Unit 3 · Integer

HARDER PRACTICE QUESTIONS

Full marks 33

Write your answers on separate paper. Show your working, one step a line. Draw a number line wherever it helps.

1 Spot the errors [4]

Sabina worked out these four. Each answer is wrong. Write the right answer, and say what went wrong.

i. $(-4) - (-9) = -13$

ii. $(-2) \times (-3) \times (-4) = 24$

iii. $(-12) \div 0 = 0$

iv. $|-7| + |+3| = -4$

2 Which sign? [4]

Copy each line and put one of $+$, $-$, $\times$ or $\div$ in the box to make it true.

a. $(-12) \square (-3) = 4$

b. $(-12) \square (-3) = -9$

c. $(-12) \square (-3) = 36$

d. $(-12) \square (-3) = -15$

3 A cold week in Jumla [4]

These are the lowest temperatures of one winter week in Jumla, in °C. (The numbers are made up.)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
−6	−3	2	−1	−8	0	−5

i. How many degrees apart are the warmest and the coldest of the seven?

ii. From which day to the next did the lowest temperature rise the most? By how much?

iii. Add the seven temperatures and divide by 7 to find their average.

iv. On how many days was the lowest temperature below the average?

4 Where do the brackets go? [4]

$(-8) + 4 \times (-3) - 2$

i. Work it out as it is, with no brackets added.

ii. Put one pair of brackets in so that the answer is 10.

iii. Put one pair of brackets in so that the answer is -28.

iv. Put two pairs of brackets in so that the answer is 20.

5 Without multiplying [3]

Without working out the products, say whether each is positive, negative or zero. Give a reason.

i. $(-1) \times (-2) \times (-3) \times \cdots \times (-9)$

ii. $(-1) \times (-2) \times (-3) \times \cdots \times (-10)$

iii. $(-3) \times (-2) \times (-1) \times 0 \times 1 \times 2 \times 3$

6 Two integers from clues [3]

Two integers add up to -4. Their absolute values add up to 10.

i. Explain why they can't both be negative.

ii. Find the two integers.

iii. Check both clues with your answer.

7 Out of the freezer [4]

A packet of momos is taken out of a freezer at −18 °C. It warms by 3 °C every 4 minutes until it reaches the kitchen's temperature, 21 °C. (The numbers are made up.)

i. What is its temperature after 20 minutes?
ii. After how many minutes does it reach 0 °C?
iii. How long does it take to reach 21 °C?
iv. The day before, the same packet was cooled in the freezer from 21 °C to −18 °C. Write the change in its temperature as a product of two integers.

8 Make your own [3]

Write one example of each, with numbers not used on this sheet, and work it out.

i. A division of two integers whose quotient is −6.
ii. A subtraction of one negative integer from another whose answer is positive.
iii. A product of three different integers that equals −24.

9 Think: do they swap and regroup? [4]

i. Work out $[(-10) - (-4)] - (-2)$ and $(-10) - [(-4) - (-2)]$. Is subtraction of integers associative?
ii. Work out $[(-24) \div (-6)] \div 2$ and $(-24) \div [(-6) \div 2]$. Is division of integers associative?
iii. Is the quotient of two integers always an integer? Give an example.
iv. For which integers a and b is $a - b = b - a$?