

“Mind Your Maths” **Answers 6**

Year 10 Exam Revision

Answer 1

$$\begin{aligned} \text{(i)} \quad & (x - 16)(x - 28) \\ &= x^2 - 44x + 448 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & (15x + 11)^2 \\ &= (15x + 11)(15x + 11) \\ &= 225x^2 + 330x + 121 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & x^7(x^5 - 13x^8) \\ &= x^{12} - 13x^{15} \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & (5x^2)^3 - (10x^3)^2 \\ &= 125x^6 - 100x^6 \\ &= 25x^6 \end{aligned}$$

[8 marks]

Answer 2

$$\text{(i)} \quad \frac{1}{12} \qquad \text{(ii)} \quad \frac{1}{6} \qquad \text{(iii)} \quad \frac{5}{12} \qquad \text{(iv)} \quad \frac{3}{4}$$

[4 marks]

Answer 3

(i) An obtuse angle is between 90° and 180°

[1 mark]

(ii)

$$\begin{aligned} \frac{\sin L}{l} &= \frac{\sin N}{n} \\ \frac{\sin L}{17.3} &= \frac{\sin 42}{12.6} \\ \sin L &= \frac{17.3 \sin 42}{12.6} \end{aligned}$$

$$= 0.9187$$

$$L = \arcsin 0.9187$$

$$= 66.7^\circ$$

$$\therefore M = 180 - (42 + 66.7)$$

$$= 71.3^\circ$$

$$\text{Area } \Delta = \frac{1}{2} l n \sin M$$

$$= \frac{1}{2} \times 17.3 \times 12.6 \times \sin 71.3$$

$$= 103 \text{ cm}^2$$

[5 marks]

Answer 4**(i)**

Spider Count	0	1	2	3	4	5	6
Squares	1	9	7	6	1	1	0

[4 marks]**(ii)**

$$\text{mean} = \frac{0 + 9 + 14 + 18 + 4 + 5}{25} = 2 \text{ spiders per m}^2$$

[4 marks]**Answer 5**

$$\begin{aligned}
 \text{Time} &= \frac{\text{Distance}}{\text{Speed}} \\
 &= \frac{25\,277\,120\,000\,000}{186\,000} \\
 &= 135898494 \text{ seconds} \\
 &= 2264975 \text{ minutes} \\
 &= 37750 \text{ hours} \\
 &= 1573 \text{ days} \\
 &= 4 \text{ years (to the nearest year)}
 \end{aligned}$$

[4 marks]**Answer 6**

$$\text{(i) } \quad \frac{5}{12}$$

$$\text{(ii) } \quad \frac{5}{12} \times \frac{4}{11} = \frac{20}{132} \quad \left(= \frac{5}{33} \right)$$

$$\begin{aligned}
 \text{(iii) } \quad &\frac{5}{12} \times \frac{4}{11} + \frac{7}{12} \times \frac{6}{11} \\
 &= \frac{20}{132} + \frac{42}{132} \\
 &= \frac{62}{132} \left(= \frac{31}{66} \right)
 \end{aligned}$$

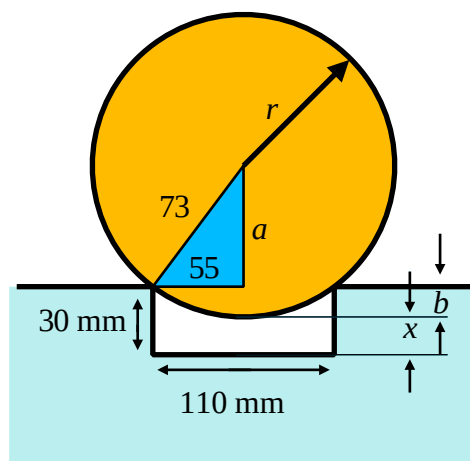
$$\begin{aligned}
 \text{(iv) } \quad &\frac{5}{12} \times \frac{4}{11} + \frac{7}{12} \times \frac{5}{11} \\
 &= \frac{20}{132} + \frac{35}{132} \\
 &= \frac{55}{132} \left(= \frac{5}{12} \right)
 \end{aligned}$$

[1, 2, 3, 3 marks]**Answer 7**

$$\begin{aligned}
 f(x) = \frac{5x + 2}{3} &\Leftrightarrow y = \frac{5x + 2}{3} \Leftrightarrow x = \frac{5y + 2}{3} \\
 3x &= 5y + 2 \\
 3x - 2 &= 5y \\
 f^{-1}(x) &= \frac{3x - 2}{5}
 \end{aligned}$$

[3 marks]

Answer 8



$$\begin{aligned} a &= \sqrt{73^2 - 55^2} \\ &= 48 \text{ mm} \\ b &= 73 - 48 \\ &= 25 \text{ mm} \\ \therefore x &= 30 - 25 \\ &= 5 \text{ mm} \end{aligned}$$

[6 marks]

Answer 9

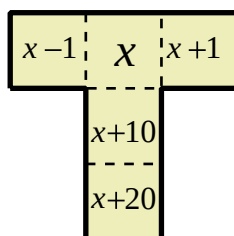
(i) T-2

(ii) T-79

(iii) 95

[1, 1, 1 marks]

(iv)



[3 marks]

(v) $S = 5x + 30$

[2 marks]

(vi) $5x + 30 = 355 \Leftrightarrow 5x = 325 \Leftrightarrow T-65$

[2 marks]

(vii) $5x + 30 = 135 \Leftrightarrow 5x = 105 \Leftrightarrow x = 21$ but this takes T off the grid.

[2 marks]

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