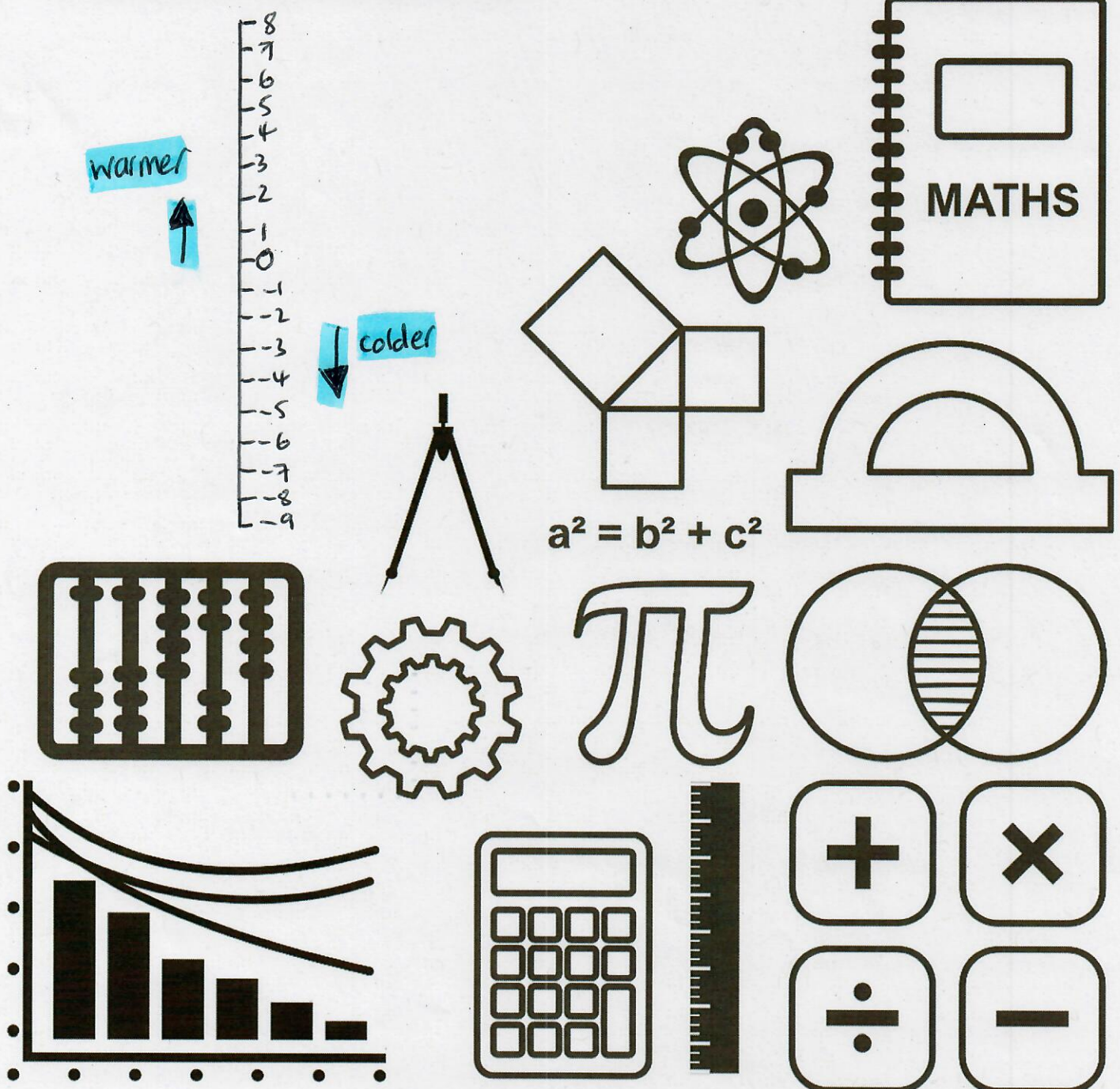


MATHSDIY

GCSE TOPIC BOOKLET NEGATIVE NUMBERS

SOLUTIONS



1. The following table shows the midday temperatures in four cities for one day in December.

City	Temperature in °C
Glasgow	-10
Birmingham	-6
Cardiff	2
London	-1

- (i) What is the difference in the midday temperatures in London and Birmingham?

5°C

- (ii) On the same day, in Cardiff, the temperature at 21.00 was eight degrees lower than the midday temperature.
What was the temperature at 21.00?

2 - 8 = -6°C

- (iii) On the same day, in Glasgow, the temperature at 15.00 had risen by 3°C.
What was the temperature at 15.00?

-7°C

[3]

2. Complete the following table which shows the temperature at 8:00am, the change in temperature and the temperature at noon in each of five cities.
The first one has been done for you.

Place	Temperature at 8:00am	Change in temperature	Temperature at noon
Paris	-2°C	Up 3°C	1°C
Moscow	-5°C	Down 4°C	<u>-9°C</u>
Warsaw	-2°C	<u>Up 2°C</u>	0°C
Swansea	<u>1°C</u>	Down 4°C	-3°C
Murmansk	-8°C	<u>Up 5°C</u>	-3°C

[4]

3.

The table below gives the highest and lowest temperatures, in $^{\circ}\text{C}$, recorded at 5 cities in a year.

City	York	Paris	Cairo	Moscow	Sydney
Highest temperature	26	31	37	29	34
Lowest temperature	-8	-5	5	-23	4

(a) In which city was the lowest temperature recorded?

Moscow

[1]

(b) What is the difference between the highest temperature in York and the lowest temperature in York?

34°C

[1]

(c) How much colder is the lowest temperature in Moscow than the lowest temperature in Paris?

18°C

[1]

4.

Complete the following table.
The first row has been completed for you.

Place	Temperature at 10 p.m.	Change	Temperature at 10 a.m. next day
Aberystwyth	-1°C	Up 4°C	3°C
Bangor	-3°C	<u>up 3°C</u>	0°C
Cardiff	-4°C	Down 3°C	<u>-7°C</u>
Denbigh	<u>-5°C</u>	Up 4°C	-1°C

[3]

5. (a) One day, the temperature in Swansea at 10.00 am was 4°C .
By 3.00 pm the temperature had risen by 8°C .
What was the temperature at 3.00 pm?

12°C

[1]

- (b) One day, the temperature in Bangor at 2.00 pm was 5°C .
At 11.00 pm the temperature had dropped by 9°C .
What was the temperature at 11.00 pm?

-4°C

[1]

- (c) The temperature inside a freezer was -25°C .
The electricity went off for a couple of hours and the temperature in the freezer became -18°C .
By how many degrees did the temperature change?

7°C

[1]

6. The following table shows four places and their height above sea level.

Place	Height above sea level (in metres)
Llyn Cowlyd, Wales	355
Chott Melrhir, Algeria	-40
Lake Eyre, Australia	-15
The Fens, England	-4

- (a) Explain what it means to write the height of Lake Eyre above sea level as -15 .

15 metres below sea level

[1]

- (b) Which place is the lowest of the four?

Chott Melrhir, Algeria

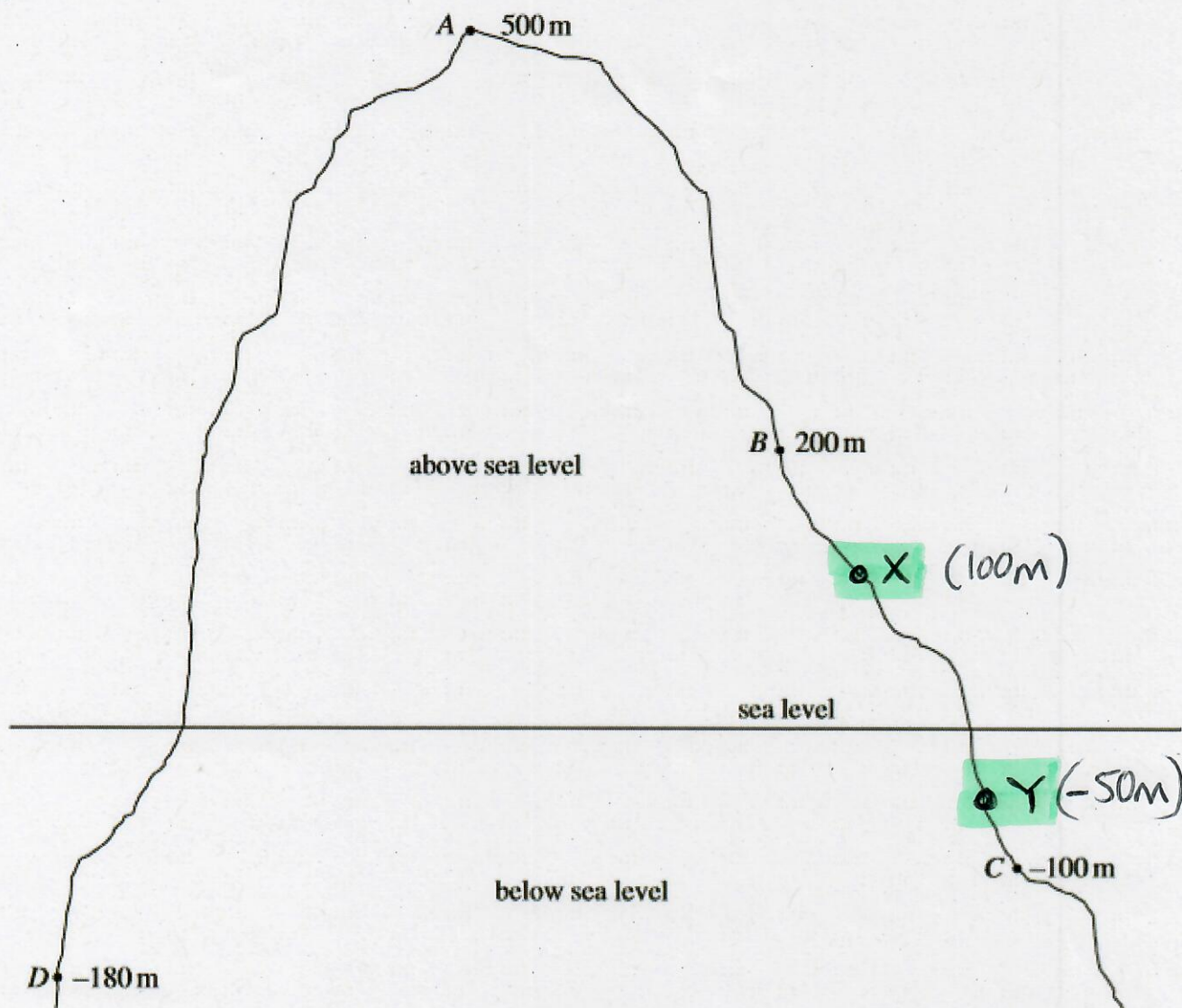
[1]

- (c) How much higher than Chott Melrhir is Llyn Cowlyd?

395 metres

[1]

7.



The diagram illustrates a mountain that is partly above sea level and partly below sea level.

The point A is 500m above sea level.

The point C is 100m below sea level and its height is shown as -100m on the diagram.

(a) On the diagram

- mark a point X that is 100m above sea level,
- mark a point Y that is 50m below sea level.

[2]

(b) How much higher is the point B than the point C?

300m

[1]

- (c) The point E is 40 m below the level of D .
Write down its height above sea level.

-220m

[1]

8. On the Glenberry golf course, golfers are expected to take 72 shots to get around the course.

A golfer who takes 74 shots gets a score of +2 because he/she has taken 2 shots more than the 72.

A golfer who takes 69 shots gets a score of -3 because he/she has taken 3 shots less than the 72.

- (a) What would be the score of a golfer who takes 78 shots?

+6

[1]

- (b) What would be the score of a golfer who takes 68 shots?

-4

[1]

- (c) Tom and Jack are 2 golfers.
Tom gets a score of -4 whilst Jack gets a score of +1.
Whose score is the better and by how much?

Tom is better by 5 (shots)

[1]

- (d) In a competition, golfers play the course 4 times.
Linda's scores were -3, -2, +1 and -4 respectively.
What is her total score for the competition?

-8

[2]

9.

The table below gives the warmest and coldest temperatures recorded in London during 2009.

London 2009	°C
Warmest day	30
Coldest day	-1
Warmest night	18
Coldest night	-6

(a) What was the coldest temperature recorded?

-6°C

[1]

(b) What is the difference between the temperatures of the coldest day and the coldest night?

5°C

[1]

(c) What is the difference between the temperatures of the warmest night and the coldest night?

24°C

[1]

10.

The following table shows, for five different places,
 • the temperatures at midday on 2 different days,
 • the change of temperature between the 2 days.
 Complete the table.

Place	Temperature on day 1	Temperature on day 2	Change in temperature
Bangor	-4	2	up 6
Toronto	3	-2	<u>down 5</u>
Glasgow	-1	<u>-4</u>	down 3
Moscow	-2	-6	<u>down 4</u>
Reykjavik	<u>-7</u>	-5	up 2

[4]

11. In a game, a person scores

- 3 points for a win,
- 1 point for a draw,
- -2 points for a loss.

- (a) Geraint plays the game **four times**.
He wins twice, draws once and loses once.
What is Geraint's score?

[2]

$$+3, +3, +1, -2 = \underline{+5} \quad (\text{or } \underline{5})$$

- (b) Mary plays the game **four times** and has a final score of 0.
Write down the number of wins, draws and losses Mary had and justify your answer. [2]

1 win, 1 draw, 2 losses

$$+3, +1, -2, -2 = \underline{0}$$

- (c) John plays the game **five times** and has a final score of -4.
Write down the number of wins, draws and losses John had and justify your answer. [2]

1 loss, 1 loss, 1 loss, 1 draw, 1 draw

$$-2, -2, -2, +1, +1 = \underline{-4}$$

0 wins, 3 losses, 2 draws

12. (a) Complete the following table, which shows the temperature at 11:00p.m., the change in temperature and the temperature at 11:00a.m. the next day, in each of three places.
The first one has been done for you.

Place	Temperature at 11:00p.m.	Change	Temperature at 11:00a.m. next day
Swansea	-1°C	Up 4°C	3°C
New York	-2°C	<u>Up 2°C</u>	0°C
Moscow	<u>-8°C</u>	Up 5°C	-3°C

[2]