



Week 5

Negative numbers

Name: _____

Class: _____

Date: _____

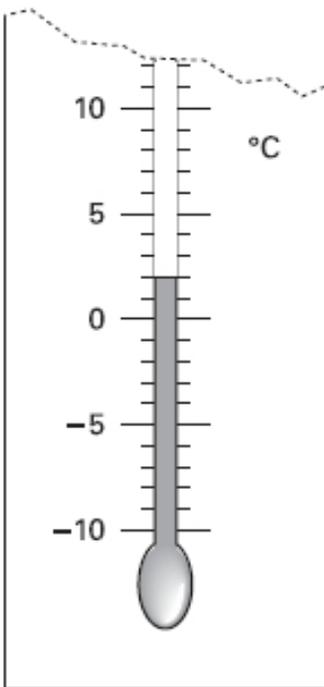
Time: **30 minutes**

Marks: **30 marks**

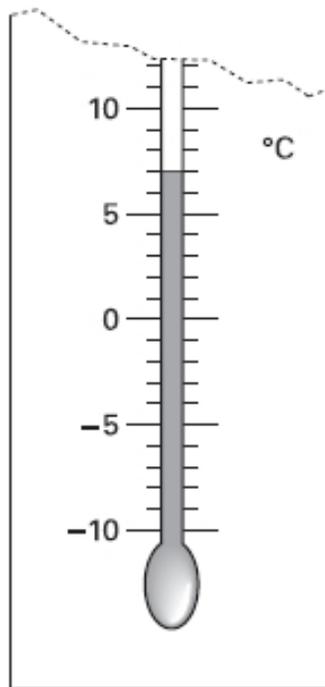
Comments:

1

These are the temperatures in York and Rome on a day in winter.



York



Rome

How many degrees **colder** is it in York than in **Rome**?

 °C

1 mark

On another day, the temperature in York is **4°C**

Rome is **7 degrees colder** than York.

What is the temperature in **Rome**?

 °C

1 mark

2



The temperature **inside** an aeroplane is **20 °C**.

The temperature **outside** the aeroplane is **-30 °C**.

What is the **difference** between these temperatures?

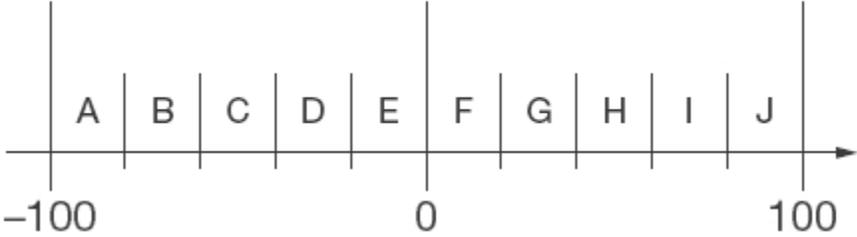
degrees

1 mark

3

Here is part of a number line.

It is divided into equal sections.



Write the letter of the section where each of these numbers belongs.

The number 99 has been done for you.

number	section
99	J
29	
-83	
-15	
44	

2 marks

4

This weather chart shows the highest and lowest temperatures in a town on five days in March.

	Temperature °C	
	highest	lowest
Monday	+7	0
Tuesday	+7	-2
Wednesday	+8	-2
Thursday	+9	+1
Friday	+4	-5

Which day has the greatest difference between the highest and the lowest temperatures?

1 mark

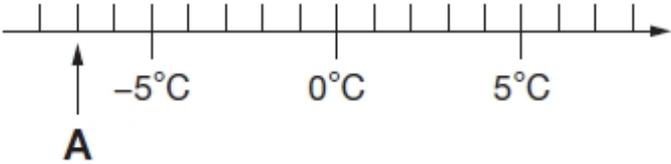
What is the difference between the lowest temperatures on Thursday and Friday?

degrees

1 mark

5

Here is part of a temperature scale.



What is the temperature shown at **A**?

 °C

1 mark

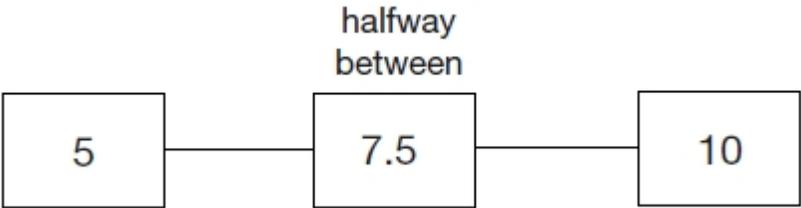
What temperature is 20 degrees **higher** than **A**?

 °C

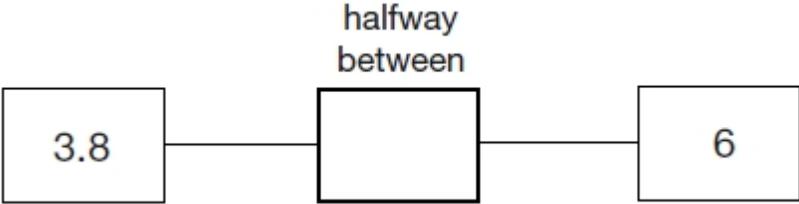
1 mark

6

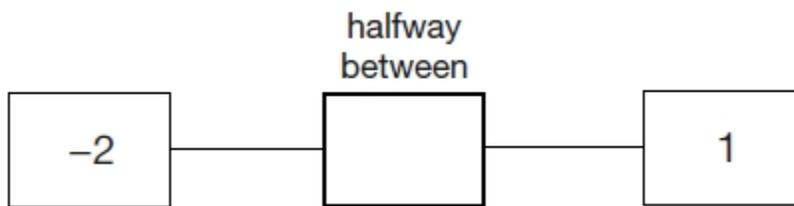
The number 7.5 is halfway between 5 and 10



Write in the missing numbers.

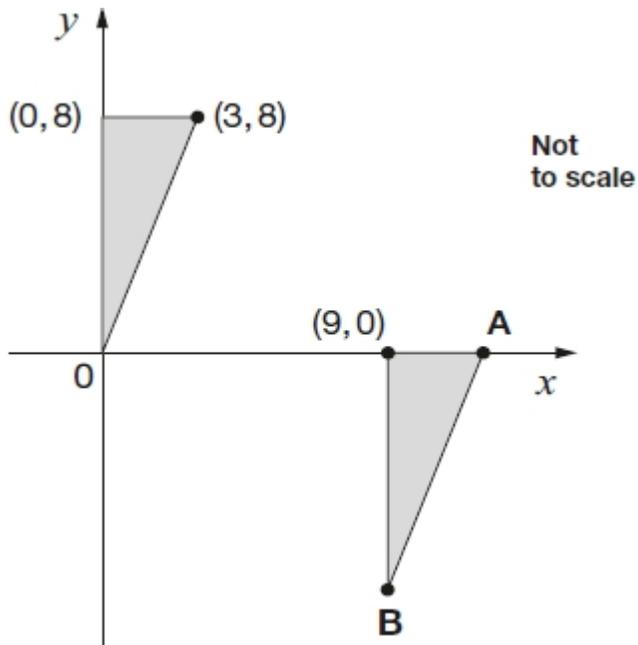


1 mark



1 mark

7 Here are two **identical** shaded triangles on coordinate axes.



Write the coordinates of points A and B.

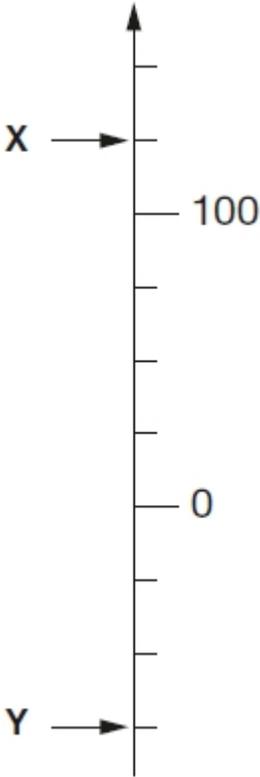
A =

B =

2 marks

8

Here is part of a number line.



What is the value of X?

X =

1 mark

What is the value of Y?

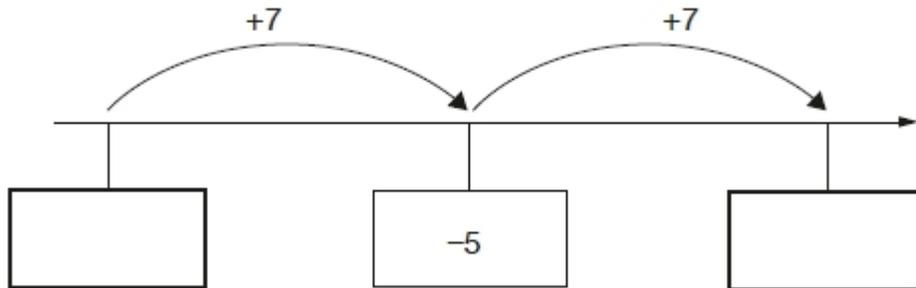
Y =

1 mark

9

Here is part of a number line.

Write the missing numbers in the boxes.



2 marks

10

This table shows the temperature at 9 am on three days in January.

1st January	8th January	15th January
$+5^{\circ}\text{C}$	-4°C	$+1^{\circ}\text{C}$

What is the difference between the temperature on 1st January and the temperature on 8th January?

 $^{\circ}\text{C}$

1 mark

On 22nd January the temperature was 7 degrees lower than on 15th January.

What was the temperature on 22nd January?

 $^{\circ}\text{C}$

1 mark

11Circle **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**

1 mark

12

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

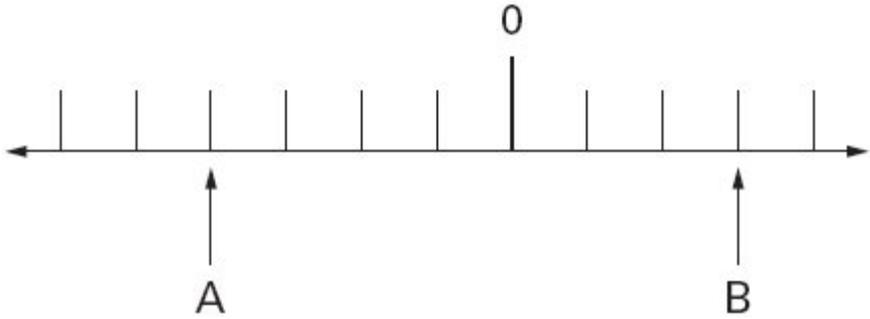
1 mark

At noon the temperature in **New York** has **risen by 5°C**.What is the temperature in **New York** at noon? °C

1 mark

13

A and B are two numbers on the number line below.



The **difference** between A and B is 140

Write the values of A and B.

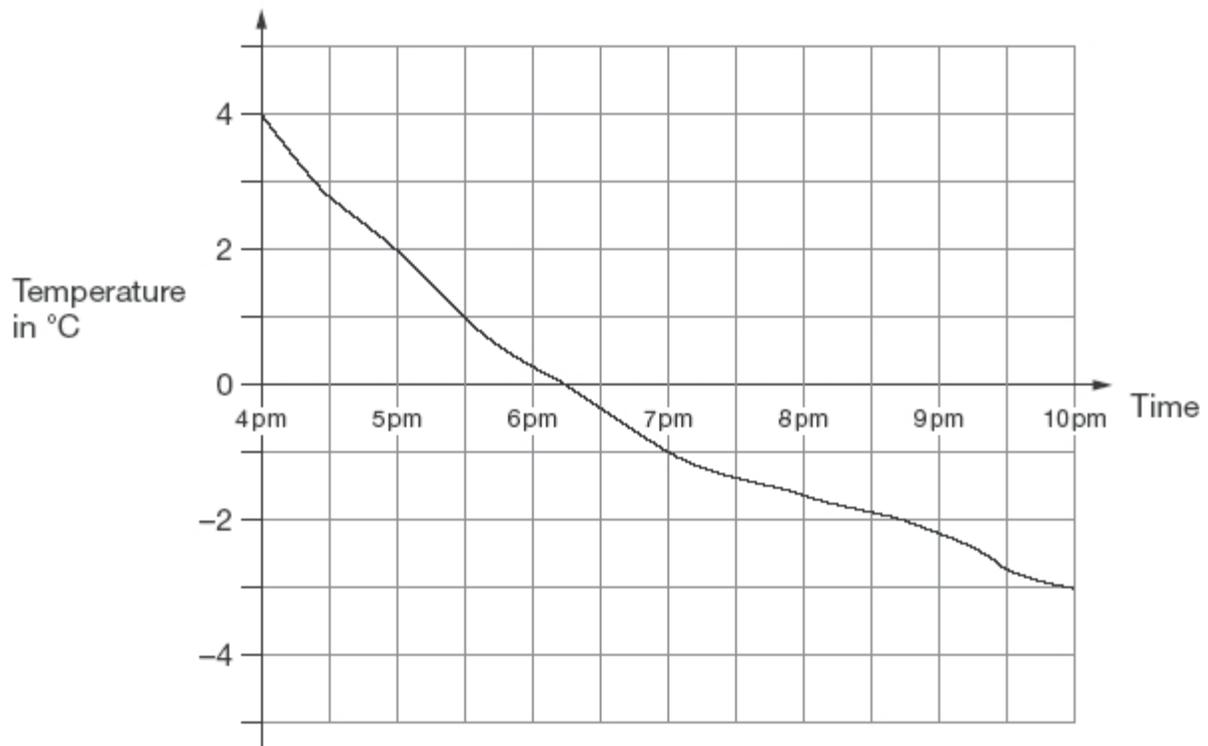
Show your method

A =	B =
-----	-----

2 marks

14

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



At what time was the temperature -2°C ?

1 mark

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

1 mark

15

I am thinking of a number that is not zero.

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

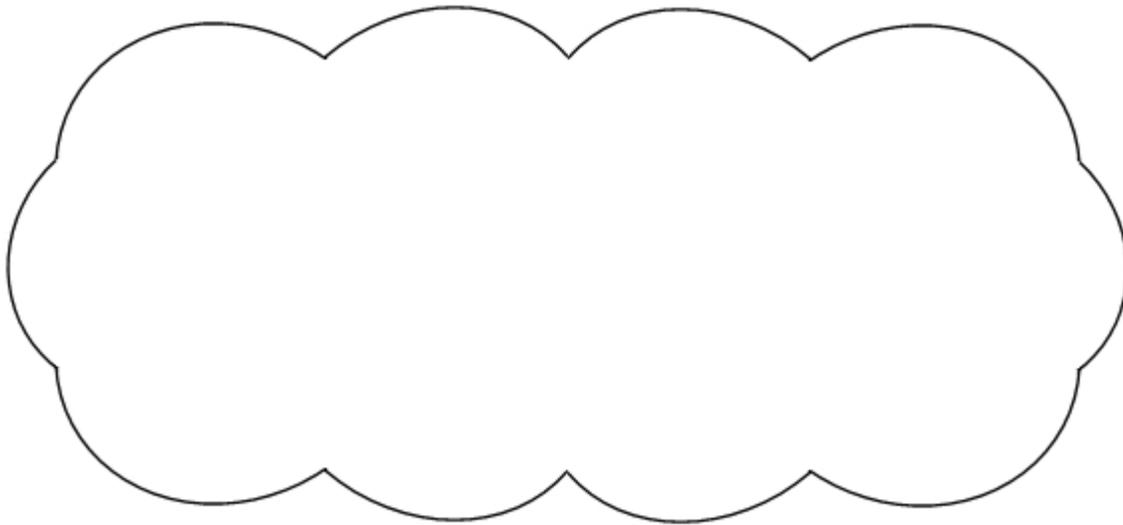
Tick (✓) the statement below that is true.

The answer must be positive.

The answer must be negative.

The answer could be positive or negative.

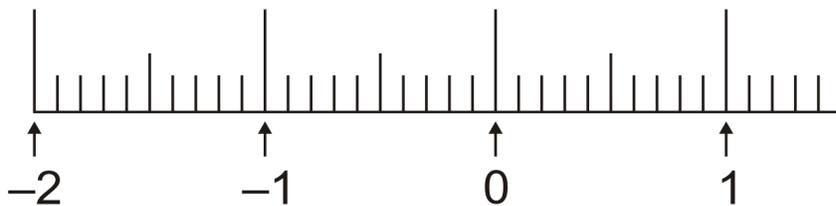
Explain how you know.



1 mark

16

Mark with arrows the points -1.5 and 0.45 on the number line.



2 marks

Mark schemes

1

(a) 5

1

(b) - 3 **OR** minus 3

*Accept '3 degrees below zero' or similar **OR** -3' written on either thermometer.*

***Do not** accept '3-' **OR** a mark on the thermometers such as a cross, unless the numerical answer is written.*

1

[2]

2

50

Accept -50

[1]

3

Award **TWO** marks for all four letters in the correct order as shown:

99 J

29 G

-83 A

-15 E

44 H

If the answer is incorrect, award **ONE** mark for three letters correct.

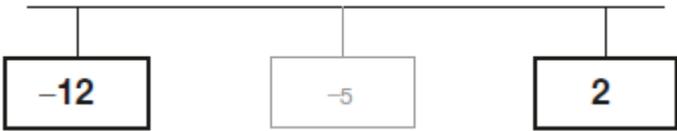
Up to 2

[2]

4	Wednesday	<i>Accept unambiguous abbreviations or recognisable misspellings.</i>	1	
	6	Do not accept -6	1	[2]
5	(a) -7°C	Do not accept 7-	1	
	(b) 13°C	<i>If (a) is negative allow follow through in part (b) for ONE mark.</i>	1	[2]
6	(a) 4.9	<i>Accept equivalent fractions and decimals</i>	1	
	(b) -0.5	<i>Accept $-\frac{1}{2}$</i>	1	[2]
7	(a) (12, 0)	<i>Accept unambiguous answers written on the diagram.</i>	1	
	(b) (9, -8)	<i>If the answer to (a) is (9, -8) AND the answer to (b) is (12, 0) then award ONE mark for (b).</i>	1	[2]
8	(a) X = 125		1	
	(b) Y = -75	Do not accept 75-	1	[2]

9

Award **TWO** marks for both numbers correct as shown.



If the answer is incorrect, award **ONE** mark for one number correct.

*Do not accept 12-
Accept +2 in the right-hand box.*

Up to 2

[2]

10

(a) 9

Do not accept -9 or 9-

1

(b) -6

Do not accept 6-

1

[2]

11

(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]

12

(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]**13**Award **TWO** marks for the correct answer as shown:A = B = If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg

$$140 \div 7 = 20$$

*Accept 'minus 80'**Do not accept '80-'**Answer need not be obtained for the award of **ONE** mark.**Accept for **ONE** mark:**A = -80 AND B = wrong answer OR**A = -80 AND B = blank OR**A = 80 AND B = 60 OR**A = 80 AND B = -60 OR**A = 60 AND B = -80*

Up to 2 (U1)

[2]**14**

(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

15

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]

16

The gradation corresponding to -1.5 correctly indicated on the number line

1

It is not necessary for the point to be labelled -1.5

It is not necessary for the point to be marked with an arrow.

A point corresponding to 0.45 correctly indicated on the number line

1

It is not necessary for the point to be labelled 0.45

*Accept any point marked that is clearly **between** the gradations for 0.4 and 0.5*

It is not necessary for the point to be marked with an arrow.

[2]