Silver Level

Model Answers 6

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Model Answers 6

Time Allowed: **54 minutes**

Score: **/ 45**

Percentage: **/100**

1 The table shows information about the time, in minutes, spent on homework by each of 32 pupils in one night.

Time (t minutes)	Number of pupils
$0 < t \leqslant 20$	7
$20 < t \leqslant 40$	16
$40 < t \leqslant 60$	3
$60 < t \leqslant 80$	6

(a) Calculate the percentage of the 32 pupils who spent more than 60 minutes on their homework.

$\frac{6}{32} \times 100 = 18.75\%$

18.75 %

(2)

(b) Calculate an estimate for the total time spent on homework by the 32 pupils.

Midpoint X frequency

$10 \times 7 = 70$
$30 \times 16 = 480$
$50 \times 3 = 150$
$70 \times 6 = 420$
$= 1120$

1120 minutes

(3)

(Total for Question is 5 marks)

2 $M = 3x^2 - nx$

(a) Work out the value of M when

$x = -2$ and $n = 5$

Sub in values

$M = (3(-2)^2 - 5(-2))$

$M = 3(4) + 10$

$M = 12 + 10$

$M = 22$

$M =$ 22

(2)

(b) Work out the value of n when

$M = 12$ and $x = 4$

$12 = 3(4)^2 - 4(n)$

$4n = 3(4)^2 - 12$

$4n = 4(12) - 12$

$4n = 3(12)$

$n = 9$

$n =$ 9

(3)

(Total for Question is 5 marks)

3 (a) Simplify, leaving your answers in index form,

(i) $6^5 \times 6^2 \times 6$ Multiplication so add index

$6^{5+2+1} = 6^8$

6^8

(ii) $(9^7)^2$

$(9^7) \times (9^7) = 9^{14}$

9^{14}

(2)

(b) $\dfrac{5^n \times 5^3}{5^6} = 5^4$

Find the value of n.

$5^n \times 5^3 = 5^{-4} \times 5^6$

$5^n \times 5^3 = 5^{10}$

$n+3=10 \therefore n=7$

$n =$ 7

(2)

(Total for Question is 4 marks)

4 The diagram shows the path of an athlete on a running track.

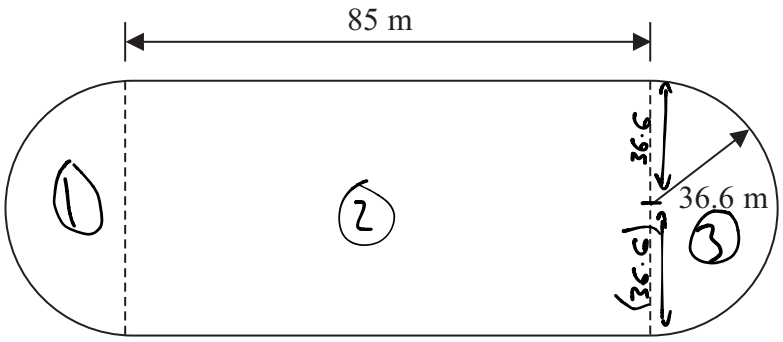


Diagram **NOT** accurately drawn

The path consists of two straight lengths and a semicircle at each end.
Each straight length is 85 metres.
Each semicircle has a radius of 36.6 metres.

Calculate the area enclosed by the path.
Give your answer correct to 3 significant figures.

Add 1 and 3 and you get a circle of radius 36.6

$A_c = \pi r^2$

$A_c = \pi (36.6)^2 = 4208.35....$

Area of 2 = $2(36.6) \times 85$

$= 6222$

Total area = circle + rectangle

$4208.3... + 6222$

≈ 10400

10 400 ..... m^2

(Total for Question is 4 marks)

5

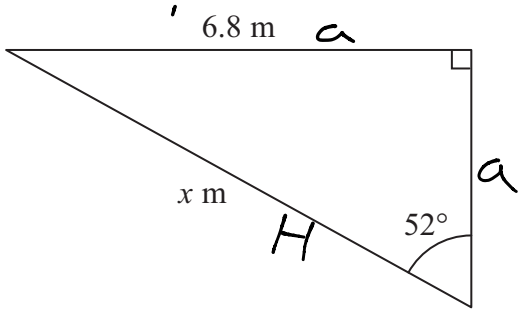


Diagram **NOT** accurately drawn

Calculate the value of x.
Give your answer correct to 3 significant figures.

SOH CAH TOA

$\sin(\theta) = \frac{O}{H}$

$\sin(52) = \frac{6.8}{x}$

$\therefore x = \frac{6.8}{\sin(52)} = \frac{6.8}{0.788..} \approx 8.63$

$x =$ 8.63

(Total for Question is 3 marks)

6 (a) Write as an ordinary number

(i) 4.2×10^6

$4.2 \times 1000000 = 4200000$

4200000

(ii) 3.82×10^{-4}

$3.82 \times \frac{1}{10000}$

0.000382

(2)

(b) Here are three numbers written in standard form.
Arrange these numbers in order of size.
Start with the smallest number.

5.6×10^{-7} 8.6×10^{-9} 5.64×10^{-8}

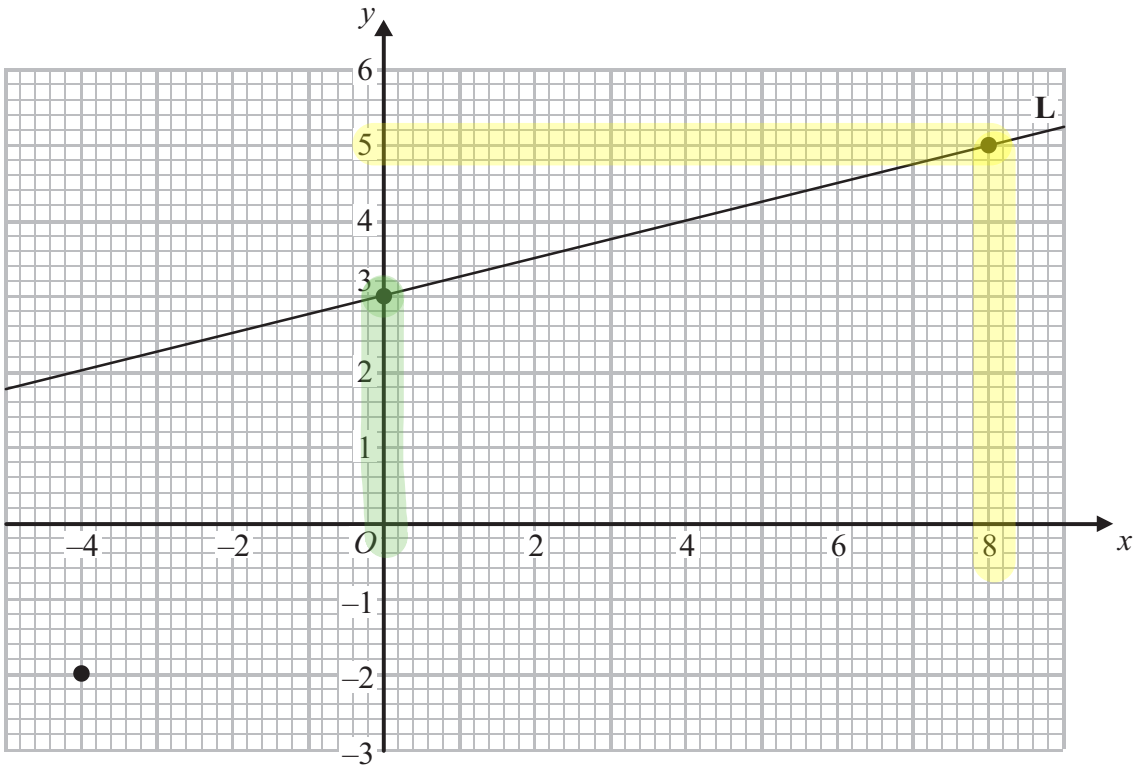
Has the lowest index so is the smallest, has the second lowest index, has the hugest index

8.6×10^{-9}, 5.64×10^{-8}, 5.6×10^{-7}

(2)

(Total for Question is 4 marks)

7 The points with coordinates (0, 3) and (8, 5) lie on the straight line **L**.



(a) Work out the gradient of **L**.

(8,5), (0,3)

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{5-3}{8-0}$

$\frac{1}{4}$

(2)

(b) Write down an equation of **L**.

Y intercept is 3

$y = \frac{x}{4} + 3$

(1)

(c) Find an equation of the line which is parallel to **L** and which passes through the point (–4, –2)

Parallel so the gradient is the same

Using the equation

$y - y_1 = m(x - x_1)$

$y - (-2) = \frac{1}{4}(x - -4)$

$y + 2 = \frac{x}{4} + 1$

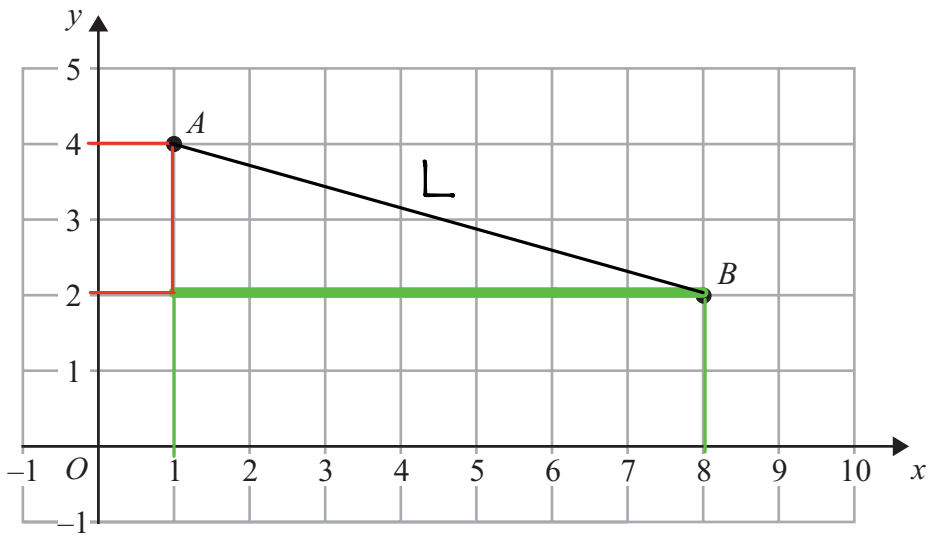
$y = \frac{x}{4} - 1$

$y = \frac{x}{4} - 1$

(2)

(Total for Question is 5 marks)

8 Two points, A and B, are plotted on a centimetre grid.
A has coordinates (1, 4) and B has coordinates (8, 2).



(a) Work out the coordinates of the midpoint of AB.

Coordinates
A (1,4) B(8,2)
X distance from A to B = 8-1 = 7
Y distance from A to B = 2-4 = (-)2

Midpoint is half x distance and half y distance from A
A + (7/2, -1) = (1,4) + (7/2, -1) = (4.5, 3)

(4.5 , 3)

(2)

(b) Use Pythagoras' Theorem to work out the length of AB.
Give your answer correct to 3 significant figures.

Length square = x component squared + y component squared

$L^2 = 7^2 + (-2)^2$

$L^2 = 49 + 4$

$L = \sqrt{53}$ = 7.28

= 7.28 cm

(4)

(Total for Question is 6 marks)

9 (a) Solve the inequalities $-6 \leqslant 3x < 9$

Divide all values by 3

-2 ⩽ X < 3

-2 ⩽ X < 3

(b) n is an integer.

Write down all the values of n which satisfy $-6 \leqslant 3n < 9$

-2 ⩽ X <

Therefore x can be -2 , 1 , 0 , 1, 2
It cannot be 3 as it is less Thant not less and equal too

-2 , 1 , 0 , 1, 2

(2)

(Total for Question is 4 marks)

10 The scale of a map is 1 : 25 000
On the map, the distance between two railway stations is 22 cm.

Work out the real distance between the two railway stations.
Give your answer in kilometres.

1 cm on map = 25000 cm in reality or 250m

22 cm on map = 22x250m in reality
= 5,500m = 5.5Km

5.5 km ..... km

(Total for Question is 3 marks)

11 The table shows information about the amount of money, in dollars, spent in a shop in one day by 80 people.

Money spent (x dollars)	Frequency
$0 < x \leqslant 20$	24
$20 < x \leqslant 40$	20
$40 < x \leqslant 60$	9
$60 < x \leqslant 80$	12
$80 < x \leqslant 100$	15

Work out an estimate for the total amount of money spent in the shop that day.

Mid point of money spent * Frequency for an estimation

(10 * 24) +(30*20)+(50*9)+(70*12)+(90*15)
= 240+600+450+840+1350 = 3480

3480 dollars

(Total for Question is 3 marks)