

Silver Level

Model Answers 5

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Model Answers 5

Time Allowed: 56 minutes

Score: / 46

Percentage: /100

1 $\frac{5}{9}$ of the students in a group are male.

$\frac{5}{6}$ of the **female** students in the group are right-handed.

(a) Work out the fraction of students in the group who are right-handed females.

$$\frac{4}{9} = \text{female}$$

$$\frac{4}{9} \times \frac{5}{6} = \frac{20}{54} = \frac{10}{27}$$

$$\frac{10}{27}$$

(3)

(b) Find the smallest possible number of students in the group.

$$\underline{27}$$

$$\underline{27}$$

(2)

(Total for Question is 5 marks)

2 Solve $\frac{2}{5x-2} = \frac{3}{6x+1}$

Show clear algebraic working.

$$\frac{2(6x+1)}{5x-2} = 3$$

$$2(6x+1) = 3(5x-2)$$

$$12x+2 = 15x-6$$

$$8 = 3x$$

$$x = \frac{8}{3} = \underline{\underline{2\frac{2}{3}}}$$

$$x = \underline{\underline{2\frac{2}{3}}}$$

(Total for Question is 4 marks)

3 Solve $5x^2 + 2x - 4 = 0$,

Give your solutions correct to 3 significant figures.

Show your working clearly.

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = x$$

$$\frac{-2 \pm \sqrt{2^2 - 4(5)(-4)}}{10} = x = \frac{-2 \pm \sqrt{4 + 80}}{10}$$

$$\frac{-2 \pm \sqrt{84}}{10} = \frac{-2 \pm 9.165...}{10}$$

$$= \underline{-1.12 \text{ or } 0.717}$$

$$\underline{\underline{-1.12 \text{ or } 0.717}}$$

(Total for Question is 3 marks)

4

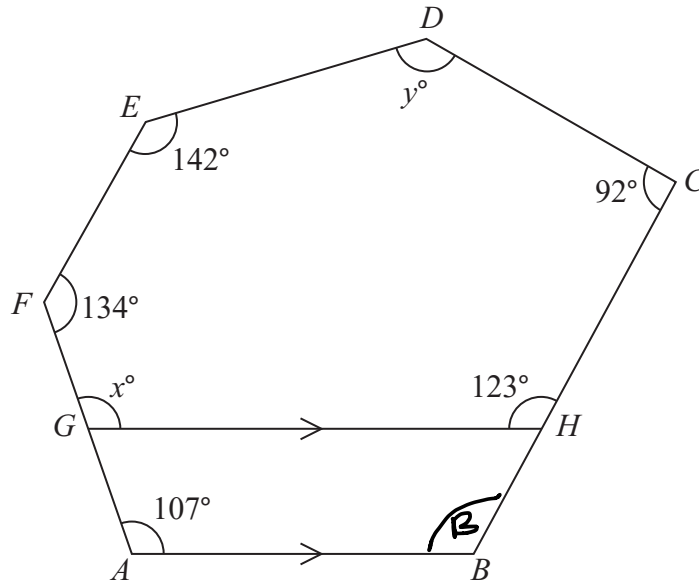


Diagram **NOT** accurately drawn

$ABCDEF$ is a hexagon.
 G is a point on AF .
 H is a point on BC .
 GH is parallel to AB .

(a) Give a reason why $x = 107$

$GH \parallel AB$ are parallel \therefore corresponding angles
 (1)

(b) Work out the value of y .

angle $B = 123^\circ$ Due to corresponding angles

pentagon

\therefore internal angles sum to 720
 as $\Sigma Int = (n-2)(180)$

$$720 = 107 + 134 + 142 + 92 + 123 + y$$

$$\therefore y = 720 - (107 + 134 + 142 + 92 + 123)$$

$$\therefore y = 122^\circ$$

$$y = \underline{122}$$

(4)

(Total for Question is 5 marks)

5

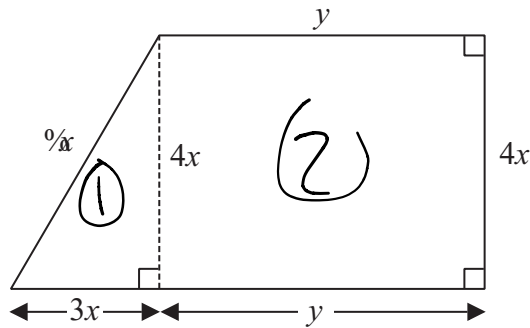


Diagram **NOT** accurately drawn

The shape in the diagram is made from a rectangle and a right-angled triangle. The diagram shows, in terms of x and y , the lengths, in centimetres, of the sides of the rectangle and of the triangle.

The perimeter, P cm, of the shape is given by the formula

$$P = 12x + 2y$$

(a) Work out the value of x when $P = 43$ and $y = 6.5$

$$43 = 12(x) + 2(6.5)$$

$$43 - 13 = 12x$$

$$30 = 12x$$

$$x = \frac{30}{12} = \underline{\underline{2.5}}$$

$$x = \frac{2.5}{(3)}$$

(b) Find, in terms of x and y , a formula for the area, A cm², of the shape. Give your answer as simply as possible.

$$\text{Area of (1)} : \frac{1}{2} (3x)(4x) \leftarrow \frac{1}{2}(\text{base})(\text{height})$$

$$\text{Area of (2)} : (y \times 4x)$$

$$\text{Total area} = \text{(1)} + \text{(2)} = 4yx + 6x^2$$

$$A = \underline{\underline{4xy + 6x^2}} \quad (2)$$

(Total for Question is 5 marks)

6 An airline increases the prices of its flights by 8%.

!)*\$!+,-./,! 01,1234/,*5,601,!7/24,!-! *!-82910!!:*2/!! ;*5! <=>%

Work out the price of a flight to Cairo after the increase.

increase by 8% = multiply by 1.08

$$\underline{475 \times 1.08} = 513$$

$$\pounds \frac{513}{(3)}$$

(b) The increase in price of a flight to Mumbai was £48

Work out the price of a flight to Mumbai after the increase.

8% of original price = 48

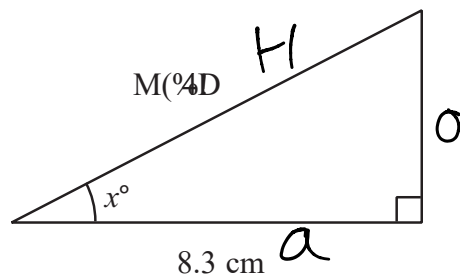
$$\therefore 48 = (\text{original}) \times 0.08$$

$$\text{original} = \frac{48}{0.08} = \underline{\underline{648}}$$

$$\pounds \frac{648}{(3)}$$

(Total for Question is 6 marks)

7

Diagram **NOT**
accurately drawnWork out the value of x .

Give your answer correct to 1 decimal place.

$$\text{SOH } \textcircled{\text{CAH}} \text{ TOA}$$

$$\cos \theta = \frac{a}{H}$$

$$\cos(x) = \frac{8.3}{9.5}$$

$$x = \cos^{-1}\left(\frac{8.3}{9.5}\right) \approx 29.1^\circ$$

$$x = \underline{\quad 29.1 \quad}$$

(Total for Question is 3 marks)

8!)*\$!K23@!01,!L291,50!:.DD.3!K*40./!)L:K\$!.-!%=!*3@!MJ

Prime factors of 54 \rightarrow 2, 3, 3, 3

Prime factors of 90 \rightarrow 2, 3, 3, 5

$$\begin{array}{l} 54: 2 \times 3 \times 3 \times 3 \\ 90: 2 \times 3 \times 3 \times 5 \end{array}$$

both have factors of
 $2 \times 3 \times 3$, So highest common factor = 18

$$\begin{array}{r} 18 \\ \hline (2) \end{array}$$

!)G\$K23@!1,!H.;;50! :.DD.3! IB80278,)H:I\$! .-!%=*3@!MJ

LCM = HCF \times other factors

$$18 \times \underline{3} \times \underline{5}$$

$$= \underline{\underline{270}}$$

$$\begin{array}{r} 270 \\ \hline (2) \end{array}$$

(Total for Question is 4 marks)

9 (a) Simplify $4p^3q^5 \times 6p^2q$

Add powers when multiplying

$$(4)(6) \times (p^3)(p^2) \times (q^5)(q)$$

$$24 \times p^5 \times q^6$$

$$\frac{24p^5q^6}{(2)}$$

!)GSP2D782-AJ $(x^2y^4)^3$

$$5(x^2y^4) \times 5(x^2y^4) \times 5(x^2y^4)$$

$$= 125(x^6y^{12})$$

$$\frac{125(x^6)(y^{12})}{(2)}$$

(c) Factorise $9a^2 - b^2$

Difference of two squares

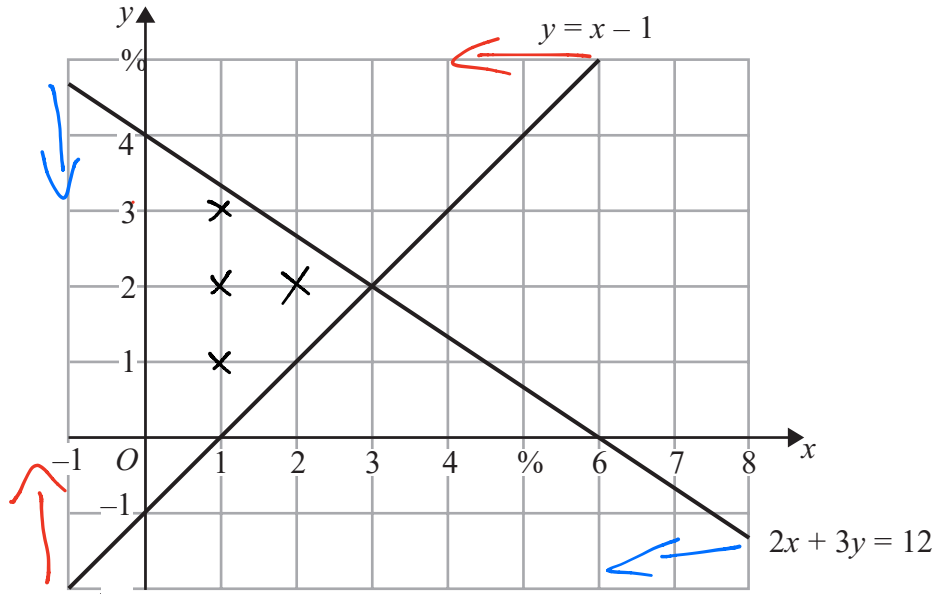
$$\rightarrow (3a)^2 - (b)^2$$

$$\rightarrow (3a - b)(3a + b)$$

$$\frac{(3a - b)(3a + b)}{(2)}$$

(Total for Question is 6 marks)

10



The diagram shows two straight lines.

The equations of the lines are $y = x - 1$ and $2x + 3y = 12$

(a) Write down the solution of the simultaneous equations

$$\begin{aligned} y &= x - 1 \\ 2x + 3y &= 12 \end{aligned}$$

$$x = 3, \quad y = 2$$

(b) Find an equation of the line which is parallel to the line with equation $2x + 3y = 12$ and passes through the point $(0, 10)$ (1)

rearrange to make y the subject

$$\begin{aligned} \rightarrow 3y &= 12 - 2x \\ \rightarrow y &= 4 - \frac{2}{3}x \end{aligned}$$

if the line is parallel the gradient is the same
 $\therefore m = -\frac{2}{3}$

using point $(0, 10)$ and $y - y_1 = m(x - x_1)$

$$\begin{aligned} \rightarrow y - 10 &= -\frac{2}{3}(x - 0) \\ y &= -\frac{2}{3}x + 10 \end{aligned}$$

$$y = -\frac{2}{3}x + 10 \quad (4)$$

(c) On the grid, mark with a cross (x) each point which satisfies both these inequalities $y > x - 1$ and $2x + 3y < 12$, for positive integers. (2)

(Total for Question is 7 marks)