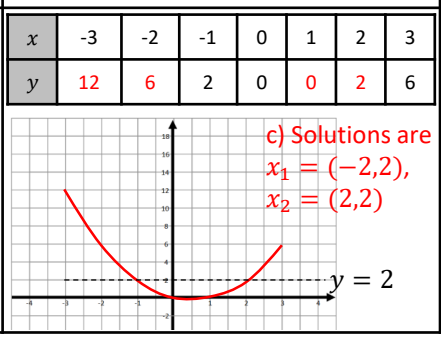
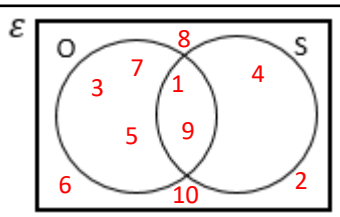
PASSPORT THREE

ANSWERS

TOPICS	ANSWERS	TOPICS	ANSWERS
1) Ratio	4 parts = $28l$ 1 part = $28 \div 4 = 7l$ Red Paint= $7 \times 3 = 21l$	**13) Circles**	Area Square $= 15 \times 15 = 225cm^2$ Area Circle $= 7.5^2 \times \pi = 56.25\pi$ Shaded = $225 - 56.25\pi =$ $48.3cm^2$
2) Percentage Increase and Decrease	Casio = $0.85 \times 8.80 = £7.48$ Sharp = $0.74 \times 9.90 = £7.33$ The Sharp is cheaper by approx 15p	**14) Semi Circles**	Circumference = 3.6π Semi Arc Length=1.8π Perimeter=$1.8\pi + 3.6 = 9.25cm$
3) Best Buy	5 doughnuts = $£3.35 = 335p$ 1 doughnut = $335 \div 5 = 67p$ 2 doughnuts = $£1.38 = 138p$ 1 doughnut = $138 \div 2 = 69p$ The five doughnut deal is cheaper.	**15) Angles in Polygons**	Dec: Ext=36^o Int=144^o Pent: Ext=72^o Int=108^o $x = 144 - 108 = 36^o$
4) HCF and LCM	a) $84 = 2 \times 2 \times 3 \times 7$ $= 2^2 \times 3 \times 7$ b) HCF = 12, LCM = 336	**16) Angles on Parallel Lines**	a) 84+32=116 a=180-116=64^o Alternate angles and angles on straight line. b) b - 180-64=116 Vertically opposite and Interior angles.
5) Estimation	$\frac{2 \times 300}{2^2} = \frac{600}{4} = 150$	**17) Pythagoras**	Base=$\sqrt{10^2 - 8^2} + \sqrt{12^2 - 8^2} = 14.9$ Area=$14.9 \times 8 \div 2 = 59.6cm^2$
6) Standard From	a) $1.02 \times 10^{-3}, 2.1 \times 10^{-2},$ $1.2 \times 10^3, 21000$ b) $768\,000\,000 = 7.68 \times 10^8$	**18) Trigonometry**	TOA Opp= $Tan(46) \times 8 = 8.28cm$
7) Expand Double Brackets	a) $x^2 + 4x + 3x + 12 = x^2 + 7x + 12$ b) $x^2 - 5x + 7x - 35 = x^2 + 2x - 35$	**19) Scatter Graphs**	a) Positive c) 40-42cm
8) Equations – 2 Steps	a) $7x = 84$ so $x = 12$ b) $\frac{x}{4} = -6$ so $x = -6 \times 4 = -24$	**20) Pie Charts**	Deg per item =$360 \div 120 = 3^o$ a) $26 \times 3 = 78^o$ b) $144 \div 3$=48 c) $46 \times 3 = 138^o$
9) Equations Unknowns on Both Sides	a) $4x = 24$ so $x = 6$ b) $8x = 18$ so $x = \frac{18}{8} = 2\frac{1}{4}$	**21) Frequency Polygon**	Points (2,6), (6,2) and (12,5) plotted. Connected with straight lines. Axis clearly labelled.
10) Form and Solve Equations	$4x + 40 = 360$ $4x = 320$ $x = 80^o$	**22) Mean from a Table**	a) $(50 + 1) \div 2 = 25.5th$ *Median size 6* *b)Mean*= $328 \div 50 = 6.56$
11) Functions	1) $output = 12 - 5 = 7$ 2) $Input = (-1 + 5) \div 3 = \frac{4}{3} = 1\frac{1}{3}$	**23) Mean from a Group Table**	a) $(30 + 1) \div 2 = 15.5th$ *Median class* $10 < l \leq 15$ b) Mean = $390 \div 30 = 13$
12) Quadratic Graphs	 c) Solutions are $x_1 = (-2,2)$, $x_2 = (2,2)$ $y = 2$	**24) Venn Diagram**	 $P(O \cap S) = \frac{2}{10} = \frac{1}{5}$

PASSPORT TWO
ANSWERS
NUMBER

TOPICS	ANSWERS	TOPICS	ANSWERS
Error interval	$345 \leq d < 355$	**Reverse Percentage**	$16.12 \div 0.55 = £29.31$
Percentage Decrease	$0.96 \times 2500 = £2400$	**Percentage Change**	$\frac{change}{original} \times 100$ $\frac{250{,}000}{1500000} \times 100$ $= 16.7\%$
Index Notation	*a)* 1 *b)* $5 \times 5 \times 5 = 125$ *c)* $\sqrt{64} = 8$ *d)* $\frac{1}{3^7} = \frac{1}{2187}$	**Standard Form**	*1)* 2.54×10^5 *2)* 0.00105
Fractions and Percentages	15% in school $\frac{7}{20} = \frac{35}{100} = 35\%$ shopping $100 - (15 + 35) =$ 50% cinema $0.5 \times 1400 =$ 700 students went to the cinema	**Subtracting and Multiplying Mixed Numbers**	*1)* $\frac{19}{5} - \frac{9}{4} = \frac{76-45}{20} = \frac{31}{20} = 1\frac{11}{20}$ *2)* $\frac{13}{3} \times \frac{23}{4} = \frac{299}{12} = 24\frac{11}{12}$

PASSPORT TWO
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Algebra

TOPICS	ANSWERS	TOPICS	ANSWERS
Factorising Expressions	*a)* $4(x+5)$ *b)* $3y(y+4)$ *c)* $(x+7)(x-3)$	**Solving inequalities**	$2x < 22$ $x < 11$
Solving Equations with Unknowns on Both Sides	$2x + 9 = -37$ $2x = -46$ $x = -23$	**Simultaneous Equations**	$8x = 48$ $x = 6$ $3x + 2y = 22$ $3(6) + 2y = 22$ $18 + 2y = 22$ $2y = 4$ $y = 2$
Change the Subject	*1)* $3x = y - t$ $x = \frac{y-t}{3}$ *2)* $\frac{x}{p} = z + pr$ $x = p(z + pr)$ *3)* $tx + tr = p$ $tx = p - tr$ $x = \frac{p-tr}{t}$	**Midpoint of Coordinates**	X coordinate $\frac{-4+10}{2} = \frac{6}{2} = 3$ Y Coordinate $\frac{6+(-8)}{2} = -\frac{2}{2} = -1$ Midpoint $(3, -1)$
Gradient of a line	$\frac{(Change\ in\ y)}{Change\ in\ x} = \frac{Rise}{Run}$ Gradient $= \frac{4}{2} = 2$	**Equation of a line parallel**	$y = 2x + C$ $E.g.$ $y = 2x$ $y = 2x - 1$ $y = 2x + 4$

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Shapes and Measures

TOPICS	ANSWERS	TOPICS	ANSWERS
Area of a Trapezium	$\frac{14+16}{2} \times 8 = \frac{30}{2} \times 8$ $= 15 \times 8 = 120cm^2$	**Bearings**	$180 - 75 = 105^o$
Pythagoras' Theorem	$x = \sqrt{13^2 - 9^2}$ $x = 9.38cm$	**Angles in Polygons**	Exterior Angle $180 - 156 = 24^o$ Number of sides $\frac{360}{24} = 15\ Sides$
Volume of a Cylinder	$V = \pi \times 2.5^2 \times 9$ $= 176.7cm^3$	**Perimeter of a Sector**	$\left(\frac{270}{360} \times \pi \times 18\right) + 9$ $+ 9$ $= 60.4\ cm$
Transformation – Enlargement from a point	Enlargement Scale Factor 2.5 Centre $(0\ ,0)$		

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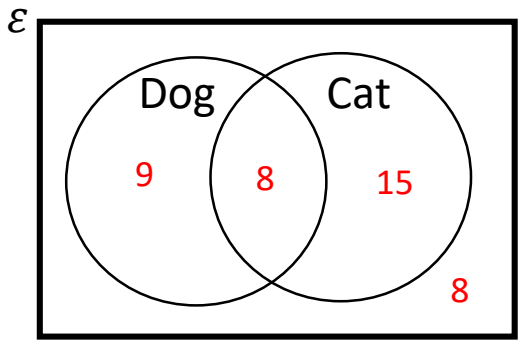
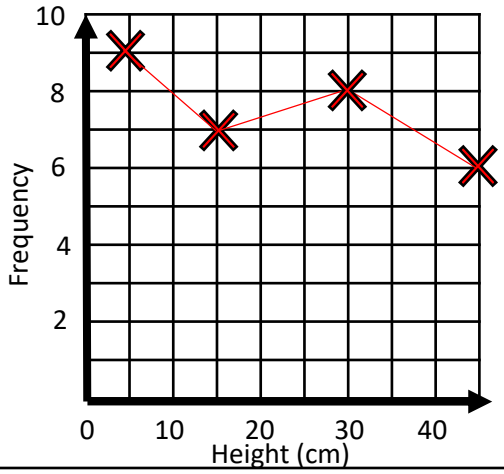
Statistics

TOPICS	ANSWERS
Venn Diagram	
Mean from a table	<table><tr><th>Height (cm)</th><th>Frequency</th><th>MP</th><th>Fx</th></tr><tr><td>$0 < h \leq 10$</td><td>9</td><td>5</td><td>45</td></tr><tr><td>$10 < h \leq 20$</td><td>7</td><td>15</td><td>105</td></tr><tr><td>$20 < h \leq 40$</td><td>8</td><td>30</td><td>240</td></tr><tr><td>$40 < h \leq 50$</td><td>6</td><td>45</td><td>270</td></tr></table> $Mean = \frac{660}{30} = 22cm$
Frequency Polygon	
Sample Space	<table><tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th></tr><tr><td>Head</td><td>1H</td><td>2H</td><td>3H</td><td>4H</td><td>5H</td><td>6H</td></tr><tr><td>Tail</td><td>1T</td><td>2T</td><td>3T</td><td>4T</td><td>5T</td><td>6T</td></tr></table> $P(H, Even) = \frac{3}{12} = \frac{1}{4}$