Silver Level

Model Answers 2

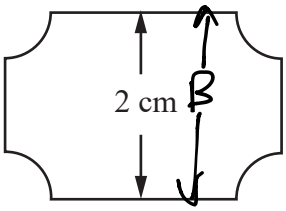
Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Silver
Booklet	Model Answers 2

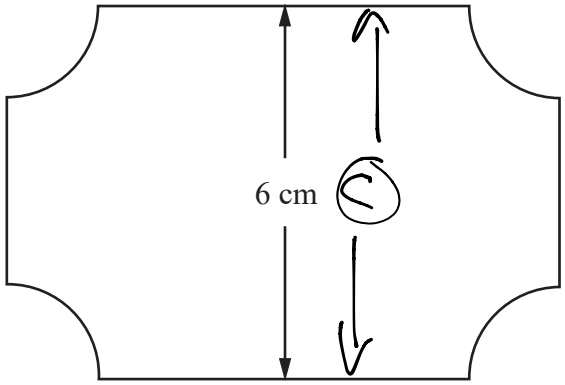
Time Allowed: **56 minutes**

Score: **/ 46**

Percentage: **/100**

1 Here are two supermarket price tickets.





Diagrams **NOT** accurately drawn

The two supermarket price tickets are mathematically similar.

The area of the smaller ticket is 7 cm^2.
Calculate the area of the larger ticket.

$C = 6$, $B = ?$

$C = 3 \times B$

$C^2 = 3^2 \times B^2$

$\therefore C^2 = 9 \times B^2$

$A_L = 9 \times A_S$

$\therefore A_L = 63$

63 cm^2

(Total for Question is 2 marks)

2 (a) Simplify $\dfrac{8(x-3)^2}{4(x-3)}$

$\dfrac{8(x-3)(x-3)}{4(x-3)} \rightarrow \dfrac{8}{4}(x-3)\dfrac{(x-3)}{(x-3)} \rightarrow \dfrac{8(x-3}{4}(1) \rightarrow 2(x-3)$

$\rightarrow 2x-6$

$2(x-3)$

(2)

(b) Factorise a^2-144

a^2-12^2 as $12^2=144$

Using difference of two squares, $(x-b)(x+b)=x^2-b^2$

$\rightarrow (a-12)(a+12)$

$(a-12)(a+12)$

(2)

(c) Make q the subject of the formula $p=\sqrt{q}-5r$

$p+5r=\sqrt{q}$ → square both sides

$(p+5r)^2=q$

$q = (p+5r)^2$

(2)

(d) Solve $\dfrac{4}{y-4}=5$

Multiply by $(y-4)$

$4=5(y-4)$

$\rightarrow 4=5y-20 \xrightarrow{+20} 24=5y$

$\rightarrow \dfrac{24}{5}=y \quad y=4.8$

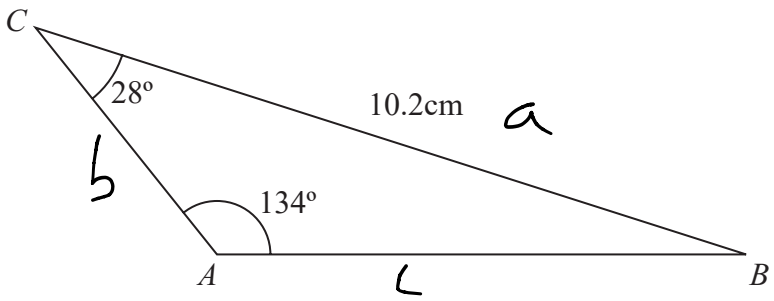
$y = 4.8$

(3)

(Total for Question is 9 marks)

3 The diagram shows triangle *ABC*.

Diagram **NOT** accurately drawn



Angle *BCA* = 28°
Angle *CAB* = 134°
BC =10.2 cm.

Calculate the length of *AB*.
Give your answer correct to 3 significant figures.

Sine rule $\frac{a}{\sin(A)} = \frac{b}{\sin(B)}$

$\frac{10.2}{\sin(134)} = \frac{b}{\sin(28)}$ $\therefore b = \frac{\sin(28) \times 10.2}{\sin(134)} = 6.6546... \approx 6.66$

6.66 cm

(Total for Question is 3 marks)

4

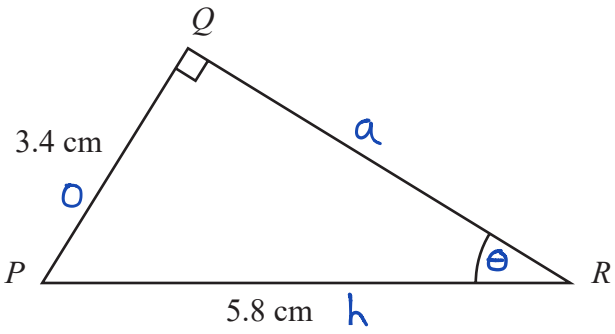


Diagram **NOT** accurately drawn

Triangle PQR has a right angle at Q.

$PQ = 3.4$ cm and $PR = 5.8$ cm.

(a) Work out the size of angle QRP.
Give your answer correct to 1 decimal place.

SOH CAH TOA

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

$\sin\theta = \frac{3.4}{5.8} = 0.5862...$

$\theta = 35.88...$

$= 35.9$

35.9 .....°

(3)

The length 5.8 cm, of PR, is correct to 2 significant figures.

(b) (i) Write down the upper bound of the length of PR.

5.8 ± 0.05

5.85

5.85 ..... cm

(ii) Write down the lower bound of the length of PR.

5.75 ..... cm

(2)

(Total for Question is 5 marks)

5 A bank pays compound interest of 6% per annum on its savings accounts.
Julia invests $7500 for 3 years.

Calculate the total interest gained after 3 years.

Each year the percentage increase is equal to an multiple of 1.06
3 years
7500 x 1.06 x 1.06 x 1.06 = 8932.62

Total interest = 8932.62 - 7500 =1432.62

$ 1432.62

(Total for Question 5 is 3 marks)

6 Make y the subject of $3(y + 2x - 1) = x + 5y$

Expand:

$3y + 6x - 3 = x + 5y$

$6x - 3 - x = 5y - 3y$

$5x - 3 = 2y$

$\frac{5x - 3}{2} = y$

$y = \frac{5x - 3}{2}$

(Total for Question is 3 marks)

7 *ABCD* and *APQR* are two similar quadrilaterals.

PQ = 9 cm.
BC = 6 cm.
AD = 5 cm.
QR = 12 cm.

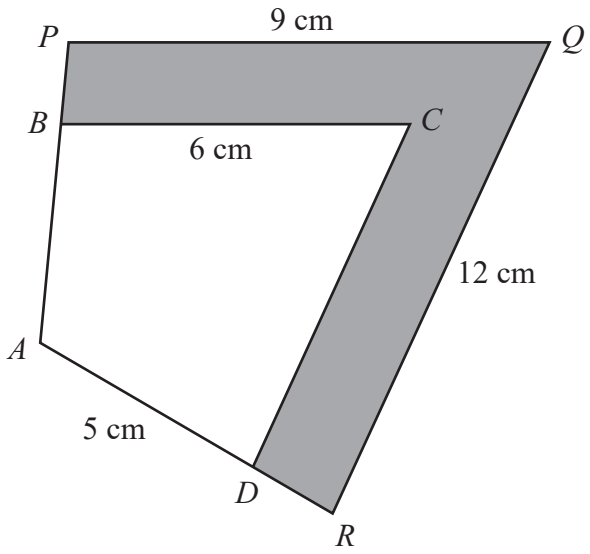


Diagram **NOT** accurately drawn

(a) Find the length of *DC*.

Scale factor big - small = 6/9
6/9 x 12 = 8

8 cm

(2)

(b) Find the length of *AR*.

AR x sf = AD
ADx9 /6 = AR
5 x 9/6 = 7.5

The area of the quadrilateral *ABCD* is 32 cm^2.

7.5 cm

(2)

(c) Calculate the area of the shaded region.

Area scale factor = length scale factor squared

Small area x (9/6) = PARQ

32 x 81/36 = PARQ =72
Shaded = PARQ - ABCD =72-32 =40

40 cm^2

(3)

(Total for Question is 7 marks)

8

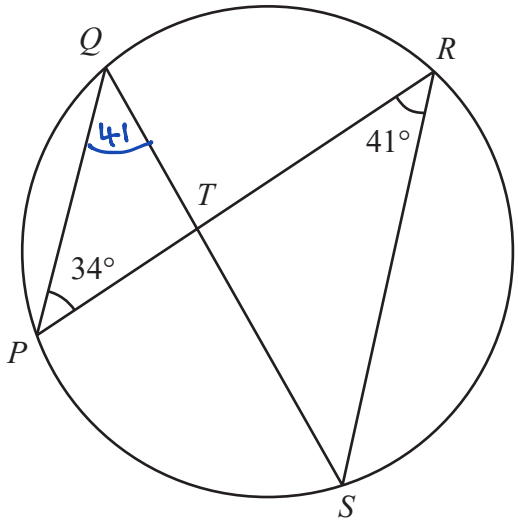


Diagram **NOT** accurately drawn

P, *Q*, *R* and *S* are points on the circumference of a circle.
PR and *QS* intersect at *T*.
Angle *QPR* = 34° and angle *PRS* = 41°

(a) (i) Find the size of angle *PQS*.

41 °

(ii) Give a reason for your answer.

Angles in the same segment are equal

(2)

(b) (i) Find the size of angle *PTS*.

180 -41 -34 = 105= QTP

QTP + PTS = 180
180-105 = 75

75 °

(ii) Explain why *T* cannot be the centre of the circle.

Angle at the center is not twice the angle at the circumference

(2)

(Total for Question is 4 marks)

9 (a) There are 32 students in a class.
All the students are either left-handed or right-handed.
The ratio of the number of left-handed students to the number of right-handed students is 1 : 7

Work out the number of right-handed students.

Ratio is per 8 students
32/8 = 4
7 left hand students per unit value, 7 x 4 = 28

28

(2)

(b) Sajid makes a scale model of a lorry.
He uses a scale of 1 : 32
The length of Sajid's model lorry is 45 cm.
Chitra makes a scale model of the same lorry.
She uses a scale of 1 : 72

Work out the length of Chitra's model lorry.

Actual length = 32x45 = 1440

New scale = 1440 /72 = 20

20 cm

(3)

(Total for Question is 5 marks)

10 Express 200 as a product of powers of its prime factors.

Divide by prime factor until you are left with a prime.
2x100
2x2x50
2x2x2x25
2x2x2x5x5

$2^3 \times 5^2$

$2^3 \times 5^2$

(Total for Question is 3 marks)

11 $\dfrac{y^3 \times y^n}{y} = y^6$

Find the value of n.

$\dfrac{y^{3+n}}{y} = y^6$

$y^{3+n-1} = y^6$

$2+n = 6$

$n = 4$

$n =$ 4

(Total for Question is 2 marks)