



THIRD SPACE
LEARNING

Mathematics

Paper 1

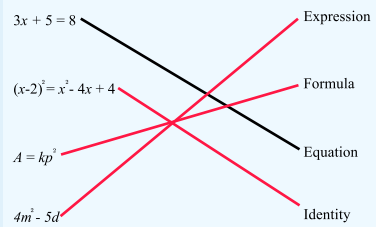
(Non-Calculator)

Higher Tier

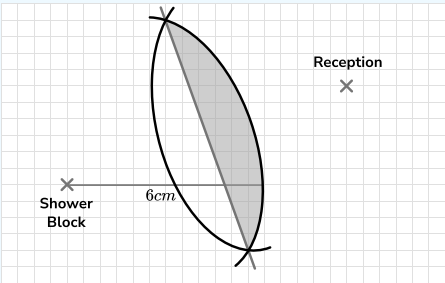
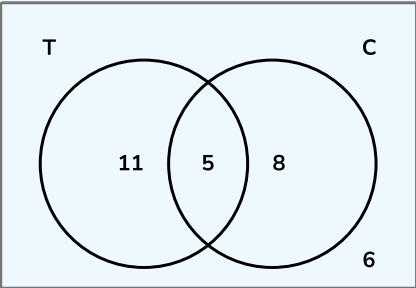
Mark Scheme

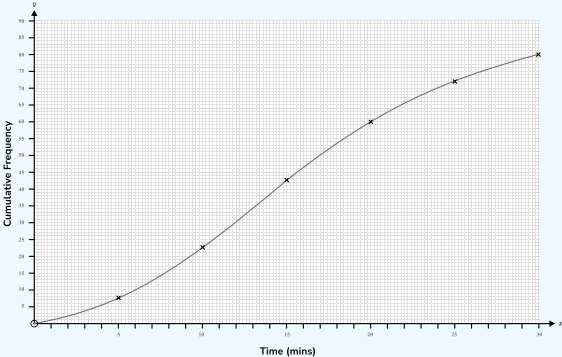
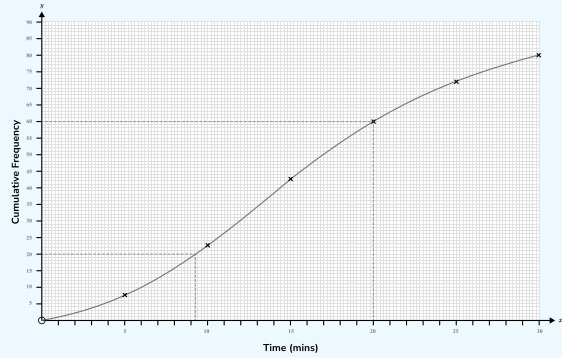
AQA GCSE

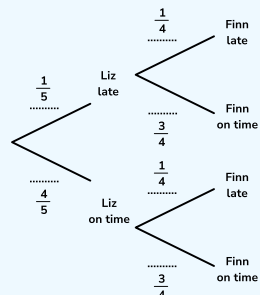
SET 1A

| Question | Working | Answer | Notes |
|----------|---|--|---|
| Q1 | | 5.208 | B1 |
| Q2 | | $\frac{1}{625}$ | B1 |
| Q3 | | 0.965 | B1 |
| Q4 | $\sin(30)=0.5$ $\tan(45)=1$ | $\frac{3}{2}$ | B1 |
| Q5 |  | | B1 for one correct match B1 for all three correct matches and no incorrect |
| Q6a | | She has added the numerators and added the denominators of the fractions | B1 oe |
| Q6b | $1\frac{8}{28} + 3\frac{7}{28} = 4\frac{15}{28}$ Or $\frac{36}{28} + \frac{91}{28} = \frac{127}{28}$ | $4\frac{15}{28}$ or $\frac{127}{28}$ | M1 Writing the fractions over a common denominator or finding improper fractions A1 cao |
| Q7 | $\frac{5}{8}$ of 24 = 15, 24-15=9 $\frac{2}{5}$ of 30 = 12, 30-12=18 | Ben | M1 Correctly calculating the number of sweets eaten or left for Gary M1 Correctly calculating the number of sweets eaten or left for Ben A1 Ben with 18 sweets left |
| Q8 | Fixed price or price on arrival or price for zero distance | | B1 |

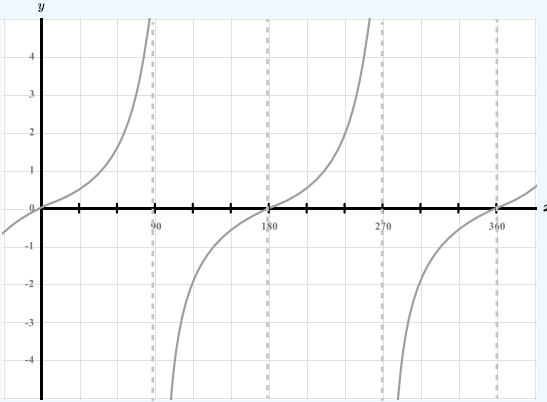
| Question | Working | Answer | Notes |
|-------------|---|-----------------------------|---|
| Q9 | 8:18 | 4:9 | M1 for 8:18 or 9:4 A1 cao |
| Q10 | Eloise x, Max 2x, Callie x-2 $x + 2x + x - 2 = 38$ $4x - 2 = 38$ $x = 10$ Eloise 10, Max 20, Callie 8 | Eloise 10, Max 20, Callie 8 | M1 Attempting to write expressions for the number of marbles each child has M1 Adding the expression and putting them equal to 38 M1 Solving to give x=10 A1 Substituting 10 into the expressions giving Eloise 10, Max 20, Callie 8 |
| Q11a | | 4.72×10^6 | A1 cao |
| Q11b | | 0.0071 | A1 cao |
| Q11c | $46000 + 512000 = 558000$ or $0.46 \times 10^5 + 5.12 \times 10^5 = 5.58 \times 10^5$ | 5.58×10^5 | M1 Correctly writing both numbers as ordinary numbers or both with the same power of 10 A1 cao |
| Q12 | | $y < x$ | B1 |
| Q13a | $7^0 = 1$ | 1 | B1 cao |
| Q13b | $\frac{5^8}{5^2} = 5^6$ | 6 | M1 5^8 seen A1 cao |
| Q14 | | $y = \frac{1}{x}$ | B1 |
| Q15 | $2a \quad 5b \quad 2a + 5b$ $2a + 10b, 4a + 15b, 6a + 25b$ | $6a + 25b$ | M1 attempt to add 5b and 2a+5b for 4th term M1 4th and 5th terms correct A1 cao |

| Question | Working | Answer | Notes |
|----------|---|---------------------------|---|
| Q16 |  | | <p>M1 Perpendicular bisector drawn</p> <p>M1 Circle radius 6 cm drawn with shower block as the centre</p> <p>A1 Correct region indicated/shaded</p> |
| Q17a | ξ  | | <p>M1 one of 11, 8 or 6 seen</p> <p>A1 all three values correct</p> |
| Q17b | | $\frac{24}{30}$ | <p>M1 24 seen as total of union of T and C</p> <p>A1 $\frac{24}{30}$ oe</p> |
| Q18 | $x^2 + y = 16y + 8w$ $x^2 - 8w = 15y$ $y = \frac{x^2 - 8w}{15}$ | $y = \frac{x^2 - 8w}{15}$ | <p>M1 Expanding bracket</p> <p>M1 moving both y terms to the same side</p> <p>A1 cao</p> |
| Q19a | $\frac{-3 - -4}{4 - 0} = \frac{1}{4}$ | $\frac{1}{4}$ | <p>M1 Picking two points and using $\frac{y_2 - y_1}{x_2 - x_1}$</p> <p>A1 oe</p> |
| Q19b | | $y = \frac{1}{4}x - 4$ | <p>B1 for the correct y-intercept -4</p> <p>A1 oe</p> |

| Question | Working | Answer | Notes |
|----------|---|----------------------|---|
| Q20 | | -2 | M1 Appropriate tangent drawn at x=8 and two points selected with attempt to calculate gradient A1 accept answers in range -1.8 to -2.2 |
| Q21a | | 8, 22, 43, 60, 71 80 | B1 cao |
| Q21b |  | | M1 Points plotted correctly ft from their part a A1 Correct points joined with a curve |
| Q21c |  $20 - 9.4 = 10.6$ | 10.6 minutes | M1 horizontal lines drawn at 20 or 60 A1 cao |
| | | | |

| Question | Working | Answer | Notes |
|----------|--|------------------------|--|
| Q22 | $y = \frac{k}{\sqrt{x}}$ $30 = \frac{k}{\sqrt{25}}$ $k = 30 \times 5 = 150$ $y = \frac{150}{\sqrt{16}} = 37.5$ | 37.5 | M1 k=150 seen A1 cao |
| Q23 | $\frac{12x^2 + 42x + 18}{24x^2 - 6} = \frac{6(2x^2 + 7x + 3)}{6(4x^2 - 1)}$ $= \frac{2x^2 + 7x + 3}{4x^2 - 1}$ $= \frac{(2x + 1)(x + 3)}{(2x + 1)(2x - 1)}$ $= \frac{x + 3}{2x - 1}$ | $\frac{x + 3}{2x - 1}$ | M1 Factoring out 6 from either expression M1 Factorising numerator or denominator M1 Both numerator and denominator factorised A1 cao |
| Q24 | $x = 0.45454545\dots$ $100x = 45.45454545\dots$ $99x = 45$ $x = \frac{45}{99} = \frac{5}{11}$ | | M1 Subtracting 0.454545.... from 45.454545... A1 $99x=45$ or $\frac{45}{99}$ seen and relevant steps shown |
| Q25a |  | | M1 at least two values correct A1 cao |

| Question | Working | Answer | Notes |
|-------------|---|--------------------------------------|--|
| Q25b | $\frac{4}{5} \times \frac{3}{4} = \frac{3}{5}$ $\frac{3}{5} \times 80 = 48$ | 48 | M1 Multiplying probabilities for “on time” M1 “their on time probability” 80 A1 cao |
| Q26 | $(3 + \sqrt{2})(4 + \sqrt{8}) = 14 + 4\sqrt{2} + 3\sqrt{8} + \sqrt{16}$ $= 12 + 4\sqrt{2} + 3 \times 2\sqrt{2} + 4$ $= 16 + 10\sqrt{2}$ | $16 + 10\sqrt{2}$ | M1 At least three terms correct in the expansion M1 $\sqrt{8} = 2\sqrt{2}$ A1 cao |
| Q27a | $\frac{\theta}{360} \times \pi \times 10^2 = 20$ $\theta = \frac{72}{\pi}$ | $\frac{72}{\pi}$ | M1 $\frac{\theta}{360} \times \pi \times 10^2$ A1 cao |
| Q27b | Unshaded area: $\frac{72}{360} \times \pi \times 5^2 = 5$ or Unshaded area: $20 \div 2^2 = 5$ $20 - 5 = 15$ | 15cm^2 | M1 Attempting to use the angle from part a to find the unshaded area Or use of similar shapes to find area M1 5 seen for unshaded area A1 cao |
| Q28 | $\vec{DC} = -2\mathbf{a} + \mathbf{b} + \mathbf{a} = \mathbf{b} - \mathbf{a}$ $\vec{DM} = \frac{1}{2}(\mathbf{b} - \mathbf{a}) = \frac{1}{2}\mathbf{b} - \frac{1}{2}\mathbf{a}$ $\vec{ND} = \frac{3}{4}(2\mathbf{a}) = \frac{6}{4}\mathbf{a} = \frac{3}{2}\mathbf{a}$ $\vec{NM} = \vec{ND} + \vec{DM}$ $= \frac{3}{2}\mathbf{a} + \frac{1}{2}\mathbf{b} - \frac{1}{2}\mathbf{a}$ $= \mathbf{a} + \frac{1}{2}\mathbf{b}$ | $\mathbf{a} + \frac{1}{2}\mathbf{b}$ | M1 Correct vector for DC or CD M1 Correct vector for DM M1 Attempting to add ND and DM oe A1 cao |

| Question | Working | Answer | Notes |
|----------|--|--------|--|
| Q29 |  | | B1 cao |
| Q30 | <p>WY is common $WX = YZ$ $\text{angle } XWY = \text{angle } WYZ$</p> <p>Triangle WXY is congruent to triangle WYZ because SAS side-angle-side</p> | | <p>B1 for stating WY common B1 for one of other reasons C1 for remaining reason and stating condition SAS</p> |
| | | | |

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