

1. (a) Solve $2x^2 = 72$

$$\begin{aligned}
 2x^2 &= 72 \\
 (\div 2) \quad (\div 2) \\
 x^2 &= 36 \\
 (\sqrt{\quad}) \quad (\sqrt{\quad}) \\
 x &= \pm 6
 \end{aligned}$$

$$\begin{array}{c}
 \pm 6 \\
 \hline
 (2)
 \end{array}$$

(b) Expand and simplify $(2x + 1)(3x - 2)$

$$\begin{aligned}
 &= 6x^2 - 4x + 3x - 2 \\
 &= 6x^2 - x - 2
 \end{aligned}$$

$$\begin{array}{c}
 6x^2 - x - 2 \\
 \hline
 (2)
 \end{array}$$

(c) Factorise $x^2 + 6x + 9$

$$\begin{array}{l}
 x^2 \rightarrow 1 \times 9 \\
 +6 \quad 3 \times 3
 \end{array}$$

$$\begin{aligned}
 x^2 + 6x + 9 &= (x+3)(x+3) \\
 &= (x+3)^2
 \end{aligned}$$

$$\begin{array}{c}
 (x+3)^2 \\
 \hline
 (1)
 \end{array}$$

It is not in line with the trend of the other points.
 doesn't fit trend - far from other points / line of best fit

It is not in line with the trend of the other points.

Extrapolation -> extending graph beyond plotted points is unreliable as we can't be sure that the trend will continue.

The point would be outside of the range of the scatter diagram

2. Expand and simplify $5(p+3) - 2(1-2p)$

$$\begin{aligned} & ((5 \times p) + (5 \times 3)) + (-2 \times 1) + (-2 \times -2p) \\ &= (5p + 15) + (-2 + 4p) \quad \textcircled{1} \text{ Expanding 1 bracket} \\ &= (5p + 4p) + (15 - 2) \\ &= 9p + 13 \quad \leftarrow (13 \text{ is prime}) \end{aligned}$$

9 and 13 have no common factors,
so this can't be simplified further.

$$9p + 13 \quad \textcircled{1}$$

(Total for Question is 2 marks)

3. Solve $4(x - 6) = 44$

$$4(x - 6) = 44$$

$$4x - 24 = 44$$

$$(+24) \quad (+24)$$

$$4x = 68$$

$$(\div 4) \quad (\div 4)$$

$$x = 17$$

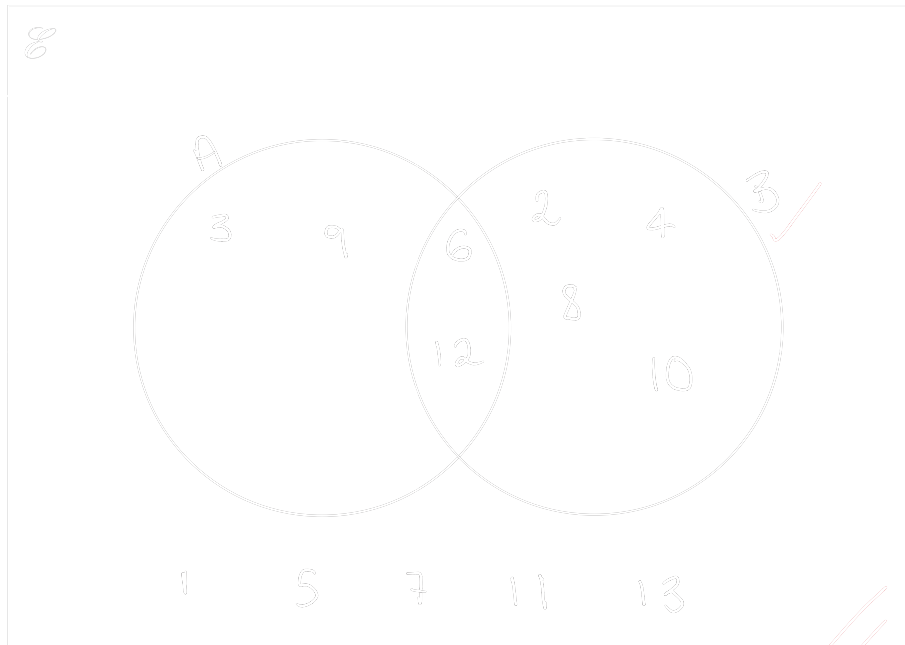
$$x = 17$$

(Total for Question is 2 marks)

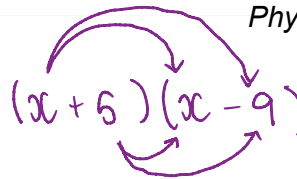
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4. (a) Expand and simplify
- $(x + 5)(x - 9)$



$$(x + 5)(x - 9)$$

$$= x^2 - 9x + 5x - 45$$

$$= x^2 - 4x - 45$$

$$\frac{x^2 - 4x - 45}{(2)}$$

- (b) Factorise fully
- $9x^2 + 6x$

$$= 3(3x^2 + 2x)$$

$$= 3x(3x + 2)$$

$$\frac{3x(3x + 2)}{(2)}$$

(Total for Question is 4 marks)

$$\frac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$$

5. (a) Expand $x(x-4)$

$$\begin{aligned}
 &= x \times x + (x)(-4) \\
 &= x^2 + (-4x) \\
 &= x^2 - 4x
 \end{aligned}$$

$$x^2 - 4x \checkmark$$

(1)

(b) Factorise $15y - 10$

$$\begin{array}{r}
 15y \quad 10 \\
 / \quad \backslash \quad \wedge \\
 y \quad 15 \quad 2 \quad 5 \\
 \quad \wedge \\
 \quad 3 \quad 5
 \end{array}$$

$$\begin{aligned}
 15y &= 3 \times 5 \times y \\
 10 &= 2 \times 5 \\
 \therefore \text{HCF} &= 5
 \end{aligned}$$

$$15y - 10 = 5(3y - 2)$$

$$5(3y - 2) \checkmark$$

(1)

(c) Solve $7(f-5) = 28$

$$\begin{aligned}
 7(f-5) &= 28 \\
 \div 7 \downarrow & \quad \quad \quad \downarrow \div 7 \checkmark \\
 f-5 &= 4 \\
 +5 \downarrow & \quad \quad \quad \downarrow +5 \\
 f &= 9
 \end{aligned}$$

$$f = 9 \checkmark$$

(2)

(Total for Question is 4 marks)