

1.

Jon makes a sequence of numbers.

His rule is to add the **same amount** each time.

Write in the missing numbers.

1 mark

2.

I am thinking of a number that is not zero.

I **multiply** my number by **5**

Tick (✓) the statement below that is true.

☐

The answer must be positive.

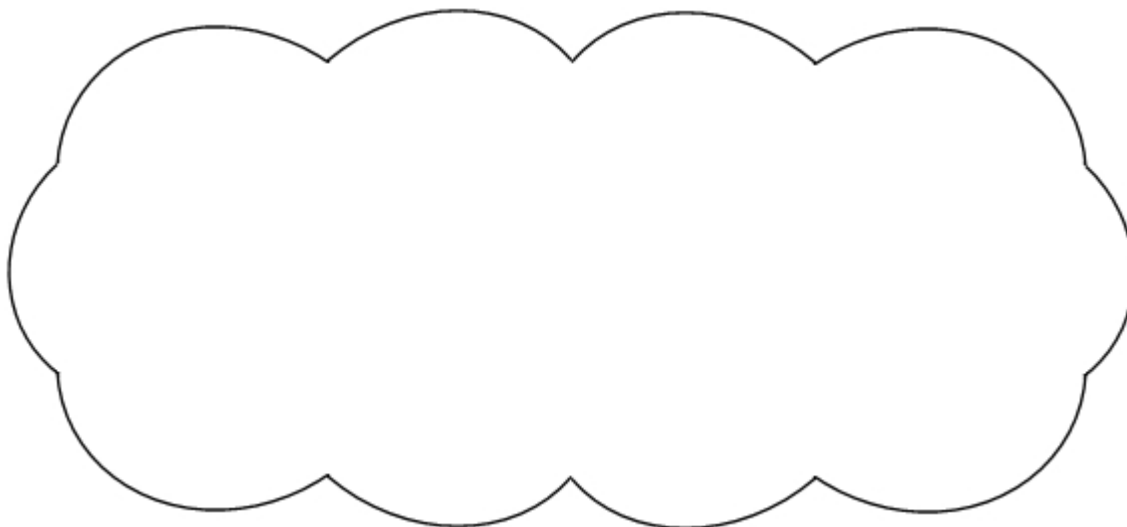
☐

The answer must be negative.

☐

The answer could be positive or negative.

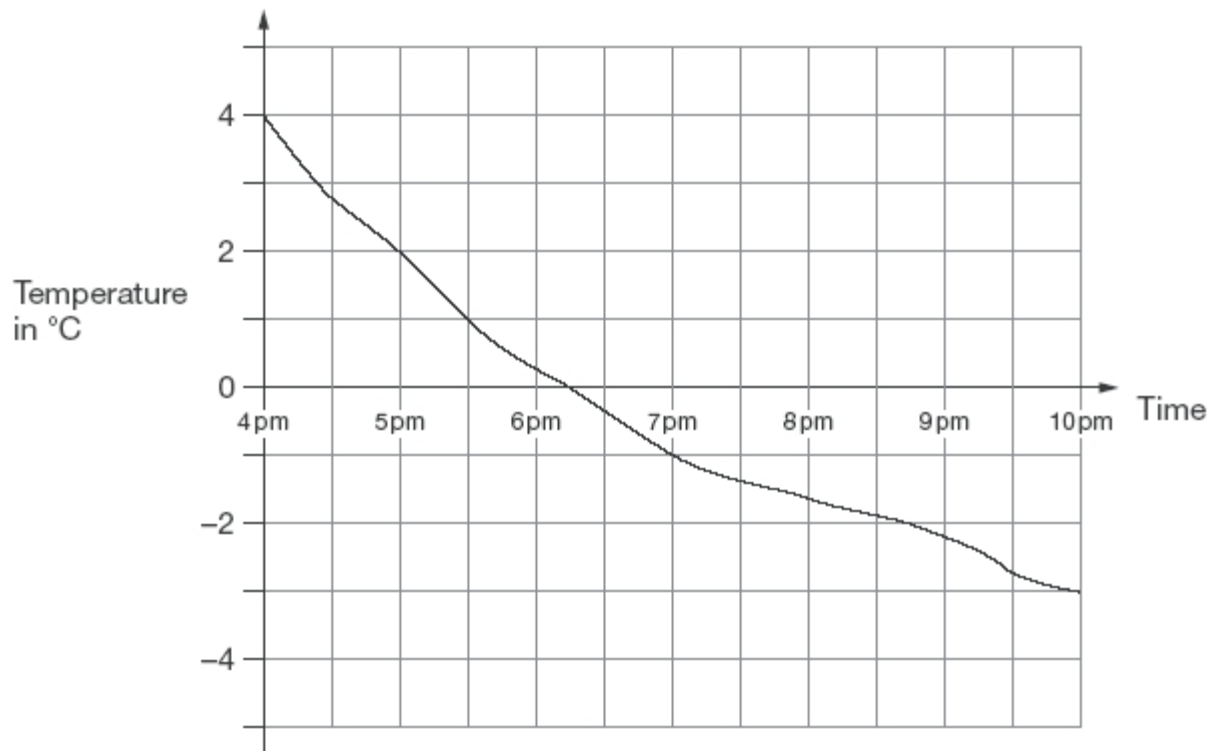
Explain how you know.



1 mark

3.

This graph shows the outside temperature from 4pm to 10pm on a day in winter.



At what time was the temperature  $-2^{\circ}\text{C}$ ?

1 mark

How many degrees did the temperature drop from 5pm to 7pm?

1 mark

4.

A sequence starts at **500** and **80** is **subtracted** each time.

500      420      340 ...

The sequence continues in the same way.

Write the **first two numbers** in the sequence which are **less than zero**.

2 marks

5.

Here is a table of temperatures at dawn on the same day.

Temperatures °C	
London	-4°C
Moscow	-6°C
New York	-9°C
Paris	+6°C
Sydney	+14°C

What is the **difference** in temperature between **London** and **Paris**?

 °C

1 mark

At noon the temperature in **New York** has **risen by 5°C**.

What is the temperature in **New York** at noon?

 °C

1 mark

6.

Paulo makes a sequence of numbers.

He chooses a starting number and then subtracts equal amounts each time.

The **third number** in his sequence is **45**

The **tenth number** is **-32**

		45								-32
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What is the **first** number in the sequence?

Show your method

2 marks

7.

Circle **two** numbers with a **difference** of **8**

-5   -4   -3   -2   -1   0   1   2   3   4   5

1 mark

Write **two** numbers with a **sum** of **-6**

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1 mark

8.

Carol has a rule for a sequence of numbers.

Her rule is

***"The next number is the sum of the two previous numbers."***

Use Carol's rule to write in the three missing numbers.

, , , 0, 1, 1, 2, 3, 5, 8, ...

1 mark

## Mark schemes

1.

-1

4

9

14

19

[1]

2.

Indicates the answer could be positive or negative and gives a correct explanation, eg

- A positive multiplied by  $-5$  gives a negative answer, but a negative multiplied by  $-5$  gives a positive answer
- Positive numbers will become negative, negative numbers will become positive
- If the number is 10 the answer will be  $-50$ , which is negative, but if the number is  $-10$ , the answer is 50, ie positive

*Accept minimally acceptable explanation*

*eg*

- *10 becomes negative, but  $-10$  becomes positive*
- *+ve  $\rightarrow$  -ve*
- *-ve  $\rightarrow$  +ve*
- *$-5 \times -3 = 15$ ,  $-5 \times 3 = -15$*

**Do not accept** incomplete explanation

*eg*

- *$-5 \times 3 = -15$*
- *The original number could be positive or negative so the answer could be positive or negative*

*! Makes an incorrect decision, or no decision made, but explanation clearly correct*

*Condone provided the explanation is more than minimal*

U1

[1]

3.

(a) Answer in the range of 8:40pm to 8:50pm inclusive

*The answer is a specific time*

1

(b) 3

**Do not accept**  $-3$

1

4.

$-60$  in first box.

*Accept 'minus 60'*

**Do not accept** '60-'

$-140$  in second box

*Accept 'minus 140'*

**OR Do not accept** '140-'

OR

a number 80 less than the answer given in the first box provided both numbers are less than 0

*If the answers given are '60-' and '140-' respectively, award **ONE** mark only.*

Up to 2

[2]

5.

(a) 10

*Accept +10 **OR** -10*

***Do not** accept an incomplete calculation, eg: **4 + 6***

1

(b) -4

*Accept 'negative 4' **OR** 'minus 4' **OR** '4 below'.*

***Do not** accept '4-'.*

1

[2]

6.

Award **TWO** marks for the correct answer of 67

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg

7 gaps = 77

1 gap = 11

*Answer need not be obtained for the award of the mark.*

Up to 2

[2]

7.

(a) Circling of numbers

**-5 AND 3**

**OR -4 AND 4**

**OR -3 AND 5**

*Only these numbers are acceptable. Accept other unambiguous indications of these numbers.*

1

(b) Any two numbers which sum to -6, eg

**-5 AND -1**

**OR -7 AND 1**

*The numbers need not be from the set given in the question. Accept **-6 AND 0 OR -3 AND -3**. Accept fractions and decimals.*

1

[2]

8.

$$\boxed{+2} \boxed{-1} \boxed{+1}$$

*'+' signs may be omitted.*

[1]