

Exercise 1.1

Focus



- 1 Hassan shaded in grey these numbers on a hundred square. The numbers form a pattern.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- a What is Hassan's rule for finding the next number?

- b What is the next number in his pattern?



- 2 The sequence 10, 16, 22, ... continues in the same way. Write the next **two** numbers in the sequence.

- 3** The rule for a sequence of numbers is 'add 3' each time.
 $1, 4, 7, 10, 13, \dots$

The sequence continues in the same way.
 Circle the numbers that are **not** in the sequence.

22 28 33 40

- 4** A sequence has the first term 2020 and the term-to-term rule is 'add 11'.
 Write the first five terms of the sequence.

_____ , _____ , _____ , _____ , _____

- 5** Write the next four terms in these linear sequences.

a $10, 7, 4, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$

b $-9, -7, -5, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$

c $1095, 1060, 1025, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$

Tip

Remember that -9 is less than -7 .



Practice

- 6** Here is part of a number sequence.
 The numbers increase by 25 each time.

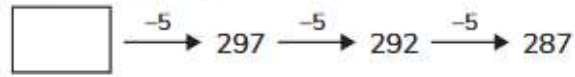
$25, 50, 75, 100, 125, \dots$

Circle all the numbers below that will be in the sequence.

355 750 835 900 995



- 8 Here is part of a number sequence.
The first number is missing.



Write the missing number.



- 9 A sequence has first term 1001 and last term 1041.
The term-to-term rule is 'add 5'.
Write down **all** the terms in the sequence.



- 10 Each number in this sequence is double the previous number.
Write the missing numbers.

_____, 3, 6, 12, 24, 48, _____

Challenge



- 11 Write the missing number in this sequence.

1, 3, 6, 10, _____

Explain how you worked it out.

Tip

Remember to
work backwards.

> 1.2 More on negative numbers

Worked example 2

temperature zero

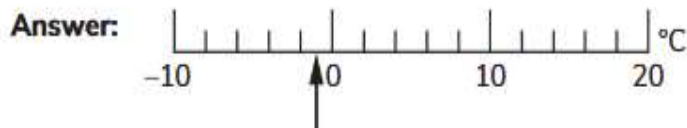
Here is a temperature scale.



The temperature is 1° **below** freezing on a cold day.
Mark the position of this temperature on the scale with an arrow.

Each division on the number line represents 2 units.

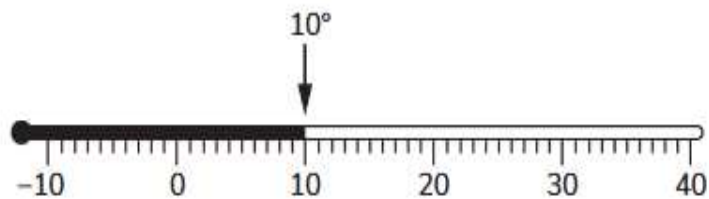
1° below freezing is -1° and it is half way between -2 and 0 .



Exercise 1.2

Focus

- K** 1 Here is a thermometer. The arrow is pointing to 10°C .



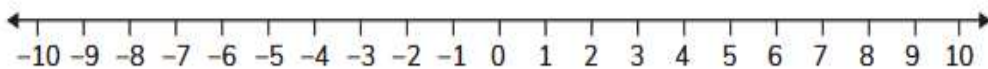
Draw an arrow on the thermometer pointing to -5°C .

- Q1** 2 Here are some temperatures.

4 °C -3 °C 5 °C 0 °C -2 °C

- a Which is the warmest temperature? _____
 b Which is the coldest temperature? _____

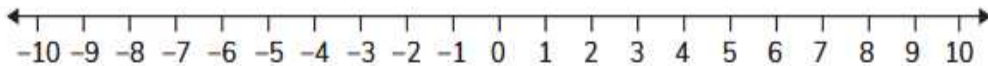
- Q2** 3 Look at the number line.



Write where you would land on the number line after these moves.

- | | | | | | | | |
|---|-------|----------|-------|---|-------|------------|-------|
| | start | count on | end | | start | count back | end |
| a | (-4) | (1) | _____ | b | (6) | (6) | _____ |
| | start | count on | end | | start | count back | end |
| c | (-5) | (3) | _____ | d | (0) | (9) | _____ |

- Q3** 4 Circle the **larger** number in each pair.
 Find the difference between the two numbers.
 Use the number line to help you.

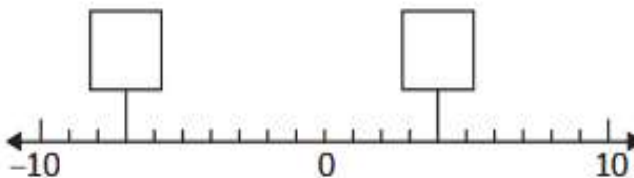


- a -6 -2 Difference: _____
 b -3 -1 Difference: _____
 c 4 -4 Difference: _____

Practice



- 5 Here is part of a number line.
Write the missing numbers in the boxes.



- 6 The thermometer shows a temperature of -8°C .



Draw arrows on the thermometer to point to these temperatures.

-4°C 14°C -1°C



- 7 Write the missing numbers in these sequences.

a $-12, -8, \underline{\hspace{2cm}}, 0, 4, 8, \underline{\hspace{2cm}}$

b $-15, \underline{\hspace{2cm}}, -5, 0, 5, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$

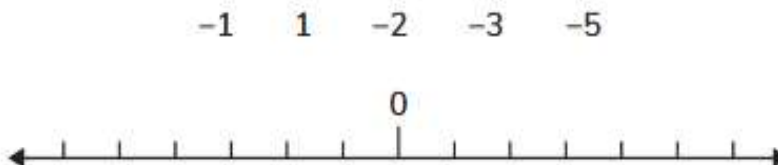


- 8 The temperature outside when Soraya arrived at school was -1°C .
By lunchtime the temperature had risen by 8°C .
What was the temperature at lunch time?

Challenge

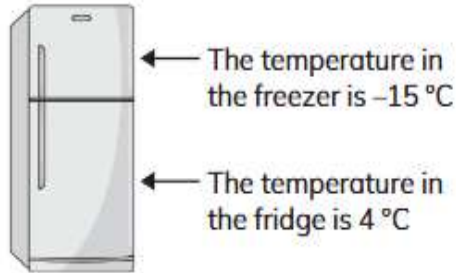


- 9 Put these numbers in order on the number line.



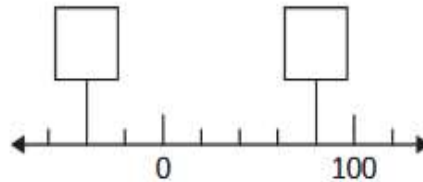
- 10** The temperature in Amsterdam is 2°C .
The temperature in Helsinki is -7°C .
How many degrees warmer is it in Amsterdam than in Helsinki?

- 11** Here is a fridge freezer.



What is the difference in temperature between the fridge and the freezer?

- 12** Here is part of a number line.
Write the missing numbers in the boxes.



- ~~**13** Mira counts on in threes starting at -13 .
She says, 'If I start at -13 and keep adding 3, I will reach 0.'
Is Mira correct?
Explain your answer.~~

Exercise 1.1

- 1 a Mia counts on in steps of 100.
She starts at 946.
Write the next number she says.
- b Kofi counts back in steps of 100.
He starts at 1048.
Write the next number he says.
- c Bibi counts on in steps of 1000.
She starts at 1989.
Write the next number she says.
- d Pierre counts back in steps of 1000.
He starts at 9999.
Write the next number he says.
- e Tara counts back in ones.
She counts 3, 2, 1, 0.
Write the next number she says.

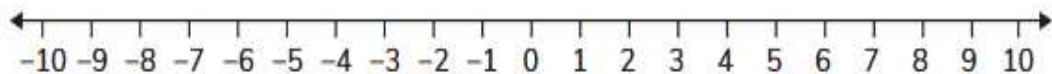
Answers

Exercise 1.1

- 1 a 1046 b 948 c 2989
d 8999 e -1

Exercise 1.2

- 1** Look at the number line.



Write where you would land on the number line after these moves.

- a** start count on

-5

1

- b** start count back

-2

4

- c** start count on

-3

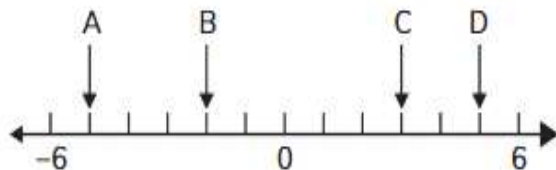
3

- d** start count back

6

9

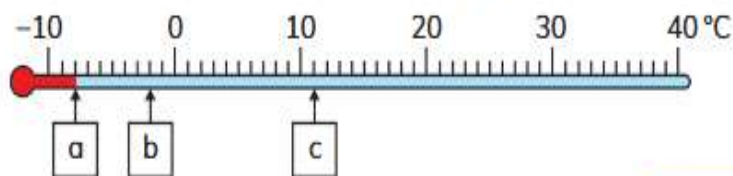
- 2** Here is a number line.



- a** Which numbers do the arrows A, B, C and D point to?
b Which letter shows the position of a number greater than -4 and less than 0 ?

- 3** Look at this thermometer.

What numbers are the arrows pointing to at a, b and c?



- 4** Which temperature is the coldest?

-6°C 0°C 1°C -2°C

Tip

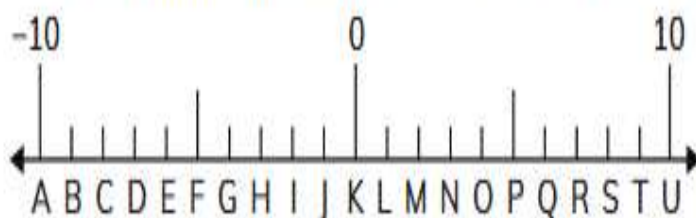
Use the thermometer in question 3 to help you.



1.2 More on negative numbers


- OT** 5 The temperature in a town one day was 5°C .
The temperature dropped by 9°C overnight.
What was the lowest night-time temperature?

- OT** 6 The letters on the number line are in the place of numbers.



Copy and complete the table to solve the puzzle and find out where emperor penguins live.

-10	3	9	-10	7	-8	9	-2	-8	-10

- OT**  7 What mistake has Marcus made?
How can you help him correct this mistake?

Negative 5°C is warmer than negative 4°C because 5 is bigger than 4.

- OT** 8
- What temperature is 6 degrees warmer than -4°C ?
 - What temperature is 5 degrees less than 1°C ?
 - What temperature is 3 degrees warmer than -2°C ?
 - What temperature is 3 degrees cooler than 0°C ?
 - What temperature is 5 degrees higher than -1°C ?



Answers

Exercise 1.2

1 a -4 b -6 c 0 d -3

2 a $A = -5$ $B = -2$ $C = 3$ $D = 5$

b B

3 $a = -8$, $b = -2$, $c = 11$

4 -6°C

5 -4°C

6 ANTARCTICA

7 -5°C is colder than -4°C .

Marcus has not taken any notice of the negative signs. He should place his numbers on a number line to help him correct the mistake.

8 a 2°C b -4°C c 1°C

d -3°C e 4°C