

Silver Level

Model Answers 7

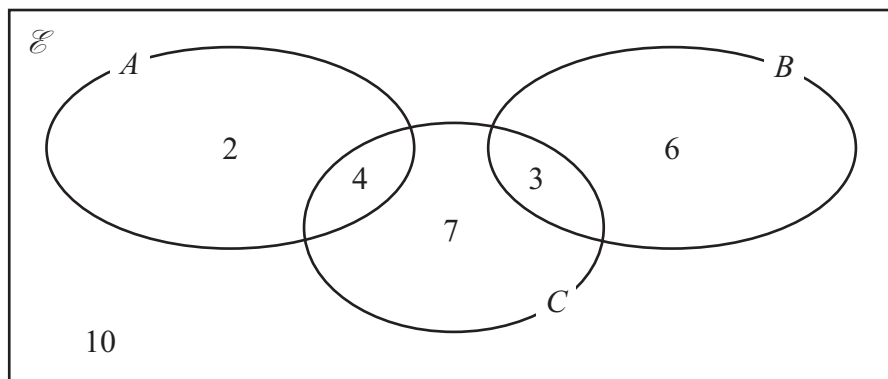
Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Model Answers 7

Time Allowed: 58 minutes

Score: / 48

Percentage: /100

2 The Venn diagram shows a universal set \mathcal{E} and 3 sets A , B and C .



2, 4, 7, 3, 6 and 10 represent **numbers** of elements.

Find

(i) $n(A \cup B)$

15

(ii) $n(B')$

$2 + 4 + 7 + 10$

23

(iii) $n(A \cap C')$

2

(iv) $n(B' \cap C')$

12

(Total for Question is 4 marks)

- 3 The table shows information about the number of letters in the first name of each of 50 people.

Number of letters	Frequency
3	2
4	5
5	14
6	19
7	10

- (i) Work out the mean number of letters in the first names of the 50 people.

Total number of letters = sum of number of letters x frequency

$$3 \times 2 + 4 \times 5 + 5 \times 14 + 6 \times 19 + 7 \times 10 = 280$$

$$\text{Mean} = \text{total} / \text{frequency} = 280/50$$

$$= 5.6$$

5.6

- (ii) One more person joins the 50 people.

The mean number of letters in the first names of the 51 people is less than the mean number of letters in the first names of the 50 people.

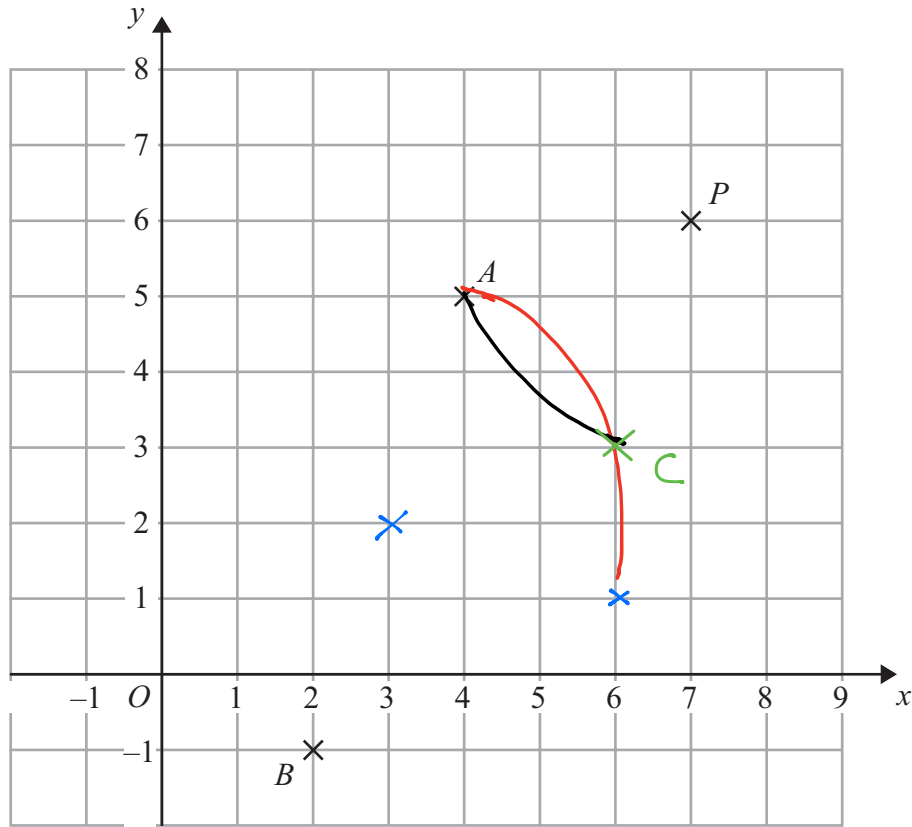
Write down the greatest number of letters in the first name of the person who joins the group.

Must be less than the median value which lies in 6

5

(Total for Question is 4 marks)

4 The diagram shows three points, A , B and P , on a centimetre grid.



The point A has coordinates $(4, 5)$ and the point B has coordinates $(2, -1)$.

(a) Find the coordinates of the midpoint of AB .

$$\text{Displacement of A to B} = B - A = \begin{pmatrix} 2 \\ -1 \end{pmatrix} - \begin{pmatrix} 4 \\ 5 \end{pmatrix} = \begin{pmatrix} 2-4 \\ -1-5 \end{pmatrix} = \begin{pmatrix} -2 \\ -6 \end{pmatrix}$$

$$\text{Midpoint of AB is half } \begin{pmatrix} -2 \\ -6 \end{pmatrix} = \begin{pmatrix} -1 \\ -3 \end{pmatrix} + \begin{pmatrix} 4 \\ 5 \end{pmatrix}$$

$$= \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

$$\left(\frac{3}{2}, \frac{2}{2} \right)$$

AB is a diameter of a circle.

P is the point $(7, 6)$

C is the point on the circle such that $PA = PC$.

(b) On the diagram, mark with a cross (\times) the point C .

Label your point C .

$$(6, 3)$$

(2)

(Total for Question is 4 marks)

5 A shop, *Furniture 4U*, had a sale.

(a) In the sale, normal prices were reduced by 15%.

(i) The normal price of a table was \$280

Work out the sale price of the table.

Reduction by 15% = a multiplication by .85 as it is 85% of the original value

$$280 * .85 = 238$$

\$ 238

(ii) The normal price of a chair was reduced in the sale by \$24

Work out the normal price of the chair.

Réduction by 24
Therefore 15% of the original cost = 24
Therefore 24/ 15% = original value
 $24/0.15 = 160$

\$ 160

(6)

(b) Ruth, Suha and Yasmin went to the sale.

The amounts of money spent by Ruth, Suha and Yasmin were in the ratios 2 : 3 : 7
Ruth and Suha spent a total of \$320 in the sale.

Work out the amount of money Yasmin spent in the sale.

Ratio is per 2+ 3+5 people, so is per every 10 people
Ruth and suha account for 5 these people

So A unit value of the ratio is $320/5 = 64$

So Yasmin spen $64 \times 7 = 448$

\$ 448

(3)

(Total for Question is 9 marks)

6

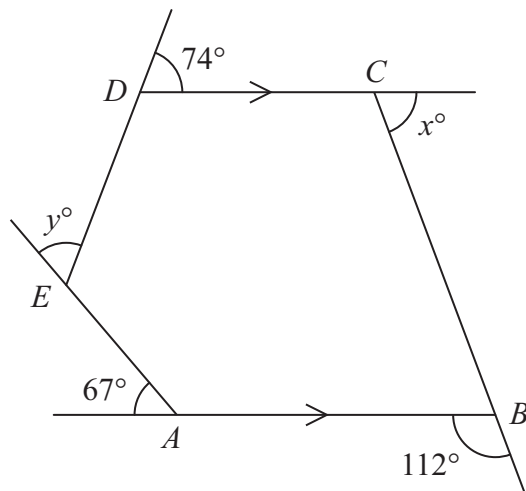


Diagram NOT accurately drawn

The diagram shows a pentagon $ABCDE$.
 DC is parallel to AB .

- The size of an exterior angle at A is 67°
- The size of an exterior angle at B is 112°
- The size of an exterior angle at C is x°
- The size of an exterior angle at D is 74°
- The size of an exterior angle at E is y°

(a) (i) Work out the value of x .

AB and DC are parallel
 Therefore c and b are 'Z' angles
 So $x = 180 - 112 = 68$

$x = \frac{68}{\dots\dots\dots}$

(ii) Work out the value of y .

Total exterior angles on a pentagon add to 360

$Y + 67 + 112 + 68 + 74 = 360$
 $Y = 39$

$y = \frac{39}{\dots\dots\dots}$

(b) Work out the sum of the interior angles of the pentagon $ABCDE$.

Sum of Interior angles = $180 \times (\text{number of sides} - 2)$

Number of sides = 5
 Sum of Interior angles = $3 \times (180) = 540$

$\frac{540}{\dots\dots\dots}$
 (2)

(Total for Question is 6 marks)

7

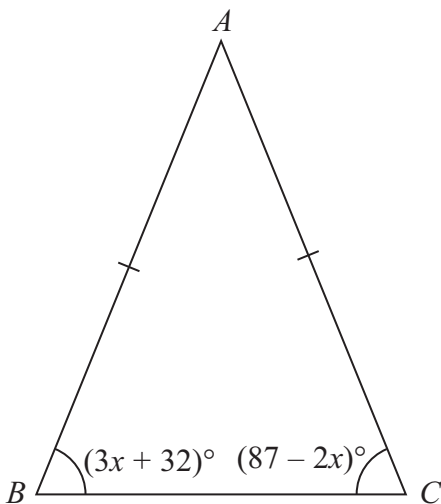


Diagram **NOT**
accurately drawn

In the isosceles triangle ABC ,

$$AB = AC$$

$$\text{angle } B = (3x + 32)^\circ$$

$$\text{angle } C = (87 - 2x)^\circ$$

Work out the value of x .

Show clear algebraic working.

$$\text{Angle } ABC = \text{angle } ACB$$

$$3x + 32 = 87 - 2x$$

Add $2x$ to both side and subtract 32

$$3x + 2x = 87 - 32$$

$$5x = 55$$

$$x = 11$$

$$x = \underline{11}$$

(Total for Question is 4 marks)

8 $A = 2^3 \times 3^2 \times 5^4$

$B = 3^5 \times 5 \times 7^3$

Find the Highest Common Factor (HCF) of A and B .

Highest common factor is the multiple of the factors shared by both

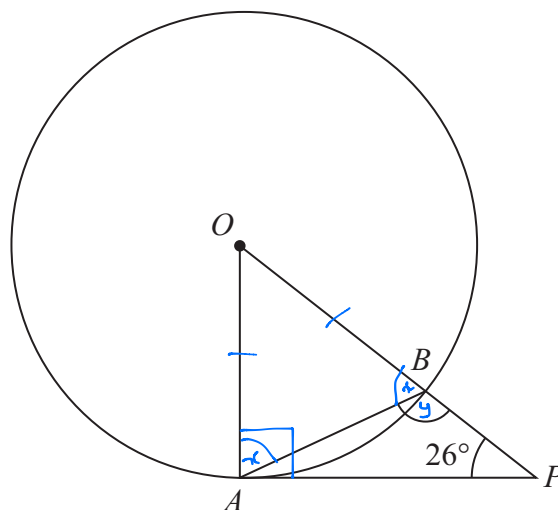
Both have two factors of 3 and both have one factor of 5

So highest common factor is $3 \times 3 \times 5 = 45$

45

(Total for Question is 2 marks)

9

Diagram **NOT**
accurately drawn

A and B are points on a circle, centre O .

PA is the tangent to the circle at A .

OBP is a straight line.

Angle $APO = 26^\circ$

Calculate the size of angle ABP .

Angle $OAP = 90$, (angle between tangent and radius is always 90)

Therefore $AOB = 180 - 90 - 26 = 64$

OAB and OBA are both equal (isosceles triangle)

$180 = 64 + 2x$

$2x = 116$

$x = 58$

$ABP + x = 180$ (angles on a straight line)

$ABP = 180 - 58$

$ABP = 122$

122^o

(Total for Question is 3 marks)

10 (a) Solve the simultaneous equations

$$5x + 3y = 9 \quad (1)$$

$$7x - 2y = 25 \quad (2)$$

Show clear algebraic working.

Multiply equation 1 by 2

$$10x + 6y = 18$$

Multiply equation 2 by 3

$$21x + -6y = 75$$

Add equation 1 and 2

$$10x + 21x + 6y - 6y = 75 + 18$$

$$31x = 93, x = 3$$

Sub $x = 3$ back into 1

$$5(3) + 3y = 9$$

$$3y = 9 - 15$$

$$3y = -2, y = -2$$

$$x = \frac{3}{\dots\dots\dots}$$

$$y = \frac{-2}{\dots\dots\dots} \quad (4)$$

(b) P is the point of intersection of the lines with equations $5x + 3y = 9$ and $7x - 2y = 25$

Write down the coordinates of P .

$$\left(\frac{3}{\dots\dots\dots}, \frac{-2}{\dots\dots\dots} \right) \quad (1)$$

(Total for Question is 5 marks)

11 Jomo invested an amount of money at 4% per annum **compound interest**.

At the end of 2 years, the value of his investment was £3380

How much of the £3380 was interest?

Increase of 4 % is multiplication by 1.04

$$\text{Original amount} \times 1.04 \times 1.04 = \text{original amount} \times 1.04^2 = 3380$$

$$\frac{3380}{1.04^2} = \text{original amount} = 3125$$

$$\text{Intrest} = \text{final} - \text{initial value} = 3380 - 3125 = 225$$

$$\text{£} \frac{225}{\dots\dots\dots}$$

(Total for Question is 4 marks)