It Through

Whole Numbers

1. Tim's age now is a multiple of 5. In one year's time, his age will be a multiple of 7 and in two years' time, it will be a multiple of 11. If he is less than 60 years old, how old is Tim now?

Solve the problem step by step.

Step	Tim's possible age
a List the multiples of 5 which are less than 60	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
b To find his age in one year's time, add 1 to each multiple of 5	6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56
c Pick out the multiples of 7	21, 56
d To find his age in two years' time, add '1' to each multiple of 7	22, 57
e Pick out the multiple of 11	22

In two years' time, Tim will be 22 years old. Tim is 20 years old now.

2. John keeps a total of 16 spiders and birds as pets. He asks his friend, Mary, to guess the number of spiders and birds he has by telling her that there are 92 legs in all. How many spiders and birds are there?

Make a list.

Number of birds	Number of legs	Number of spiders	Number of legs	Total number of legs
8	$8 \times 2 = 16$	8	$8 \times 8 = 64$	$16 + 64 = 80$
7	14	9	72	86
6	12	10	80	92 ✓

John had 6 birds and 10 spiders.

140 Think It Through

Kompetensi Dasar

- 3.1 Menjelaskan bilangan bulat negatif (termasuk menggunakan garis bilangan)
- 3.2 Menjelaskan dan melakukan operasi penjumlahan, pengurangan, perkalian, dan pembagian yang melibatkan bilangan bulat negatif
- 4.1 Menggunakan konsep bilangan bulat negatif (termasuk menggunakan garis bilangan) untuk menyatakan situasi sehari-hari
- 4.2 Menyelesaikan masalah yang berkaitan dengan operasi penjumlahan, pengurangan, perkalian, dan pembagian yang melibatkan bilangan bulat negatif dalam kehidupan sehari-hari

Kompetensi Dasar

- 3.3 Menjelaskan dan melakukan operasi hitung campuran yang melibatkan bilangan cacah, pecahan dan/atau desimal dalam berbagai bentuk sesuai urutan operasi
- 4.3 Menyelesaikan masalah yang berkaitan operasi hitung campuran yang melibatkan bilangan cacah, pecahan dan/atau desimal dalam berbagai bentuk sesuai urutan operasi

Kompetensi Dasar

- 3.4 Menjelaskan titik pusat, jari-jari, diameter, busur, tali busur, tembereng, dan juring
- 3.5 Menjelaskan taksiran keliling dan luas lingkaran
- 4.4 Mengidentifikasi titik pusat, jari-jari, diameter, busur, tali busur, tembereng, dan juring
- 4.5 Menaksir keliling dan luas lingkaran serta menggunakannya untuk menyelesaikan masalah

Contents



Chapter 1 Negative Numbers

- Lesson 1 Understanding Negative Numbers 8
- Lesson 2 Addition Involving Negative Numbers 14
- Lesson 3 Subtraction Involving Negative Numbers 17
- Lesson 4 Multiplication Involving Negative Numbers 22
- Lesson 5 Division Involving Negative Numbers 28

Chapter 2 Fractions*

- Lesson 1 Four Operations With Fractions 35
- Lesson 2 Dividing By A Proper Fraction 37
- Lesson 3 Word Problems 49

Chapter 3 Order Of Operations

- Lesson 1 Order Of Operations 56
- Lesson 2 Word Problems (1) 62
- Lesson 3 Word Problems (2) 67

Chapter 4 Circles

- Lesson 1 Parts Of A Circle 73
- Lesson 2 Circumference Of A Circle 77
- Lesson 3 Perimeter Of A Semicircle And A Quadrant 79
- Lesson 4 Area Of A Circle 83

Chapter 5 Area And Perimeter *

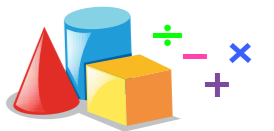
- Lesson 1 Area And Perimeter Of Composite Figures 90

Kompetensi Dasar

- 3.6 Membandingkan prisma, tabung, limas, kerucut, dan bola
- 3.7 Menjelaskan bangun ruang yang merupakan gabungan dari beberapa bangun ruang, serta luas permukaan dan volumenya
- 4.6 Mengidentifikasi prisma, tabung, limas, kerucut, dan bola
- 4.7 Mengidentifikasi bangun ruang yang merupakan gabungan dari beberapa bangun ruang, serta luas permukaan dan volumenya

Kompetensi Dasar

- 3.8 Menjelaskan dan membandingkan modus, median, dan mean dari data tunggal untuk menentukan nilai mana yang paling tepat mewakili data
- 4.8 Menyelesaikan masalah yang berkaitan dengan modus, median dan mean dari data tunggal dalam penyelesaian masalah



Chapter 6 Surface Area And Volume Of Solids

- Lesson 1 Solids 98
- Lesson 2 Nets Of Solids 103
- Lesson 3 Surface Area Of Solids 106
- Lesson 4 Volume Of Solids 109
- Lesson 5 Volume Of Composite Solids 117

Chapter 7 Mean, Median And Mode

- Lesson 1 Understanding Mean Or Average 123
- Lesson 2 Word Problems 127
- Lesson 3 Understanding Median 131
- Lesson 4 Understanding Mode 135

Think It Through 140

Review 1 153

Review 2 158

Review 3 165

Review 4 170

Review 5 175

Review 6 179

Glossary 186

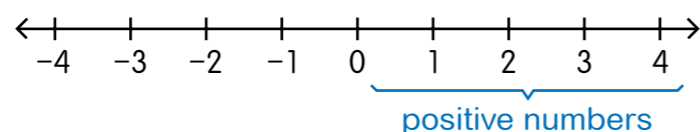


Lesson 1 Understanding Negative Numbers

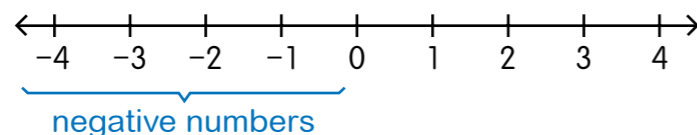
Ready, Set, Go!

1 Let's learn more about the number line.

Positive numbers are numbers greater than zero.



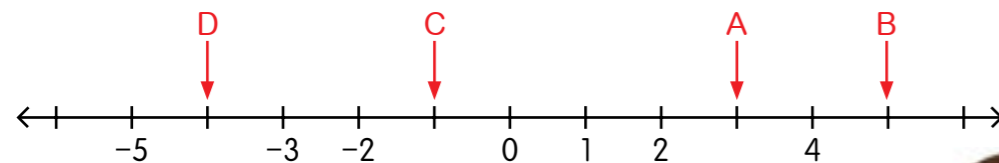
Negative numbers are numbers smaller than zero.



-1, -2, -3, ... are **negative numbers**.

We read them as negative one, negative two, negative three

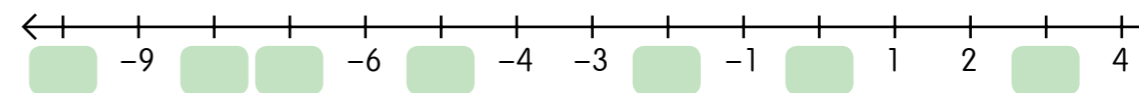
2 What number does each letter represent?



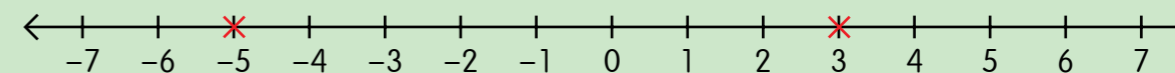
- a A represents 3 on the number line.
- b B represents on the number line.
- c C represents -1 on the number line.
- d D represents on the number line.

0 is neither positive nor negative.

3 What are the missing numbers on the number line?



4 Which is greater, -5 or 3?

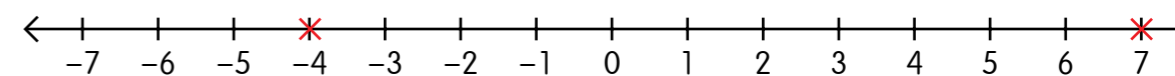


Number lines are useful when comparing numbers.

Numbers on a number line are arranged in increasing order from left to right.

From the number line, we can see that 3 is greater than -5. We write it as $3 > -5$.

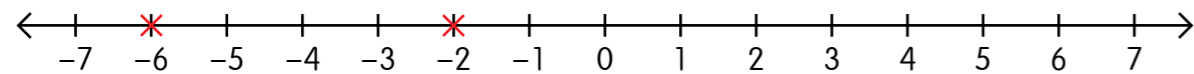
5 Which is smaller, 7 or -4?



From the number line, we can see that is smaller than . We write it as $<$.

Are negative numbers always smaller than positive numbers?

6 Which is smaller -2 or -6 ?

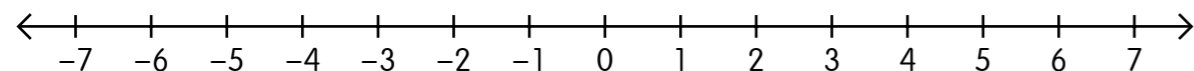


From the number line, we can see that -6 is smaller than -2 .

We write it as $-6 < -2$.

7 Which is greater, -7 or 0 ?

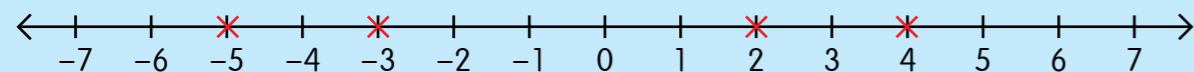
Mark the numbers on the number line below to help you compare.



From the number line, we can see that is greater than .

$>$

8 Compare 2, 4, -3 , -5 .



The smallest number is -5 .

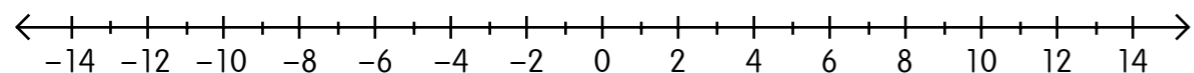
The greatest number is 4.

Arrange the numbers in order. Begin with the smallest.

$-5, -3, 2, 4$

9 Compare $-2, 3, -9, -14$.

Mark the numbers on the number line below to help you compare.



Which is the greatest number?

Which is the smallest number?

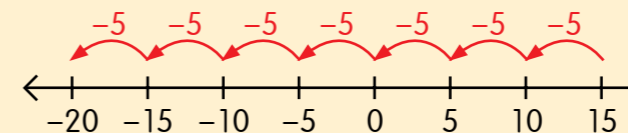
Arrange them in order. Begin with the greatest.

, , ,

10 What is the missing number in the number pattern?

a 15, 10, 5, 0, -5 , -10 , -15 , ?

Start from 15 then count backwards by 5.

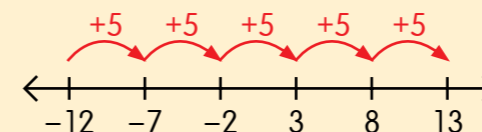


-20 is 5 less than -15 .

The missing number is -20 .

b $-12, -7, ?, 3, 8, ?$

Start from -12 then count forward by 5.



-2 is 5 more than -7 .

13 is 5 more than 8.

The missing numbers are -2 and 13.

11 Complete the given number patterns.

a 6, 2, -2 , -6 , -10 ,

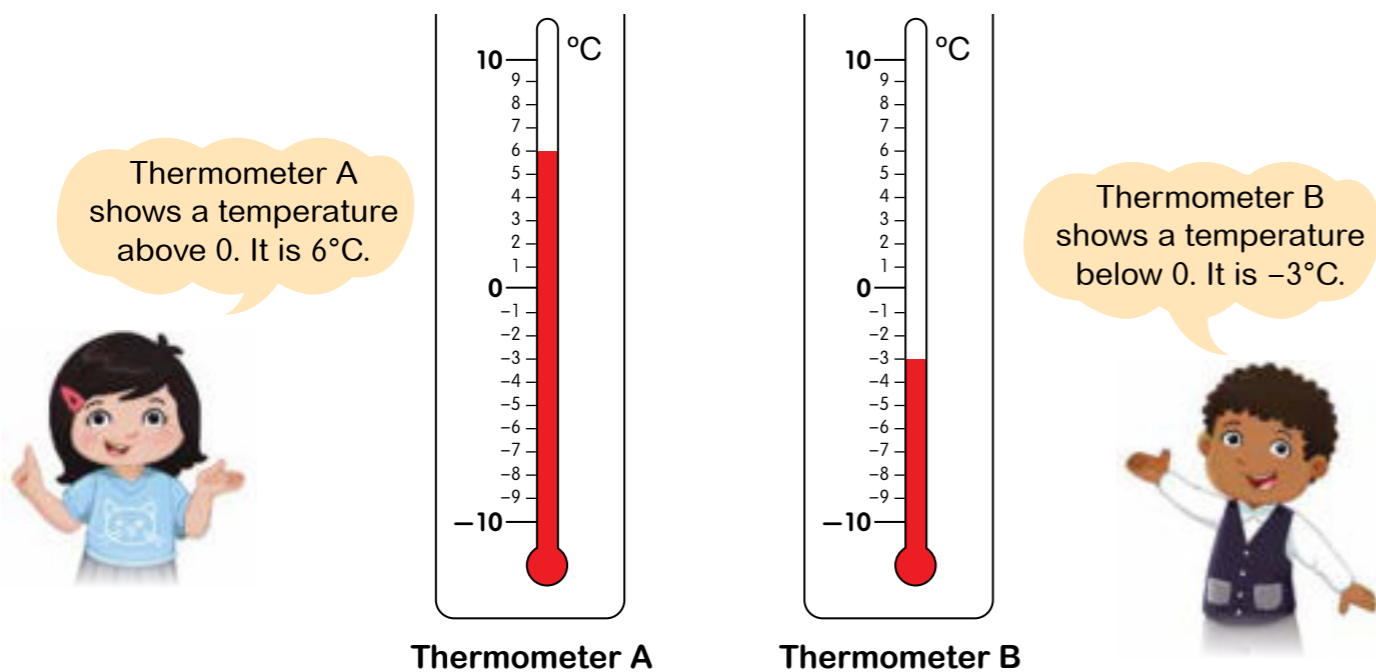
is less than -10 .

b $-5, -3, \text{input type="text"}, 1, 3, 5, \text{input type="text"}$

is more than -3 .

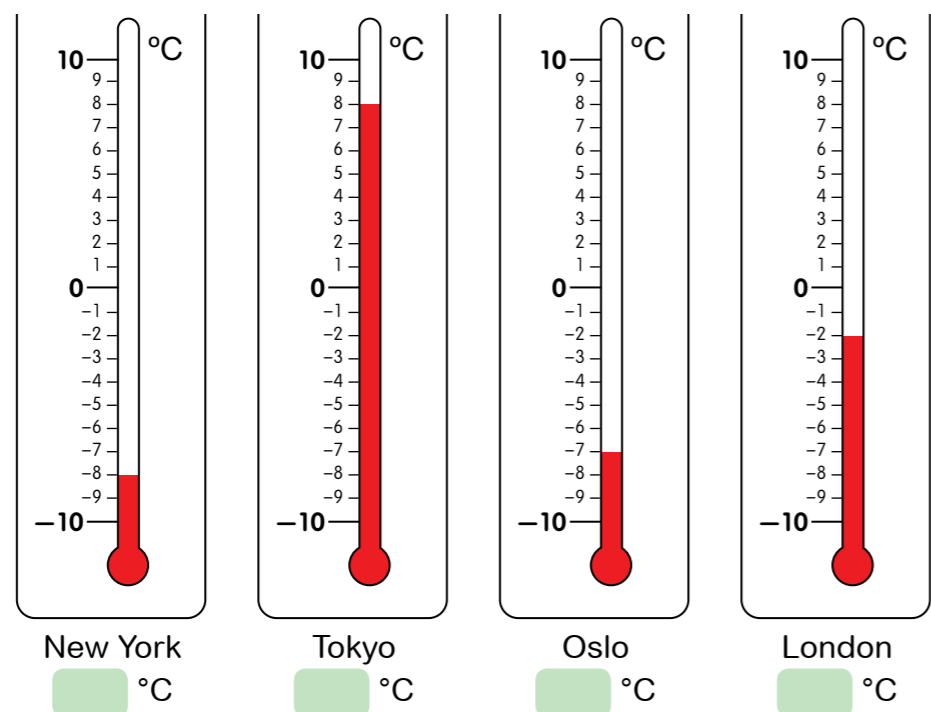
is more than 5.

- 12** Thermometers are used to measure temperature.
Study the thermometers below. What temperatures do they show?



- 13** The thermometers below show the temperatures of some cities around the world.

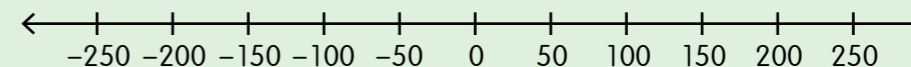
a Can you tell what the temperatures are?



- b** Which city has the highest temperature?
- c** Which city has the lowest temperature?

Carry out this activity.

- 14** Work in pairs.
Your teacher will give you a piece of paper with a number line the same as the one below.



- step 1** Mark the numbers on the number line above with a cross (x).

- A is -15.
- B is 150.
- C is -70.
- D is -180.
- E is -220.

- step 2** Discuss with your partner, and then write as many statements as you can that compare the numbers you marked on the number line.

Examples: 150 is greater than -15.
150 is the greatest number in the group.

WB 6, p 7
Practice 1



Lesson 2 Addition Involving Negative Numbers



Ready, Set, Go!

1 What is the sum of 1 and -1 ?

These are two faces of an Algebra Disc.






Using Algebra Discs, 1 and -1 can be represented as  and .




 and  makes a **ZERO PAIR**.

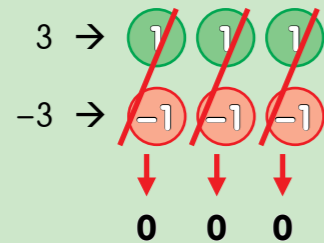
It means that they cancel each other out.



So, the sum of 1 and -1 is 0.

2 $3 + (-3) = ?$

Using Algebra Discs, 3 and -3 can be represented as   

and   .



 and  cancel each other out.



So, $3 + (-3) = 0$.

3 Answer the questions below. Use Algebra Discs to help you.



a What will you add to 7 to get 0?

b What will you add to -4 to get 0?

4 $9 + (-5) = ?$



So, $9 + (-5) = 4$.

 and  cancel each other out.



5 $-8 + 6 = ?$



So, $-8 + 6 =$.

6 Add the following.

a $-10 + 4 =$

c $2 + (-9) =$

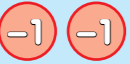
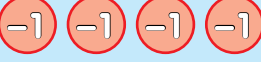
e $-11 + 3 =$

b $8 + (-7) =$

d $12 + (-7) =$

f $-2 + 5 =$

7 $-2 + (-4) = ?$

$-2 \rightarrow$ 
 $-4 \rightarrow$ 





There are no zero pairs formed.




$-6 \rightarrow$ 

So, $-2 + (-4) = -6$.


8 $-5 + (-3) = ?$


 \rightarrow 
 \rightarrow 


 \rightarrow 


So, $-5 + (-3) =$ .


9 Add the following.


a $-5 + (-3) =$ 

b $-2 + (-8) =$ 

c $-1 + (-4) =$ 

d $-6 + (-9) =$ 

e $-11 + (-7) =$ 

f $-10 + (-12) =$ 


WB 6, p 10
Practice 2

Lesson 3 Subtraction Involving Negative Numbers



Ready, Set, Go!

1 What is the negative of 3?

Using Algebra Discs, the negative of 3 can be represented as

the negative of 3 \rightarrow 

The negative sign (-) in front means that the Algebra Discs must be flipped.

the negative of 3 \rightarrow 
 \rightarrow 


The negative of a positive number is always a negative number.





So, the negative of 3 is -3.

2 What is the negative of -2?

Using Algebra Discs, the negative of -2 can be represented as

the negative of -2 \rightarrow 

The negative sign in front means that the Algebra Discs must be flipped.

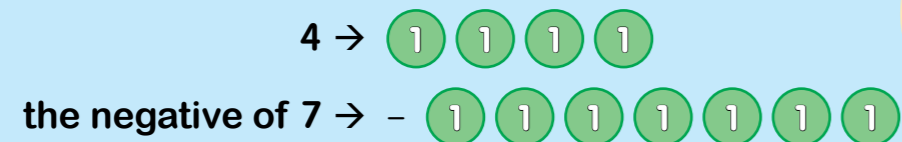
the negative of -2 \rightarrow 
 \rightarrow 

The negative of a negative number is always a positive number.

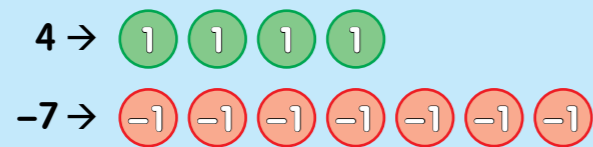


So, the negative of -2 is 2.

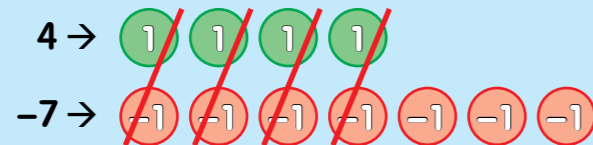
3 $4 - 7 = ?$



Minus 7 is the same as the negative of 7, which is -7 .



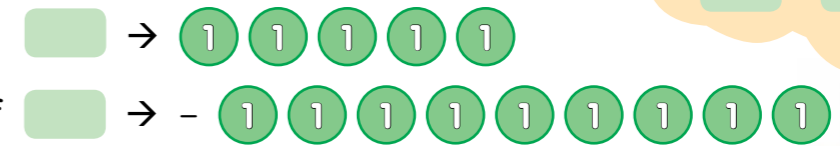
$4 - 7$ is the same as $4 + (-7)$.



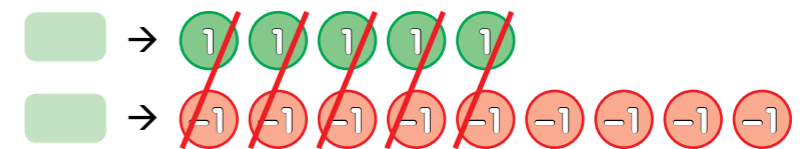
So, $4 - 7 = -3$.

4 $5 - 9 = ?$

the negative of



$5 - 9$ is the same as $\square + \square$.



So, $5 - 9 = \square$.

5 Subtract.

a $-4 - 11 = ?$
 $-4 - 11 = -4 + (-11)$
 $= -15$

$-4 - 11$ is the same as $-4 + (-11)$.

b $-6 - 2 = ?$
 $-6 - 2 = \square + \square$
 $= \square$

$-6 - 2$ is the same as $\square + \square$.



6 Subtract the following.

a $3 - 8 =$

b $-1 - 5 =$

c $2 - 5 =$

d $-5 - 9 =$

e $6 - 15 =$

f $-9 - 4 =$

7 $2 - (-4) = ?$

2 →

the negative of -4 → -

Minus -4 is the same as the negative of -4, which is 4.



2 →

4 →

$2 - (-4)$ is the same as $2 + 4$.



6 →

So, $2 - (-4) = 6$.

8 $3 - (-6) = ?$

→

the negative of → -

$3 - (-6)$ is the same as + .



→

→

So, $3 - (-6) =$.

9 Subtract the following.

a $-7 - (-5) = ?$

$-7 - (-5) = -7 + 5$
 $= -2$

$-7 - (-5)$ is the same as $-7 + 5$.

b $-3 - (-8) = ?$

$-3 - (-8) =$ +
 $=$

$-3 - (-8)$ is the same as + .



10 Subtract the following.

a $2 - (-7) =$

b $-3 - (-6) =$

c $-9 - (-4) =$

d $8 - (-5) =$

e $-7 - (-7) =$

f $-14 - (-8) =$

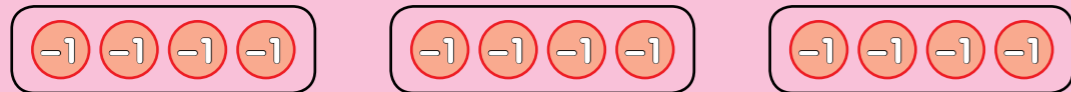
Lesson 4 Multiplication Involving Negative Numbers

Ready, Set, Go!

1 $3 \times (-4) = ?$

$3 \times (-4)$ is the same as 3 groups of (-4) .

Using Algebra Discs, 3 groups of (-4) can be represented as follows.



$$3 \times (-4) = (-4) + (-4) + (-4) = -12$$

So, $3 \times (-4) = -12$.

3 multiplied by (-4) is the same as three (-4) s.



2 $2 \times (-5) = ?$

$2 \times (-5)$ is the same as groups of .



$$\begin{array}{l} \square \times \square = \square + \square \\ \qquad \qquad = \square \end{array}$$

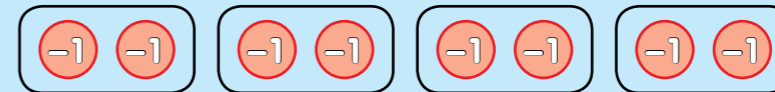
So, \times = .

3 $-2 \times 4 = ?$

Method 1

-2×4 is the same as 4×-2 , which is 4 groups of -2 .

Using Algebra Discs, 4 groups of -2 can be represented as follows.



$$4 \times (-2) = (-2) + (-2) + (-2) + (-2) = -8$$

So, $-2 \times 4 = 4 \times -2 = -8$.

Method 2

-2×4 means *the negative of 2 groups of 4*.

$$\begin{array}{l} -2 \times 4 = -(4 + 4) \\ \qquad \qquad = -(8) \\ \qquad \qquad = -8 \end{array}$$

$$\begin{array}{l} -2 \times 4 = -(2 \times 4) \\ \qquad \qquad = -(8) \\ \qquad \qquad = -8 \end{array}$$

So, $-2 \times 4 = -8$.

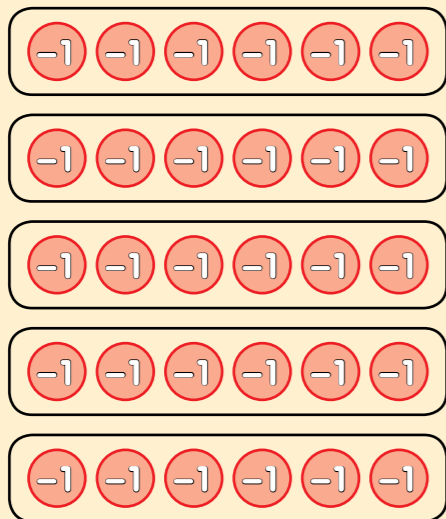


4 $-6 \times 5 = ?$

Method 1

-6×5 is the same as \times , which is groups of .

Using Algebra Discs, it can be represented as follows.



$$\begin{aligned} \square \times \square &= \square + \square + \square + \square + \square \\ &= \square \end{aligned}$$

So, $-6 \times 5 = \square \times \square = \square$.

Method 2

-6×5 means the negative of groups of .

$$\begin{aligned} -6 \times 5 &= -(\square + \square + \square + \square + \square + \square) \\ &= -(\square) \\ &= \square \end{aligned}$$

So, $-6 \times 5 = \square$.

5 Multiply.

a $2 \times (-9) = \square$

b $8 \times (-5) = \square$

c $6 \times (-1) = \square$

d $-4 \times 10 = \square$

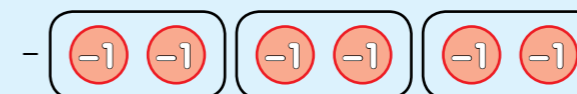
e $-7 \times 3 = \square$

f $-5 \times 12 = \square$

6 $-3 \times (-2) = ?$

$-3 \times (-2)$ is the same as *the negative of 3 groups of (-2)*.

Using Algebra Discs, it can be represented as follows.



$$\begin{aligned} -3 \times (-2) &= - [(-2) + (-2) + (-2)] \\ &= - [-6] \\ &= 6 \end{aligned}$$

$-3 \times (-2) = - [3 \times (-2)]$

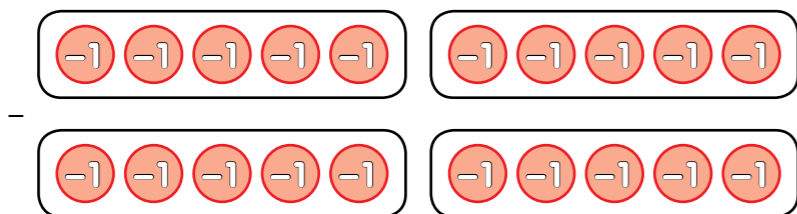


So, $-3 \times (-2) = 6$.

7 $-4 \times (-5) = ?$

$-4 \times (-5)$ is the same as the negative of groups of .

Using Algebra Discs, it can be represented as follows.



$$\begin{aligned}
 -4 \times (-5) &= - (\text{ } + \text{ } + \text{ } + \text{ }) \\
 &= - (\text{ }) \\
 &= \text{ }
 \end{aligned}$$

So, $-4 \times (-5) = \text{ }.$

8 Multiply.

a $-8 \times (-6) = \text{ }.$

b $-4 \times (-2) = \text{ }.$

c $-9 \times (-3) = \text{ }.$

d $-1 \times 0 = \text{ }.$

e $-6 \times (-12) = \text{ }.$

f $-10 \times (-8) = \text{ }.$

Carry out this activity.

9 Work in pairs.

Find the product of each multiplication sentence in each group.

Group A	Group B
$2 \times (-8)$	14×3
-10×6	$-7 \times (-2)$
-4×15	$-6 \times (-11)$
$3 \times (-9)$	8×12
$13 \times (-20)$	$-14 \times (-9)$

Discuss the following with your partner.

- a Compare your answers in Group A. How are they similar?
- b Compare your answers in Group B. How are they similar?
- c Compare your answers in Group A to your answers in Group B? How are they different?
- d How does the sign of the factors affect the sign of the product? Complete the table below.

Factor	\times	Factor	$=$	Product
\oplus	\times	\oplus	$=$	\oplus
\oplus	\times	\ominus	$=$	
\ominus	\times	\oplus	$=$	
\ominus	\times	\ominus	$=$	

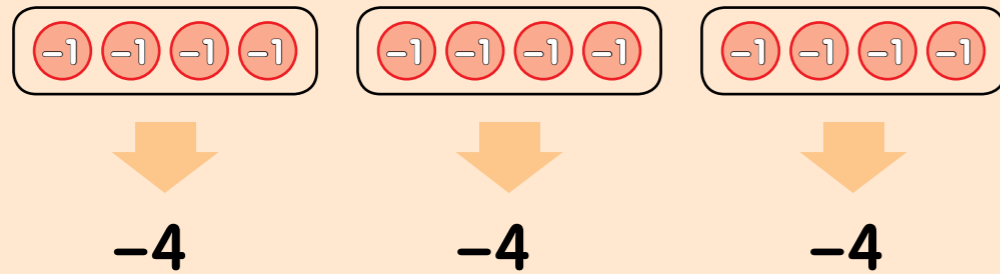
Lesson 5 Division Involving Negative Numbers

Ready, Set, Go!

1 $-12 \div 3 = ?$

Method 1:

Dividing -12 by 3 means making 3 equal groups.
Using Algebra Discs, $-12 \div 3$ can be represented as follows.



So, $-12 \div 3 = -4$.

Method 2:

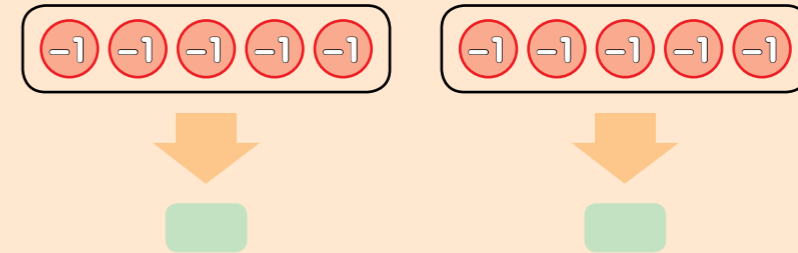
By relating division and multiplication,
 $-12 \div 3$ can be interpreted as $3 \times \square = -12$.

So, $-12 \div 3 = -4$.

2 $-10 \div 2 = ?$

Method 1:

Dividing -10 by 2 means making \square equal groups.
Using Algebra Discs, $-10 \div 2$ can be represented as follows.



So, $-10 \div 2 = \square$.

Method 2:

By relating division to multiplication,
 $-10 \div 2$ can be interpreted as $\square \times \square = \square$.

So, $-10 \div 2 = \square$.

3 Divide by relating division to multiplication.

- a $-24 \div 4 = \square$
- b $-35 \div 5 = \square$
- c $-63 \div 7 = \square$

$4 \times \square = -24$



4 $-8 \div (-2) = ?$

Method 1:

Dividing -8 by -2 means this: "How many groups of -2 s are there in -8 ?"
Using Algebra Discs, $-8 \div (-2)$ can be represented as follows.



There are 4 groups of -2 s.

So, $-8 \div (-2) = 4$.

Method 2:

By relating division and multiplication,

$-8 \div (-2)$ can be interpreted as $\square \times (-2) = -8$.

So, $-8 \div (-2) = 4$.



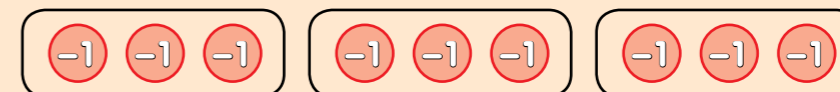
What is the sign of the quotient when a negative number is divided by another negative number?

5 $-9 \div (-3) = ?$

Method 1:

Dividing -9 by -3 means this: "How many groups of \square are there in \square ?"

Using Algebra Discs, $-9 \div (-3)$ can be represented as follows.



There are 3 groups of -3 s.

So, $-9 \div (-3) = \square$.

Method 2:

By relating division to multiplication,

$-9 \div (-3)$ can be interpreted as $\square \times (-3) = \square$.

So, $-9 \div (-3) = \square$.

6 Divide by relating division to multiplication.

a $-12 \div (-6) = \square$

b $-45 \div (-9) = \square$

c $-56 \div (-8) = \square$

$\square \times (-6) = -12$



Maths Reflection

Look at the following numbers.

-3 2 3 -2 6 -6

Use one of the positive numbers and one of the negative numbers above to make:

- a** an addition sentence
- b** a subtraction sentence
- c** a multiplication sentence
- d** a division sentence

Summary

You have learnt to:

- identify and compare negative numbers using a number line
- add, subtract, multiply and divide negative numbers

Let's revise!

- 1 The temperatures in three cities are shown in the table below:

City	31 July 2017	31 December 2017
Jakarta	34°C	31°C
Tokyo	32°C	-9°C
Seoul	31°C	-3°C

- a** What is the difference in temperature between Jakarta and Tokyo on 31 July 2017?

$$34 - 32 = 2$$

The difference is 2°C.

- b** What is the difference in temperature between Jakarta and Seoul on 31 December 2017?

$$31 - (-3) = 31 + 3 = 34$$

The difference is 34°C.

- c** What is the difference in temperature between Tokyo and Seoul on 31 December 2017?

$$-3 - (-9) = -3 + 9 = 6$$

The difference is 6°C.

To find the difference between two numbers, subtract the smaller number from the greater number.



- 2** We can relate multiplication and division when multiplying and dividing negative numbers.

Multiplication	Division
$(+) \times (+) = (+)$	$(+) \div (+) = (+)$
$(-) \times (+) = (-)$	$(-) \div (+) = (-)$
$(+) \times (-) = (-)$	$(+) \div (-) = (-)$
$(-) \times (-) = (+)$	$(-) \div (-) = (+)$

- a** $3 \times 4 = 12$ $12 \div 3 = 4$ or
 $12 \div 4 = 3$
- b** $-2 \times 3 = -6$ $-6 \div (-2) = 3$ or
 $-6 \div 3 = -2$
- c** $7 \times (-9) = -63$ $-63 \div 7 = -9$ or
 $-63 \div (-9) = 7$
- d** $-8 \times (-5) = 40$ $40 \div (-8) = -5$ or
 $40 \div (-5) = -8$