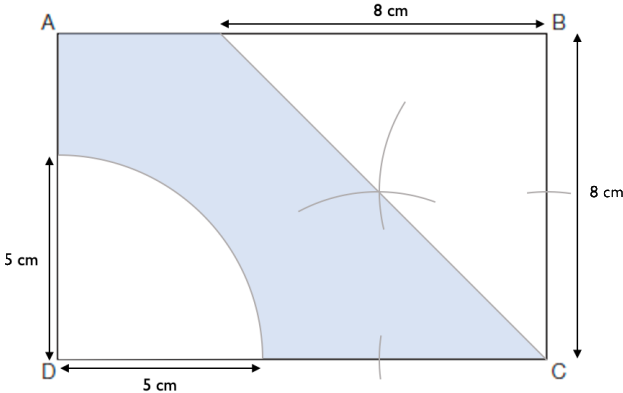


Year 9 Autumn Higher Mark Scheme A

| Question | Answer | Marks | Notes and guidance |
|----------|----------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 288 | 2 | Award 1 mark for correct method. |
| | 336 | 3 | Award 2 marks for attempt to find areas of all five faces and find the total, including correct formula for area of triangle. Award 1 mark for area of at least 3 faces. |
| 2 | Correct graph of $y = 4x - 3$ drawn | 4 | Award 2 marks for table/list of values with at least three points correct. Award 1 mark for one correct point. Award 2 marks for fully correct graph. Award 1 mark for at least 3 of their values correctly plotted on a pair of axes. |
| 3 | $y = 6 - 2x$ | 2 | Accept any equivalent form with y as the subject e.g. $y = \frac{12-4x}{2}$ Award 1 mark for correct first step e.g. $2y = 12 - 4x$ or $2x + y = 6$ |
| | -2 | 1 | Follow through from their answer to the first part. |
| 4 | Indicates “ x is inversely proportional to y ” | 1 | Accept any clear indication – tick, circles, underline etc. |
| | 25 | 1 | |
| 5 | $8 > m$ or $m < 8$ | 2 | Award 1 mark for fully correct method or $m = 8$ |

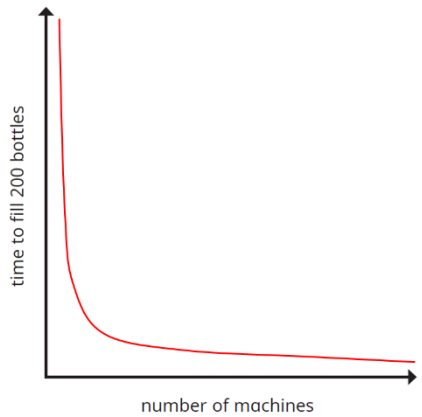
Year 9 Autumn Higher Mark Scheme A

| | | | |
|----|---------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | $-\frac{1}{2}$ or any equivalent value | 2 | Award 1 mark for correct method e.g. with wrong scale. |
| | $y = -\frac{1}{2}x - 1$ | 1 | Allow any correct form. Follow through from their gradient |
| 7 | 100π | 2 | Award 1 mark for correct substitution into formula seen or implied e.g. $\frac{1}{3} \times \pi \times 5^2 \times 12$ or 314.15.... |
| 8 | Correct perpendicular drawn with construction lines visible | 2 | Award 1 mark for correct method. |
| 9 | $b = \sqrt{c^2 - a^2}$ | 2 | Award 1 mark for correct first step i.e. $b^2 = c^2 - a^2$ |
| 10 | Completes table with $x + 2, x + 10, x + 12$ | 1 | |
| | $(x + 2)(x + 10) - x(x + 12)$ $x^2 + 12x + 20 - x^2 - 12x$ 20 | 2 | Award 2 marks for fully correct proof. Award 1 marks for attempt to multiply both sets of brackets and subtract/compare expressions. |
| 11 | <p>Correct region drawn i.e.</p>  | 3 | Award 1 mark for quarter circle drawn from D. Award 1 mark for attempt to bisect angle BCD. Award 3 rd mark for shading correct region. |

Year 9 Autumn Higher Mark Scheme A

| | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | Indicates True and justifies e.g. $3 \times -\frac{1}{3} = -1$ | 1 | |
| 13 | 3 | 2 | Award 1 mark for equation $\pi r^2 h$ to 72π , substituting h and attempting to find r^2 or r . |
| 14 | Fully correct proof that triangles are congruent e.g. $180 - 41 - 42 = 97$ $7 \text{ cm} = 70 \text{ mm}$ Both triangles have a side of 7 cm with angles 41 and 72, so they congruent (ASA). | 3 | Award 1 mark for finding missing angle in either triangle. Award 2 nd mark for showing sides lengths are the same. Award 3 rd mark for stating they are congruent with correct condition. |
| 15 | $\frac{3}{8} \geq x$ or $x \leq \frac{3}{8}$ | 3 | Allow 0.375 for $\frac{3}{8}$ Award 1 mark for forming correctly inequality $7 - 5x \geq 3x + 4$ or $3x + 4 \leq 7 - 5x$ Award 2 nd mark for isolating x and simplifying constants e.g. $3 \geq 8x$ Do not penalise if using $>$ and $<$ instead of \geq or \leq . |

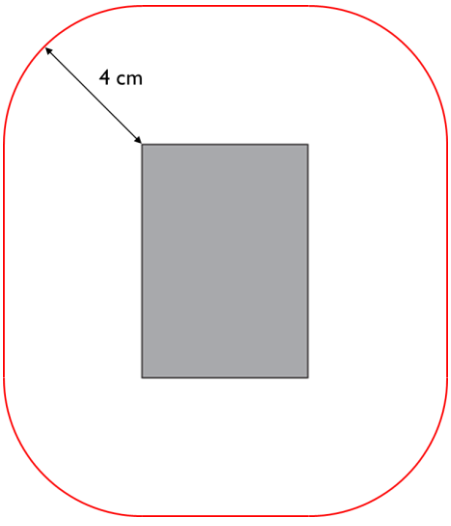
Year 9 Autumn Higher Paper Mark Scheme B

| Question | Answer | Marks | Notes and guidance |
|----------|------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | $A = (3, 11)$ | 1 | |
| | $B = (7, -1)$ | 1 | |
| 2 | $2y + x = 12$ | 1 | |
| 3 | £408 | 3 | Award 1 mark for correctly starting the process of finding the total length of the edges of the tank e.g. $4 \times (3 + 5 + 0.5)$ Award 1 mark for their "38" $\times 12$ |
| 4 | 12 minutes | 2 | Award 1 mark for $60 \div 5$ seen or implied |
| |  | 1 | |
| 5 | $x = 30$ | 1 | |

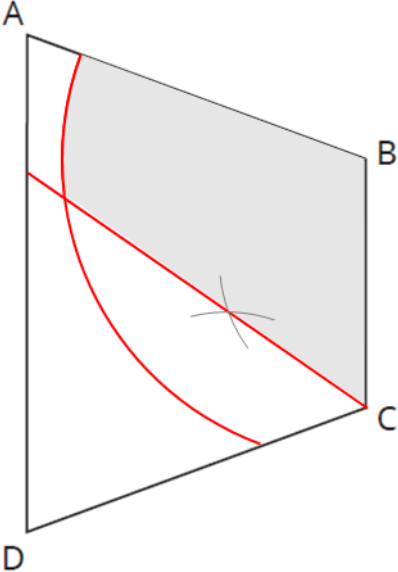
Year 9 Autumn Higher Paper Mark Scheme B

| | | | |
|---|-----------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | $y = 2.5$ | 3 | Award 1 mark for any correct first step to solve the equation e.g. multiply through by 3 $2y + 1 + 12y = 36$ Award 2 nd mark for simplifying equation to $14y = 35$ |
| 6 | $2^6 \times 3^2$ | 2 | Award 1 mark for correct process to find prime factors i.e. a correct completed factor tree. Do not accept a list of 576's prime factors. |
| | Yes e.g. as $576 = (2^3 \times 3)^2$ | 1 | Accept any correct reasoning e.g. $24^2 = 576$ Do not accept Yes with no/incorrect explanation. |
| 7 | e.g. $(2x + 3)(x - 5) + x(x + 7) + 9$ $\equiv 2x^2 - 7x - 15 + x^2 + 7x + 9$ $\equiv 3x^2 - 6$ $\equiv 3(x^2 - 2)$ | 3 | Award 1 mark for expanding brackets correctly. Award 2 nd for collecting like terms. Award final mark for correctly factorising. Allow any equivalent method e.g. showing both sides are $3x^2 - 6$ |
| 8 | $a = 275$ $b = 525$ | 2 | Award 1 mark for process e.g. $b = 250 + a \Rightarrow 2a + 250 = 800$ |

Year 9 Autumn Higher Paper Mark Scheme B

| | | | |
|-----|------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | $252\pi \text{ cm}^3$ or 792 cm^3 | 4 | <p>Award 1 mark for calculating the volume of the cylinder $\pi \times 3^2 \times 20$ Award 1 mark for calculating the volume of a sphere $\frac{4}{3} \times \pi \times 3^3$ Award 1 mark for find the total volume $180\pi + 36\pi + 36\pi$ Accept awrt 792 cm^3</p> |
| 10 | 216 cm^2 | 3 | <p>Award 1 mark for attempt to find x e.g. solving Area of triangle $\times x = 168$ Award 1 mark for attempt to find surface area using their x (or in terms of x</p> |
|)11 |  | 3 | <p>Award 1 mark for calculating scaled distance i.e. $80 \div 20 (= 4)$ Award 1 mark for arcs of radii 4 cm draw at each vertex of the rectangle or locus of points 4 cm parallel to each edge accurately drawn. Award full marks complete locus of points 4 cm from rectangle</p> |

Year 9 Autumn Higher Paper Mark Scheme B

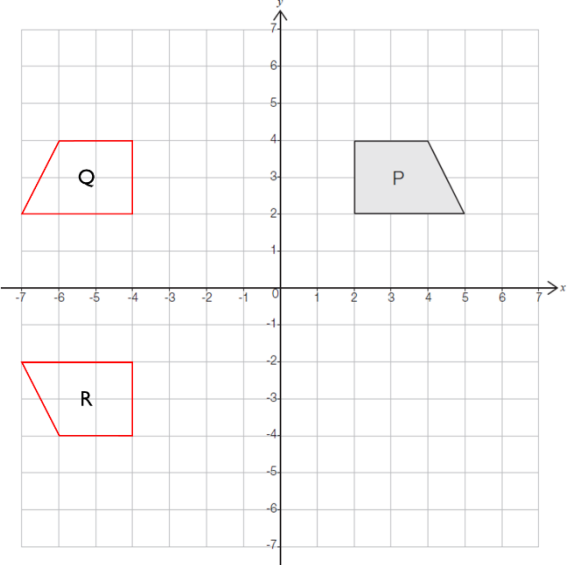
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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 |  | 3 | <p>Award 1 mark for an accurate angle bisector constructed for $\angle BCD$</p> <p>Award 1 mark for arc of radius 4cm drawn from B</p> <p>Award full marks for correct region identified.</p> |
| 13 | $g = \sqrt{\frac{b-4}{5}}$ | 2 | <p>Award 1 mark for any correct first step to rearrange formula</p> |
| 14 | <p>e.g. Triangle C is congruent to triangle F Condition for congruency: SAS</p> <p>Triangle E is congruent to triangle G Condition for congruency: SSS</p> | 4 | <p>Award 1 mark for each correct pair of congruent triangles.</p> <p>Award 1 mark for the correct conditions of congruency stated with the pair of congruent triangles</p> |

Year 9 Spring Higher Paper Mark Scheme

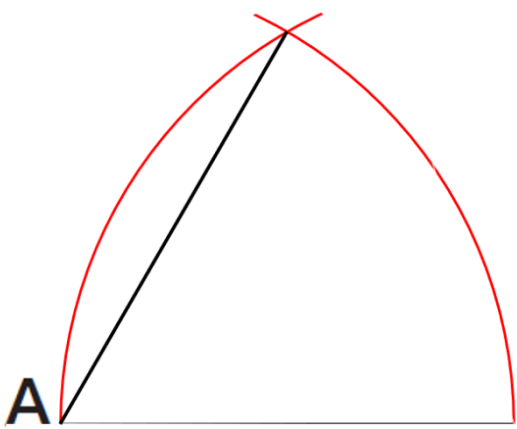


| Question | Answer | Marks | Notes and guidance |
|----------|---------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 700π | 3 | Award 1 mark either area of base (100π) or curved surface area (600π) correctly calculated, allow decimals Award 2 nd mark for both correct 2199.11... or rounded implies 2 marks out of 3 |
| 2 | 1.5 | 3 | Award 1 mark for $450 \div 5$ or 90 seen. Award 1 mark for correct method to find rate of interest e.g. $90 \div 6000 \times 100\%$ |
| | Indicates 6000×1.035^5 | 1 | Allow any clear indication – circle, underlined, tick etc. |
| 3 | 1080 | 2 | Award 1 mark for $20\% = 180$ used to find 100% or 120% seen or implied |
| 4 | 121 supported with reasoning | 3 | Award 1 mark for either $\angle AEB = 65^\circ$ or $\angle EAB = 56^\circ$ seen or implied (could be on diagram) Award 2 nd mark if x found to be 121° Award 3 rd mark for any fully correct chain of reasoning, with correct mathematical statements throughout |

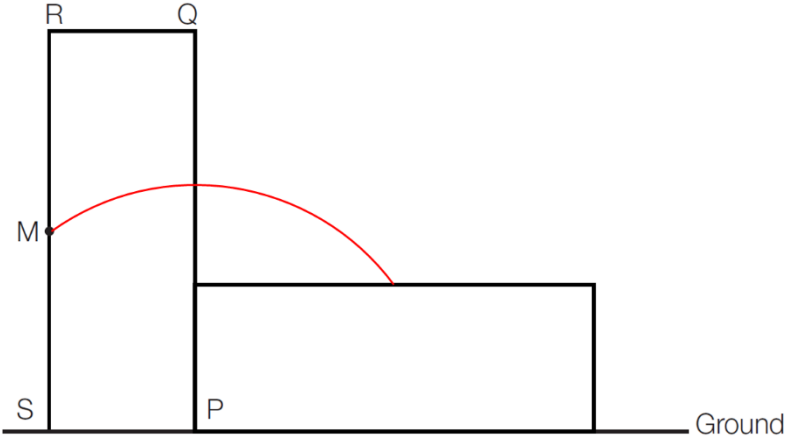
Year 9 Spring Higher Paper Mark Scheme

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|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>5</p> |  <p>Rotation 180° about $(-1, 0)$</p> | <p>Award 1 mark for shape P correctly reflected through $x = -1$ to give shape Q</p> <p>Award 1 mark for their shape Q correctly reflected through the x-axis to give shape R</p> <p>Award 1 mark correctly describing single transformation of shape P to their shape R provided this is a rotation</p> |
| <p>6</p> | <p>10 800</p> | <p>3</p> <p>Award 1 mark for any correct method to find the car value after 1st year e.g. $15\,000 \times 0.8$</p> <p>Award 1 mark for any correct method to find the car value after 2nd year e.g. their $12\,000 \times 0.9$</p> |
| | <p>35%</p> | <p>2</p> <p>Award 1 mark for any correct method to find $20\,000 - 13\,000$ as a percentage of $20\,000$</p> |

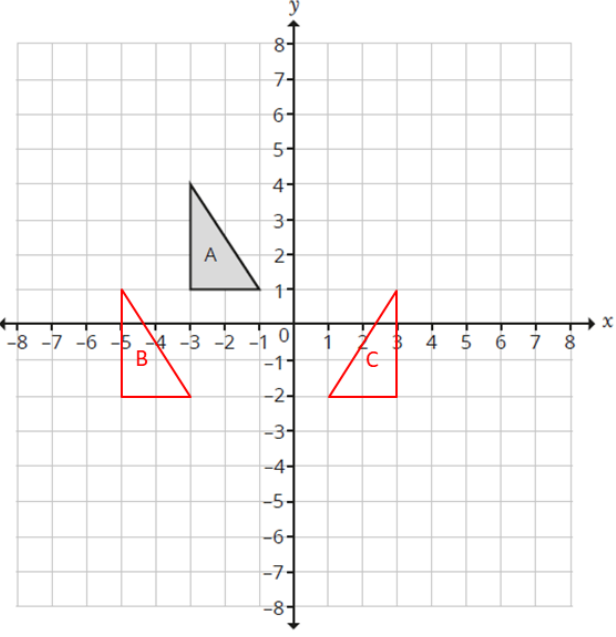
Year 9 Spring Higher Paper Mark Scheme

| | | | |
|----|---------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 80 | 2 | Award 1 mark for correctly substituting m and v into the formula |
| | $m = \frac{2K}{v^2}$ | 2 | Award 1 mark for any correct first step taken to rearrange formula e.g. $2K = mv^2$ or $\frac{1}{2}m = \frac{K}{v^2}$ |
| 8 | Indicates “Never True” | 1 | Allow any clear indication – circle, underlined, tick etc. |
| | Indicates “Sometimes True” | 1 | |
| 9 | e.g. $4x + 2y = 10 \rightarrow y = 5 - 2x$, so both have gradient of -2 | 2 | Award 1 mark for valid attempt to find gradient of both lines Award 2 nd mark for fully correct justification |
| 10 | e.g.  | 2 | Award 1 mark for first arc crossing the given line Awards 2 nd mark for correct construction at X, allow $\pm 2^\circ$ No marks if no arcs seen Award 1 mark maximum for correct construction seen elsewhere on the line Condone equilateral triangle fully constructed. |
| 11 | $3\frac{1}{3}$ | 2 | Award 1 mark for answer in any other form e.g. $3.33\dots$ or $\frac{10}{3}$ |

Year 9 Spring Higher Paper Mark Scheme

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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | e.g. $\sqrt{0.25} = \sqrt{\frac{1}{4}} = \frac{1}{2}$ | 2 | Award 1 mark for $\sqrt{0.25} = 0.5$ |
| 13 | e.g. $AC = \sqrt{12^2 + 5^2} (= 13)$ $AG = \sqrt{13^2 + 5^2} = 13.928 \dots$ or $\sqrt{12^2 + 5^2 + 5^2}$ $13.938 \dots < 14$ | 4 | Award 1 mark for any correct use of Pythagoras' theorem Award 2 nd mark for any correct relevant length found e.g. $AC = 13$ cm Award 3 rd mark for 2 nd use of to find $AG = 13.928$ (may get 2 nd and 3 rd mark in one step if using $\sqrt{12^2 + 5^2 + 5^2}$) Award final mark for comparison with 14 cm |
| 14 |  <p>The diagram shows a rectangle PQRS on a horizontal line labeled 'Ground'. The vertices are labeled: R at the top-left, Q at the top-right, S at the bottom-left, and P at the bottom-right. A red arc is drawn with its center at P and its radius equal to the length of PM, where M is a point on the side SR. The arc intersects the side SR at a point.</p> | 3 | Award 1 mark correct size and new position of rectangle PQRS. Award 1 mark for arc drawn of radius PM centre P Award 3 rd mark for arc ending on the "new" SR |

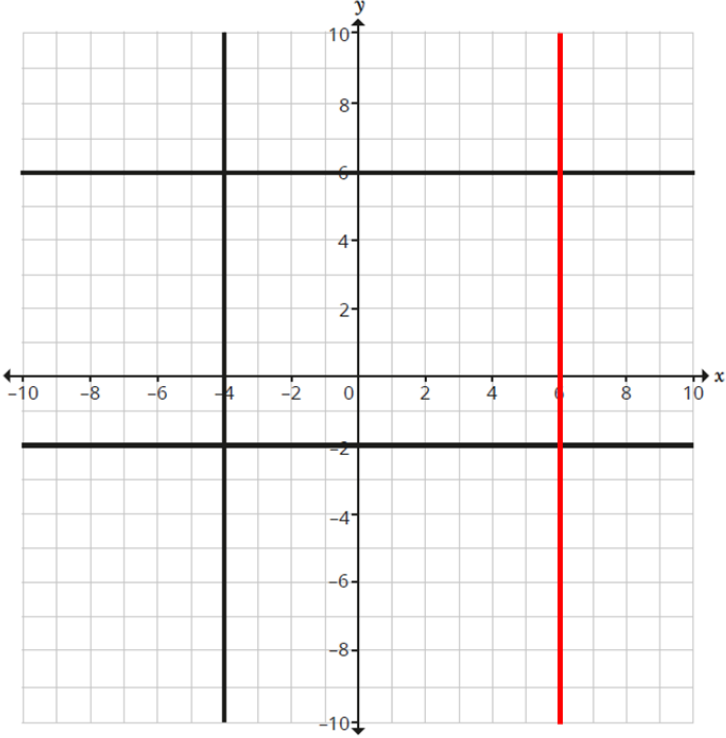
Year 9 Spring Higher Paper Mark Scheme B

| Question | Answer | Marks | Notes and guidance |
|----------|-------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 |  | 2 | <p>Triangle B Award 1 mark a correct translation of either the horizontal or vertical component of $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$</p> |
| | | 2 | <p>Triangle C Follow through their B Award 1 mark for a correct reflection of their B in the line $x = k$ where $k \neq -1$</p> |
| 2 | $a = 7$ | 2 | Award 1 mark for correct substitution of (2, 11) into $y = ax - 3$ i.e. $11 = 2a - 3$ |
| 3 | 1000 | 2 | Award 1 mark for correct method to find the whole (3000) seen or implied. |
| | 0.5% | 2 | Award 1 mark for correct method e.g. $\frac{40}{8000} \times 100$ seen or implied |

Year 9 Spring Higher Paper Mark Scheme B

| | | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | Increased by 8% | 1 | |
| | Different e.g. because this would a decrease by 12% | 1 | Accept any equivalent correct explanation Do not accept 'Different' with no or incorrect explanation |
| 5 | Amir | 3 | Award 1 mark for correct method to obtain Eva or Amir's earned interest i.e. $20 \times 5 = 100$ or $(1000 \times 1.05^2) - 1000 = 102.5(0)$ Award 2 nd mark for both values correct. Award 1 mark for correct conclusion based on their values. |
| 6 | The 400 g bag | 3 | Award 1 mark for attempt to find two comparable vales e.g. cost of 1 kg or comparing weight of £6 worth of potatoes etc. Award 1 mark for two correct comparable values found Award final mark for correct conclusion., must be justified |
| 7 | $\angle BDC = 60^\circ$ (angles in an equilateral triangle are equal) $\angle BDA = 120^\circ$ (angles on a straight line sum to 180°) $\angle BAD = \frac{180-120}{2} = 30^\circ$ (base angles in an isosceles triangle are equal) | 3 | Award 1 mark for $\angle BDC$ found with correct reason stated. Award 1 mark for $\angle BDA$ found with correct reason stated. Award full marks for fully correct proof with correct reasons. |

Year 9 Spring Higher Paper Mark Scheme B

| | | | | | | | | | | | |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------|------------------------------------------------------------------|------------|-----------------------------------------------|------------|----------|------------------------------------------------------|
| <p>8</p> | <table border="1"> <tbody> <tr> <td data-bbox="376 204 927 288">The diagonals of a rhombus bisect each other.</td> <td data-bbox="934 204 1117 288">true false</td> </tr> <tr> <td data-bbox="376 293 927 378">The diagonals of a parallelogram are equal in length.</td> <td data-bbox="934 293 1117 378">true false</td> </tr> <tr> <td data-bbox="376 383 927 467">The diagonals of a rectangle bisect the angles of the rectangle.</td> <td data-bbox="934 383 1117 467">true false</td> </tr> <tr> <td data-bbox="376 472 927 557">The diagonals of a kite meet at right angles.</td> <td data-bbox="934 472 1117 557">true false</td> </tr> </tbody> </table> | The diagonals of a rhombus bisect each other. | true false | The diagonals of a parallelogram are equal in length. | true false | The diagonals of a rectangle bisect the angles of the rectangle. | true false | The diagonals of a kite meet at right angles. | true false | <p>2</p> | <p>Award 1 mark for two or three correct choices</p> |
| The diagonals of a rhombus bisect each other. | true false | | | | | | | | | | |
| The diagonals of a parallelogram are equal in length. | true false | | | | | | | | | | |
| The diagonals of a rectangle bisect the angles of the rectangle. | true false | | | | | | | | | | |
| The diagonals of a kite meet at right angles. | true false | | | | | | | | | | |
| <p>9</p> |  <p>$x = 6$</p> | <p>2</p> | <p>Award 1 mark for correct line drawn</p> <p>Award 1 mark for correct equation of their line drawn</p> | | | | | | | | |

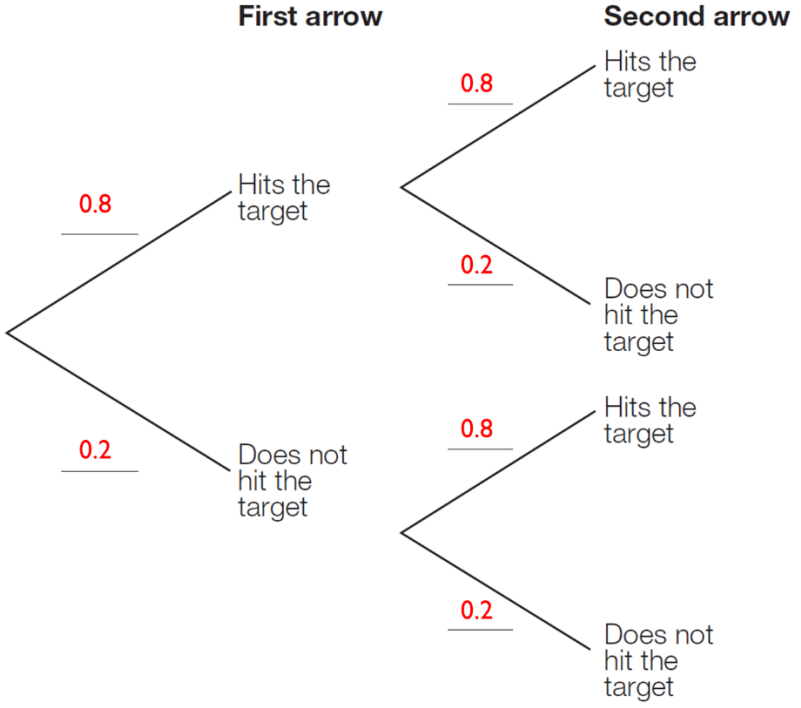
Year 9 Spring Higher Paper Mark Scheme B

| | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | $x^3 + 10x^2 + 31x + 30$ | 3 | Award 1 mark for a correct method to find the product of any two linear expressions (must have at least 3 out of 4 terms correct) Award 2 nd mark for a complete method to obtain all terms, half of which are correct |
| 11 | e.g. QS (shared) PQ = QR (given) PS = SR (given) \therefore PQS, QRS are congruent with conditions SSS | 3 | Award 1 mark for stating a correct pair of equal sides with reasons. Award 2 nd mark for stating two correct pairs of equal sides with reasons. Award full marks for fully correct proof with SSS condition Note: Apply same approach when awarding marks for an alternative approach e.g. SAS |
| 12 | -343 | 1 | |
| | $0.3, \frac{17}{5}, \sqrt[3]{-8}$ | 2 | Award 1 mark for any two correct values indicated |
| | $4\sqrt{5}$ | 2 | Award 1 mark for writing $\sqrt{80} = \sqrt{a} \times \sqrt{b}$ where a is a square number and $ab = 80$ |
| 13 | Diameter of circle with centre Y = 32 Diameter of circle with centre Z = 48 XY = 24 cm, XZ = 32 cm, YZ = 40 cm $XY^2 + XZ^2 = 1600 = 40^2 = YZ^2$ The lengths of the triangle satisfy Pythagoras' theorem \therefore XYZ is a right-angled triangle | 4 | Award 1 mark for correctly working out the other two diameters. Award 1 mark correctly working out the lengths of the sides of XYZ Award 1 mark for correct use of Pythagoras' theorem Award final mark for fully correct answer with conclusion. |

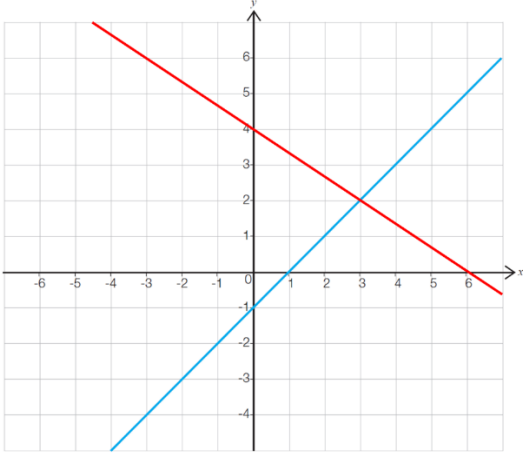
Year 9 Summer Higher Paper Mark Scheme

| Question | Answer | Marks | Notes and guidance |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 108 | 2 | Award 1 mark for $\frac{1}{3} \times 6^2 \times 9$ seen or implied. |
| 2 | $-\frac{4}{3}$ | 2 | Accept any equivalent form Award 1 mark for correct process to make y the subject i.e. $y = \frac{8}{3} - \frac{4}{3}x$ |
| 3 | 21600 | 2 | Award 1 mark for $20000 \times 1.2 \times 0.9$ or equivalent complete method |
| 4 | $\begin{pmatrix} -2 \\ -8 \end{pmatrix}$ | 2 | Award 1 mark for shape C correctly positioned $(-1, 3), (1, 4), (-2, 3), (-2, 4)$ or translation vector of A to C seen $\begin{pmatrix} 2 \\ 8 \end{pmatrix}$ |
| 5 | 120 | 2 | Award 1 mark for $\sqrt{5} \times \sqrt{5} = 5$ seen or implied. |
| 6 | $r = \sqrt{\frac{A}{4\pi}}$ | 2 | Award 1 mark for correct first step to rearrange the formula e.g. divide both sides by 4π or square root both sides |
| 7 | e.g. Exterior angle: $180^\circ - 160^\circ = 20^\circ$ No. of sides: $360^\circ \div 20^\circ = 18$ Perimeter: $18 \times 12 = 216$ cm 216 cm = 2.16 m $>$ 2 m | 3 | Award 1 mark for a correct process to calculate the number of sides Award 1 mark for a correct process to calculate the perimeter Award full marks for fully correct method with conclusion |
| 8 | $x, x + 1, x + 2$ $x + x + 1 + x + 2 \equiv 3x + 3 \equiv 3(x + 1)$ | 2 | Award 1 mark for correct first step e.g. attempt to sum expressions for 3 consecutive integers Award 2 nd mark for fully correct proof |

Year 9 Summer Higher Paper Mark Scheme

| | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | <p>e.g.</p> $\sqrt{10^2 - 6^2} = \sqrt{64} = 8$ $x = \sqrt{8^2 + 8^2} = \sqrt{128}$ $\sqrt{121} < \sqrt{128} < \sqrt{144}$ <p>So $11 < x < 12$</p> | 3 | <p>Award 1 mark for correct use of Pythagoras' theorem to find missing side in first triangle Award 2nd mark for correct use of Pythagoras' theorem in second triangle Award full marks for clear justification that x is between 11 and 12</p> |
| 10 | 12 | 2 | <p>Award 1 mark for correct method to find scale factor between $\triangle ABC$ and $\triangle DEF$ (1.5)</p> |
| 11 | <p style="text-align: center;">First arrow Second arrow</p>  | 2 | <p>Award 1 mark for 'First arrow' probabilities correctly labelled Award full marks for fully correct tree Accept equivalent probabilities</p> |
| | 0.04 | 2 | <p>Award 1 mark for 0.2×0.2 seen or implied.</p> |

Year 9 Summer Higher Paper Mark Scheme

| | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | Sometimes true | 1 | |
| | Sometimes true | 1 | |
| 13 | $\frac{y}{x}$ with justification | 1 | Accept any correct explanation e.g. $\frac{3}{2} > \frac{2}{3}$ Do not accept $\frac{y}{x}$ with no or incorrect explanation. |
| | $a = 12$ | 2 | Award 1 mark for scaling ratios or forming equation from ratios e.g. $\frac{a}{18} = \frac{8}{a}$ |
| 14 | e.g. Run: $7 \text{ m/s} = 420 \text{ m/min} = 25\,200 \text{ m/h} = 25.2 \text{ km/h} > 20 \text{ km/h}$, so running is faster OR Bike: $20 \text{ km/h} = 20\,000 \text{ m/h} = 20000 \div 3600 \text{ m/s} = 5.55.. \text{ m/s} < 7 \text{ m/s}$, so running is faster | 3 | Award 1 mark correctly converting units of distance or time to make comparison Award 2 nd mark for correctly converting both units to make comparison Award full marks for correct conclusion with supporting work. |
| 15 |  | 2 | Award 1 mark for correct table of values or |
| | $x = 3, y = 2$ | 1 | Follow through their intersection point |

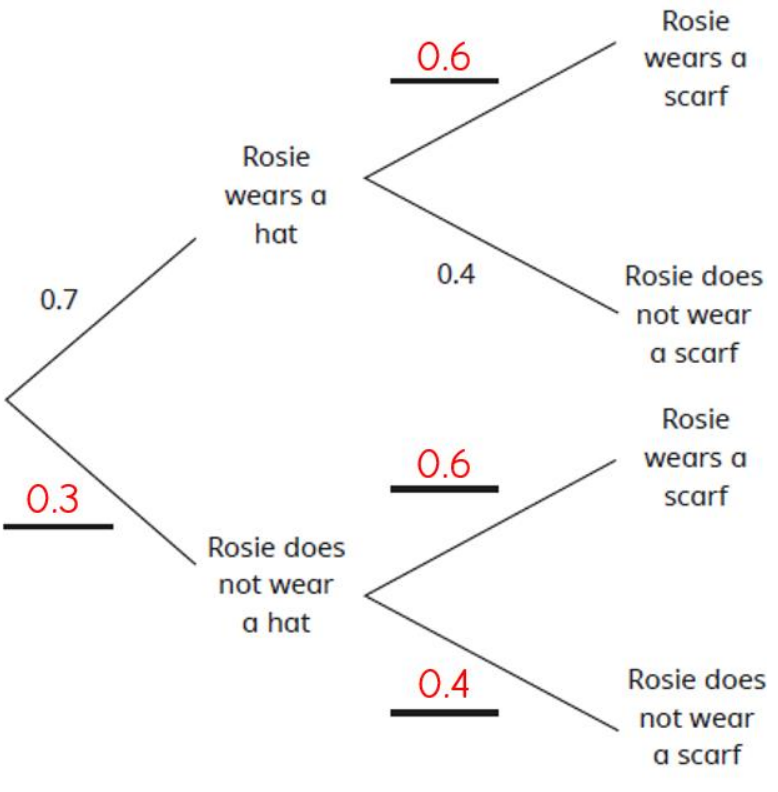
Year 9 Summer Higher Paper Mark Scheme

| | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | <p>e.g. $\angle ABY = \angle XCD$ (given) $AB = CD$ (opposite sides of a parallelogram are equal) $\angle BAD = \angle BCD$ (opposite angles of a parallelogram are equal) So $\triangle ABY$ and $\triangle XCD$ are congruent with (AAS)</p> | 3 | <p>Award 1 mark for any correct equality with reason Award 2nd for a second correct equality with reason Award full marks for complete proof with AAS condition stated</p> |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Year 9 Summer Higher Paper Mark Scheme B

| Question | Answer | Marks | Notes and guidance |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Indicates “ $2\frac{1}{2}\%$ of £450” with justification e.g. $2\frac{1}{2}\%$ of £450 = £11.25 250% of £1.20 = £3, $11.25 > 3$ | 2 | Accept any full justification Award 1 mark for attempt to work out both values with at least one of them correctly found |
| 2 | 225 | 2 | Award 1 mark for 15 seen as HCF of 45 and 75 OR attempt to find x by squaring any other common factor (greater than 1) of 45 and 75 |
| 3 | e.g. $\angle ABE = \angle ACD$ (corresponding angles are equal) $\angle AEB = \angle ADC$ (corresponding angles are equal) $\angle BAE = \angle CAD$ (common), so the triangles are similar as they have the same angles | 2 | Award 1 mark for partial justification e.g. at least two pairs of angles identified as equal |
| | 8 | 1 | Award 1 mark for any correct use of scale factor e.g. $ED = 2$ cm seen or attempt to find $12 \times \frac{6}{9}$ or equivalent |
| 4 | $x = 10, y = 0$ | 3 | Award 1 mark for correct reflection of triangle A shown on the grid Award 2 nd mark for either x or y correct |
| 5 | Indicates the middle graph on the top row | 1 | |

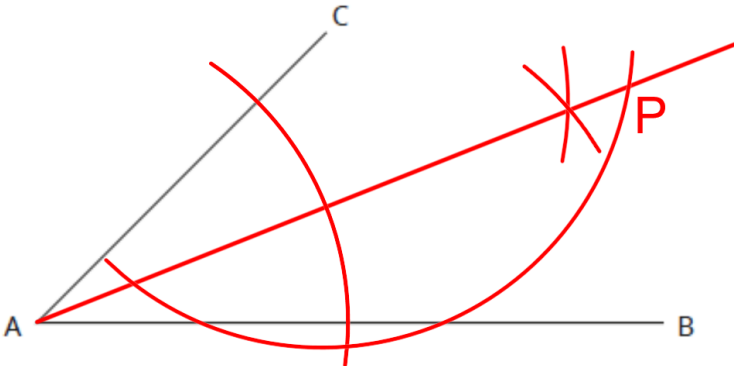
Year 9 Summer Higher Paper Mark Scheme B

| | | | |
|---|-------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------|
| 6 | Indicates $\times 0.85^3$ | 1 | |
| 7 |  | 2 | Award 1 mark for either 0.3 or 0.6 correctly place |
| | 0.42 | 2 | Award 1 mark for attempt to calculate 0.7×0.6 |
| 8 | 10 500 | 1 | Award 1 mark for $1 \text{ m}^3 = 1\,000\,000 \text{ cm}^3$ seen or implied |

Year 9 Summer Higher Paper Mark Scheme B

| | | | |
|----|--------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 28 | 3 | <p>Award 1 mark for complete correct method to find number of sweets each person has e.g. setting up equation $4x - 2 = 3x + 2$ or equivalent</p> <p>Award 2nd mark for correct method to solve equation, or equivalent, e.g. one 'part' found to be 4 or $x = 4$ seen or implied</p> |
| 10 | $x = 4, y = 2$ | 1 | Both values must be correct |
| | $y = -\frac{1}{2}x + 4$ | 2 | <p>Allow $y = 4 - \frac{1}{2}x$</p> <p>Award 1 mark for correct first step to rearrange i.e. $2y = 8 - x$ or $y + \frac{1}{2}x = 4$ seen</p> |
| 11 | 12 | 2 | Award 1 mark for attempt to calculate $360 \div (180 - 150)$ |
| 12 | <p>e.g.</p> $\sqrt{6^2 + 6^2} = \sqrt{72}$ $\sqrt{72 + 6^2} = \sqrt{108} > 10$ | 1 | <p>Must compare with 10 for full marks</p> <p>Allow $\sqrt{6^2 + 6^2 + 6^2} = \sqrt{108}$ to find the length of the longest diagonal</p> <p>Award 2 marks for $\sqrt{108}$ found</p> <p>Award 1 mark for any correct use of Pythagoras' theorem</p> |
| 13 | 27 | 1 | Award 1 mark for correct rearrangement to solve i.e. $30 - x = 3$ or $10 - 1 = \frac{1}{3}x$ seen |
| 14 | e.g. $(2n)^3 = 8n^3 = 4 \times 2n^3$ | 2 | Award 1 mark for attempt to cube general even number e.g. $(2n)^3$ |

Year 9 Summer Higher Paper Mark Scheme B

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| 15 | <p>Indicates “No” with justification e.g.</p> $V = \frac{1}{3} \times \pi \times 6 \times 6 \times 15$ $V = 180\pi$ $180 \times 4 = 720 < 1000$ $\pi < 4 \text{ so volume is less than 1 litre}$ | 3 | <p>Award 1 mark for using formula with correct dimensions Award 2nd mark for using an estimate for π to find the volume award 3rd mark for full clear justification (e.g. “Using $\pi \approx 3$ gives $V \approx 540$, nowhere near 1000”)</p> |
| 16 | <p>e.g.</p>  | 3 | <p>Award 1 mark for correct construction of bisector of angle CAB or an arc/circle of radius 5 cm from at least one of A and C Award 2nd mark for arc centre C radius 5 cm that intersects with their bisector Award 3rd mark for P clearly indicated</p> |