

Year 7 Term 3 Homework

Student Name: _____	Grade: _____
Date: _____	Score: _____

Table of contents

2	Year 7 Term 3 Week 2 Homework	1
2.1	Integers	1
2.1.1	Addition and subtraction involving directed numbers	1
2.1.2	Adjacent signs	2
2.1.3	Multiplication involving directed numbers	3
2.1.4	Division involving directed numbers	4
2.1.5	Problem solving	5
2.2	Maths Challenge	6
2.3	Miscellaneous Exercises	7

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2 Year 7 Term 3 Week 2 Homework

2.1 Integers

2.1.1 Addition and subtraction involving directed numbers

Exercise 2.1.1 Simplify each of these mixed expressions:

1. $8 - -9 =$ _____

2. $-4 - 13 =$ _____

3. $-2 - -12 =$ _____

4. $5 - (-1 - 8) =$ _____

5. $-5 - (-1 + 12) =$ _____

6. $-3 - (-8 - 9) =$ _____

7. $12 - (6 - 2) =$ _____

8. $-10 - (6 - 7) =$ _____

9. $-6 - (-4 + 8) =$ _____

10. $0 - 3 - -12 =$ _____

Exercise 2.1.2 Simplify the following expressions:

1. $0.2 - -0.3 =$ _____

2. $-0.12 - 0.43 =$ _____

3. $-\frac{3}{4} - \frac{1}{4} =$ _____

4. $(-\frac{2}{5}) + (-\frac{3}{5}) =$ _____

5. $\frac{3}{10} - -\frac{5}{10} =$ _____

6. $0 - -\frac{3}{7} =$ _____

7. $1 - -\frac{2}{3} =$ _____

8. $-(-\frac{3}{8} - -\frac{5}{8}) =$ _____

2.1.2 Adjacent signs

Two like adjacent signs can be replaced with a single addition sign.

That is, $++$ or $--$ means $+$.

Two different adjacent signs can be replaced with a single subtraction sign.

That is, $+-$ or $-+$ means $-$.

Exercise 2.1.3

1. $-3 + (-3) =$ _____

2. $-5 - (-9) =$ _____

3. $-12 - (+10) =$ _____

4. $8 - (+12) - (-7) =$ _____

5. $1 - (-8) + (-5) =$ _____

6. $-24 - (-68) - (-12) =$ _____

7. $12 - (-26) + (-25) =$ _____

Exercise 2.1.4

1. What is the difference between -12 and -28 ? _____

2. What is the difference between 6 and -8 ? _____

3. By how much does -3 exceed -7 ? _____

4. By how much does 3 exceed -7 ? _____

5. How much less than 5 is -6 ? _____

6. How much less than -7 is -15 ? _____

7. How much more than -2 is 8 ? _____

2.1.3 Multiplication involving directed numbers

The product of two numbers with like signs is positive.

That is, $(+) \times (+) = (+)$ and $(-) \times (-) = (+)$.

The product of two numbers with different signs is negative.

That is, $(-) \times (+) = (-)$ and $(+) \times (-) = (-)$

Exercise 2.1.5 True or false?

1. $-6 \times 0 \div 3 = -2$ _____

2. $-2 - 3 - 5 = -5 - 3 - 2$ _____

3. $(-6 - 7) - 8 = -6 + (-7 - 8)$ _____

4. $-3 \times -4 \times -5 = -3 \times (-4 \times -5)$ _____

5. $7 \times (-6 + 3) = 5 \times -6 + 7 \times 3$ _____

6. $-3 \times -5 \times -7 = -7 \times -5 \times -3$ _____

Exercise 2.1.6 Simplify the following expressions:

1. $(-3 - 3) \times (1 - -7) =$ _____

2. $-100 \times (0.1)^2 =$ _____

3. $(-0.3)^2 \times 0.2 =$ _____

4. $(-0.2)^3 \times -0.2 =$ _____

5. $\frac{-10 \times -6}{-2 \times -3} =$ _____

6. $-0.5 \times 0.5 \times -0.6 =$ _____

7. $0.08 \times -6 =$ _____

8. $-3 \times -8 \times -1 =$ _____

2.1.4 Division involving directed numbers

The quotient of two numbers with like signs is positive.

That is, $(+) \div (+) = (+)$ and $(-) \div (-) = (+)$.

The quotient of two numbers with different signs is negative.

That is, $(-) \div (+) = (-)$ and $(+) \div (-) = (-)$

Exercise 2.1.7 Simplify the following expressions:

1. $(3 - 17) \div (-10 + 8) =$ _____

2. $-8 + 4 \div 2 =$ _____

3. $-72 \div -2 \div -6 =$ _____

4. $\frac{-3+18}{-5} =$ _____

5. $\frac{-9+12}{2-5} =$ _____

Exercise 2.1.8 Further applications

1. *The quotient of two integers is -8. If one of the numbers is -4, what are the possible values of the other number?*

2. *The average of four numbers is -4. If three of the numbers are -4, 8 and 12, what is the fourth number?*

3. *When a number is divided by -8 and then -8 is added the result is -3. What is the number?*

2.1.5 Problem solving**Exercise 2.1.9**

1. Joe is 5 years older than his sister Anna, but 7 years younger than his brother Mike. If the sum of their ages is 86, how old are each of them?

2. A box containing 7 marbles weigh 216 g. The same box containing 5 marbles weigh 160 g. Find the mass of the box.

3. Local time in Sydney is always 3 hours ahead of Singapore time, and Singapore is always 5 hours behind Wellington, which is 12 hours ahead of London. What is the time difference between Sydney and London?

4. Two numbers have a product of 12 but their sum is -7. What are the numbers?

5. The sum of two numbers is 1 but their product is -30. What are they?

6. One more than -4 is added to the product of 2 and four less than 2. What is the result?

7. At a Weightwatchers Club since the last meeting, the most weight lost by a member was 2.4 kg; the most gained was 0.7 kg. Five members worked out the total of their changes since the last meeting. Which of the following could be their answer?

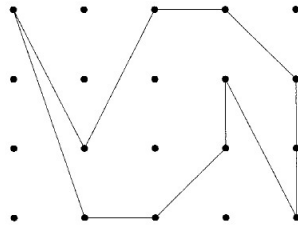
A. a gain of 4 kg B. a loss of 0.2 kg C. a loss of 15 kg D. a loss of 24 kg

2.2 Maths Challenge

Exercise 2.2.1

1. What is the sum of next two numbers in this sequence? 4, 11, 32, 95, 284, . . .

2. The dots in this grid are one cm apart horizontally and vertically. Find the area of the outlined region.



3. Twice in twenty-four hours the hands of the clock divide the face into two parts so that the sum of the numbers in each part is the same. When does this happen?



4. Draw two straight lines on the face of a clock so that the sum of the numbers in each third is the same.



2.3 Miscellaneous Exercises

Exercise 2.3.1

1. The length of the sides of triangle ABC are such that $AB:BC:CA = 3: 6: 8$. Calculate the perimeter of triangle ABC given that the length of $BC = 24$ cm.

2. A shelf can hold 40 books of thickness 3.5 cm each. If books of thickness 2.5 cm each are put on the shelf instead, how many books can it hold?

3. Cathy's mother is 5 times her age. Their combined age is 42 years. How old is Cathy's mother?

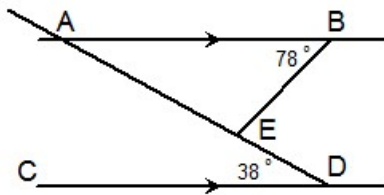
4. The perimeter of the rectangular base of a water tank is 800 cm. The ratio of its length to its breadth is 5:3. When 750 litres of water are poured into the tank, $\frac{5}{12}$ of it is filled. Find the height of the tank.

5. A shop keeper pays \$57.60 for 12 dozens of soft drink and sells them at 45 cents each. Find the percentage profit.

Exercise 2.3.2

1. A bank pays interest of 5.4% per year. How much interest will be paid on \$25,000 in 2 years and 10 months?

2. In the diagram AB is parallel to CD, $\angle ABE = 78^\circ$ and $\angle CDE = 38^\circ$. find the size of $\angle BED$.



3. Evaluate $\frac{5}{16} \div (2\frac{1}{2})^2$.

4. The product of two numbers is 108. If one third of one of the numbers is 9. What are the numbers?

5. In decimal numerals, a two-digit number is smaller by 54 than the number with their digits reversed. The units digit is three more than twice the tens digit. What is the number?
