

# Silver Level

## Model Answers 10

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Model Answers 10

**Time Allowed:** 58 minutes

**Score:** / 48

**Percentage:** /100

1 The table shows the population of each of three countries in 2012.

Country	Population
India	$1.21 \times 10^9$
Turkey	$7.48 \times 10^7$
Singapore	$5.2 \times 10^6$

(a) Find the total population of India, Turkey and Singapore in 2012.

Give your answer in standard form.

Ensure the exponents are the same then add coefficients

$$1210 + 748 + 5.2 \times 10^6$$

$$1290 \times 10^6 \quad 1.29 \times 10^9$$

$$\frac{1.29 \times 10^9}{\dots\dots\dots}$$

(2)

Population density is calculated by the formula

$$\text{Population density} = \text{Population} \div \text{Land area}$$

The land area of India is  $3.29 \times 10^6 \text{ km}^2$

(b) Calculate the population density of India in 2012.

Give your answer correct to 3 significant figures.

$$\begin{aligned} \text{Population density} &= \frac{1.21 \times 10^9}{3.29 \times 10^6} = \frac{1.21}{3.29} \times 10^{9-6} \\ &= 0.368 \times 10^3 \\ &= \underline{368} \end{aligned}$$

$$\frac{368}{\dots\dots\dots} \text{ people/km}^2$$

(2)

(Total for Question is 4 marks)

2

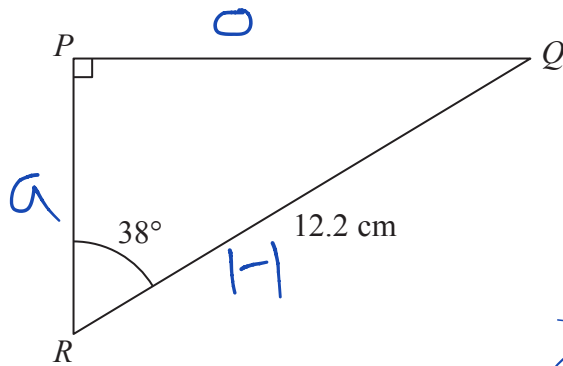


Diagram **NOT** accurately drawn

Calculate the length of  $PQ$ .  
Give your answer correct to 3 significant figures.

$\sin$   $\theta$   $\frac{a}{h}$   $\frac{a}{h}$

$$\sin(x) \times h = PQ$$
$$\sin(38) \times 12.2 = 7.51$$

..... 7.51 cm

(Total for Question is 3 marks)

- 3 The diagram shows an accurate scale drawing of part of the boundary of a field.  
The complete boundary of the field is in the shape of a quadrilateral  $ABCD$ .

$AB = 300$  metres.

$BC = 230$  metres.

Point  $B$  is due north of point  $C$ .

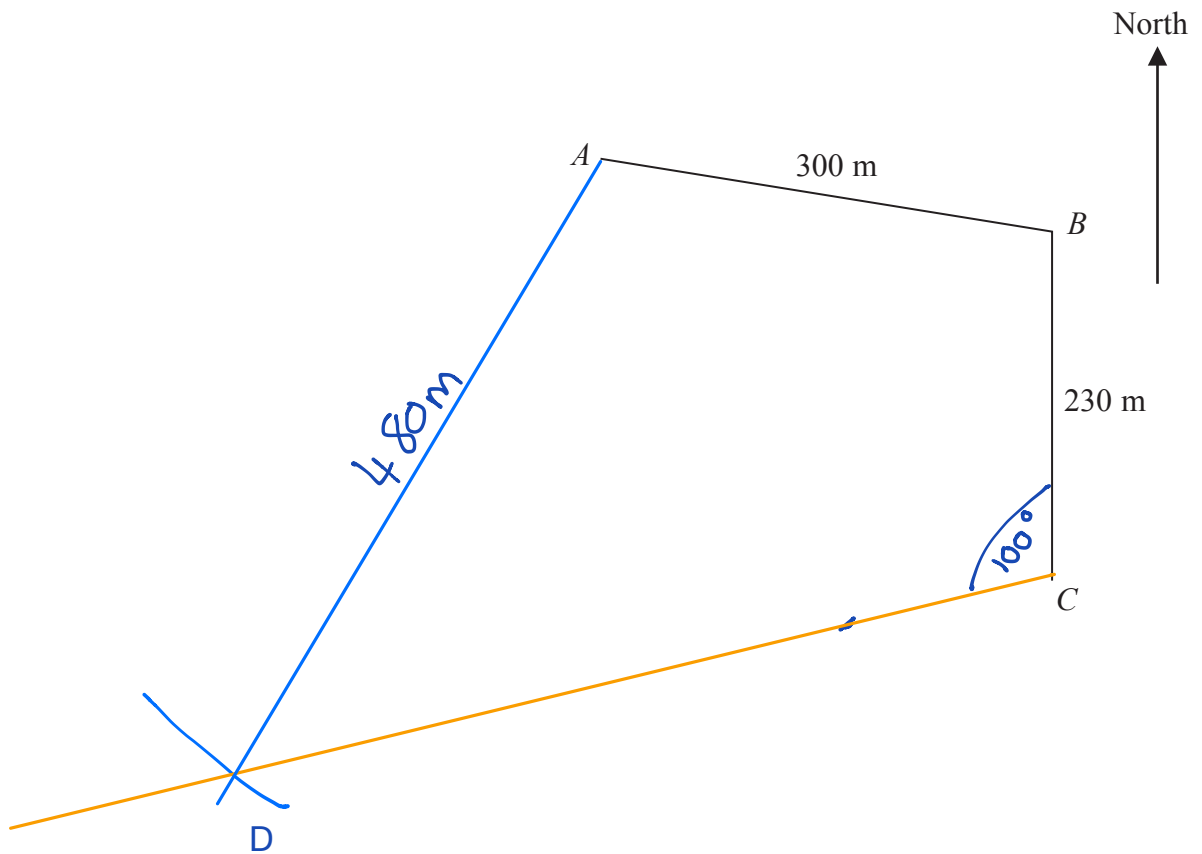
The scale of the diagram is 1 cm to 50 metres.

The bearing of  $D$  from  $C$  is  $260^\circ$

$AD = 480$  metres.

Complete the scale drawing of the boundary of the field.

Mark the position of  $D$ .



(Total for Question is 2 marks)

4

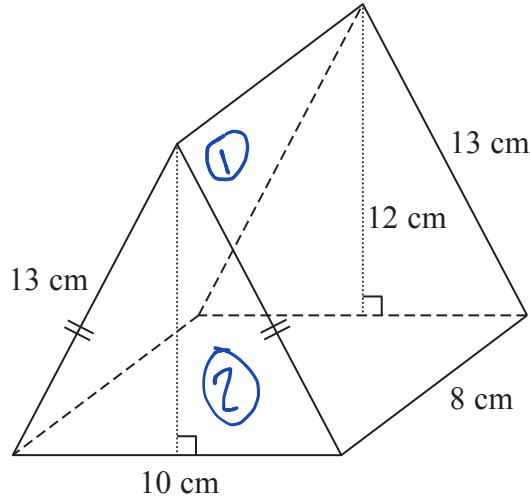


Diagram **NOT**  
accurately drawn

The diagram shows a prism.  
 The cross-section of the prism is an isosceles triangle.  
 The lengths of the sides of the triangle are 13 cm, 13 cm and 10 cm.  
 The perpendicular height of the triangle is 12 cm.  
 The length of the prism is 8 cm.

Work out the total surface area of the prism.

Total surface area of the two triangles (1) + SA of the two rectangles (2) +  
 the SA of the base (3)

Area of a triangle is  $0.5 \times \text{base} \times \text{height} : 0.5 (10) (12) = 60$

Area of rectangle is width  $\times$  height :  $8 \times 13 = 104$

SA of base :  $8 \times 10 = 80$

Total SA =  $2(60) + 2(104) + 80 = 408$

408  
 ..... cm<sup>2</sup>

(Total for Question is 3 marks)

- 5 Zara must take 5 tests.  
Each test is out of 100  
After 4 tests, her mean score is 64%.

What score must Zara get in her 5th test to increase her mean score in all 5 tests to 70%?

Total = mean x frequency

Current total is 256 marks

New total must be  $70 \times 5 = 350$

$350 - 256 = 94$

So her 5th mark must be 94/100

94

(Total for Question is 4 marks)

6 (a) Helen's savings increased from £155 to £167.40

Work out the percentage increase in Helen's savings.

(Difference / original) x 100 = % increase

$$\frac{167.40 - 155}{155} = \frac{12.4}{155} = 0.08$$

$$0.08 \times 100 = 8\%$$

8  
..... %  
(3)

(b) Joe's savings increased by 4.5%.

His savings are now £125.40

What were his savings before the increase?

Increase by 4.5 % is equivalent to a multiplication by 1.045

$$\text{So original amount} \times 1.045 = 125.40$$

$$\text{Therefore original} = 125.40 / 1.045 = 120$$

£ 120  
.....  
(3)

(Total for Question is 6 marks)

7

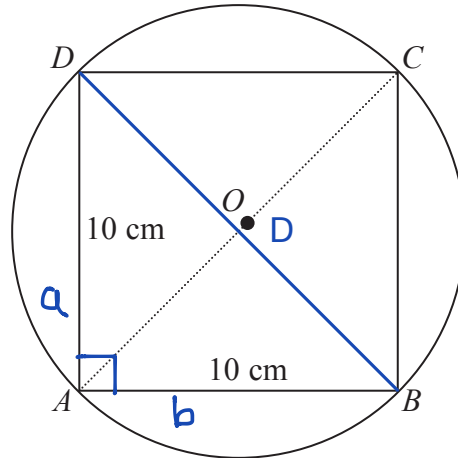


Diagram **NOT** accurately drawn

The diagram shows a square  $ABCD$  drawn inside a circle, centre  $O$ .  
 $A$ ,  $B$ ,  $C$  and  $D$  are points on the circle.  
 The lengths of the sides of the square are 10 cm.  
 $AC$  is a diameter of the circle.

Calculate the circumference of the circle.  
 Give your answer correct to 3 significant figures.

$$D^2 = 10^2 + 10^2 \quad (\text{applying Pythagoras theorem})$$

$$D = \sqrt{200} = 14.1\dots$$

Circumference of a circle =  $\pi$  X the diameter

$$\text{Circumference} = \pi \times 14.1\dots = 44.4$$

44.4 ..... cm

(Total for Question is 4 marks)



8  $AEC$  and  $DEB$  are chords of a circle.

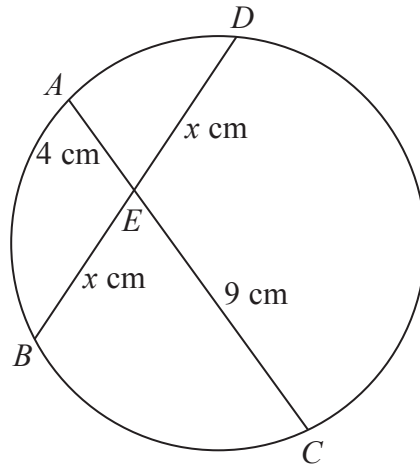


Diagram **NOT**  
accurately drawn

$AE = 4$  cm.  
 $CE = 9$  cm.  
 $DE = BE = x$  cm.

Calculate the value of  $x$ .

$$\frac{EC}{EB} = \frac{AE}{DE}$$

$$(x)(x) = (4)(9) = 36$$

$$x = 36, \quad X = 6$$

$$x = \dots 6 \dots$$

(Total for Question is 2 marks)

9 Freya keeps hens.

The table shows information about the number of boxes of eggs she sold in each of 52 weeks.

Number of boxes sold in a week	Number of weeks
0 to 4	2
5 to 9	6
10 to 14	20
15 to 19	13
20 to 24	8
25 to 29	3

(a) Write down the modal class.

10 to 14

(1)

(b) Work out an estimate for the mean number of boxes of eggs that Freya sold each week. Give your answer correct to 3 significant figures.

Sum of Midpoints of classes x frequencies = estimate of total

$$2 \times 2 + 6 \times 7 + 20 \times 12 + 13 \times 17 + 8 \times 22 + 3 \times 27$$

$$4 + 42 + 240 + 221 + 176 + 81 = 764$$

Mean = total / total frequency

$$764 / 52 = 14.7$$

14.7

(4)

Dan picks at random one of the 52 weeks.

(c) Find the probability that in this week Freya sold at least 15 boxes of eggs.

The classes with greater than 15 boxes of eggs sold have frequencies of 13,8,3 so 24 in total.

$$24/52 = 6/13$$

6/13

.....  
(2)

**(Total for Question is 7 marks)**

10 The table gives some information about the average price of a litre of petrol in England.

	January 2007	January 2012
Average price of a litre of petrol (pence)	87.3	133.3

(a) Work out the percentage increase in the average price of a litre of petrol in England between January 2007 and January 2012.

Give your answer correct to 3 significant figures.

Percentage increase = (difference/ original value) x 100

$$\frac{133.3 - 87.3}{87.3} \times 100 = 52.7$$

52.7  
..... %  
(3)

The average price of a litre of petrol in England increased by 20% from January 2010 to January 2012.

- (b) Work out the average price of a litre of petrol in England in January 2010.  
Give your answer in pence, correct to 1 decimal place.

Increase in value by 20% = a multiplication by 1.20

Original value  $\times$  1.2 = new price

Original price =  $133.3/1.2 = 111.1$

111.1 pence  
(3)

**(Total for Question is 6 marks)**

11 (a) Complete the table of values for  $y = x^2 - 5x + 4$

x	0	1				
y	4	0	-2	-2	0	4

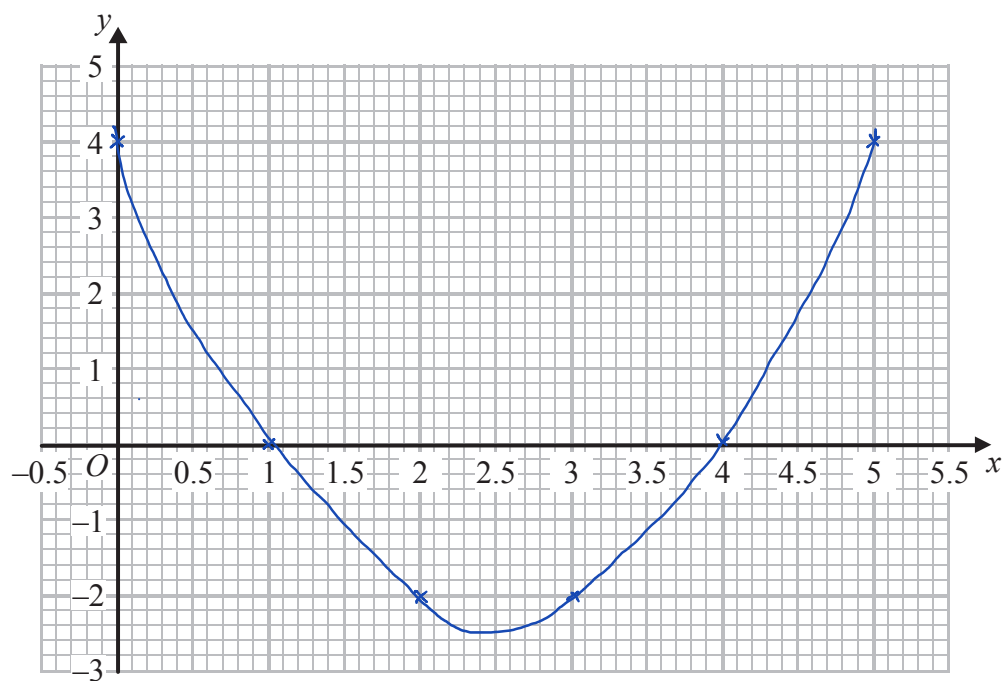
Sub in values of x into the equation

E.g. (0)  $-5(0)$

(2)

(b) On the grid, draw the graph of  $y = x^2 - 5x + 4$  for all values of x from  $x = 0$  to  $x = 5$

(2)



(Total for Question is 4 marks)

- 12 A cylinder has diameter 12 cm and length 30 cm.

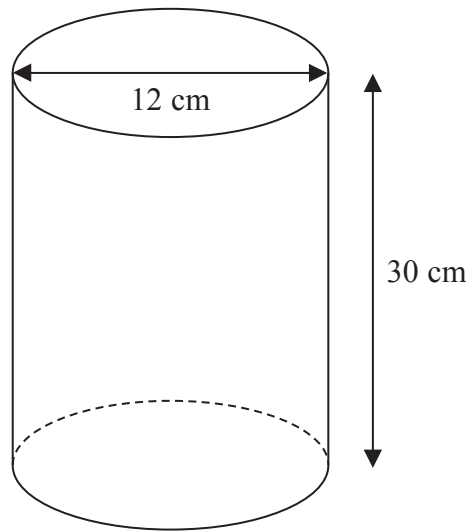


Diagram **NOT**  
accurately drawn

Work out the curved surface area of the cylinder.  
Give your answer correct to 3 significant figures.

Curved surface is equal to circumference x height

$$\text{Circumference} = \pi \times \text{Diameter} = 12\pi$$

$$\text{Height} = 30$$

$$12\pi \times 30 = 360\pi = 1130$$

..... 1130 ..... cm<sup>2</sup>

(Total for Question is 3 marks)