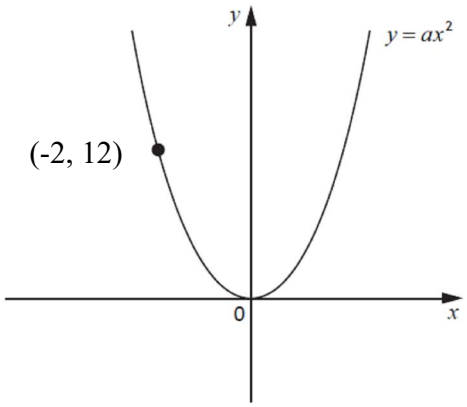
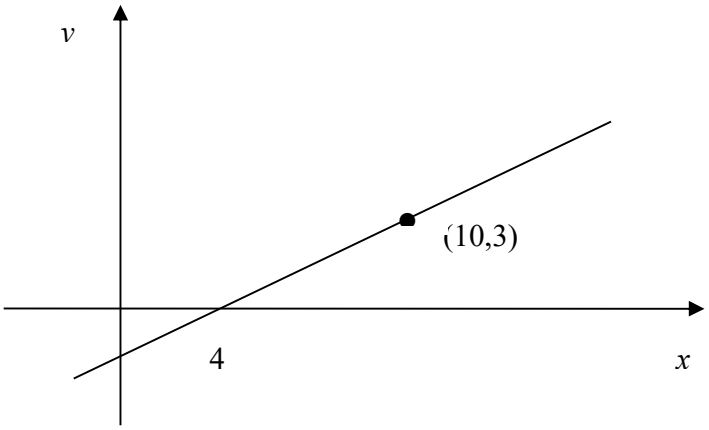
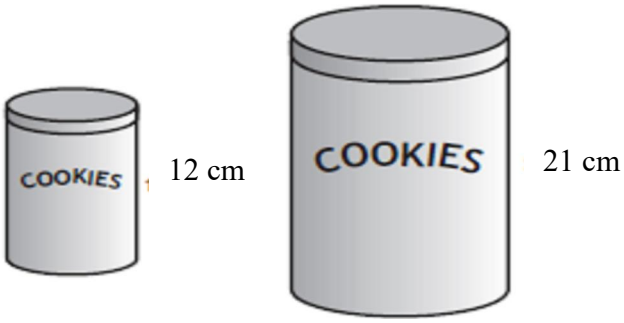
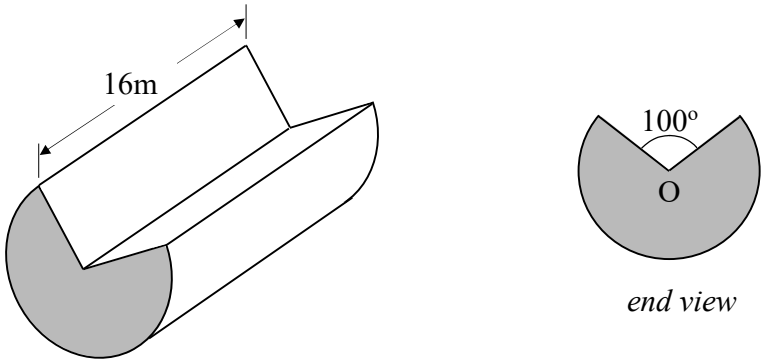
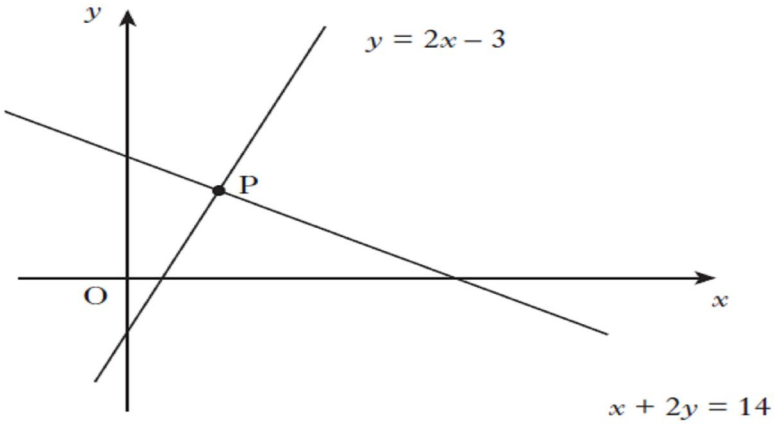
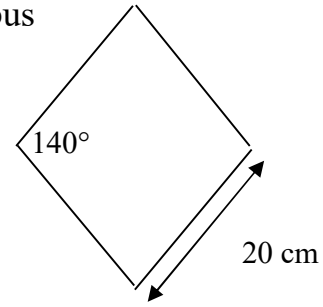
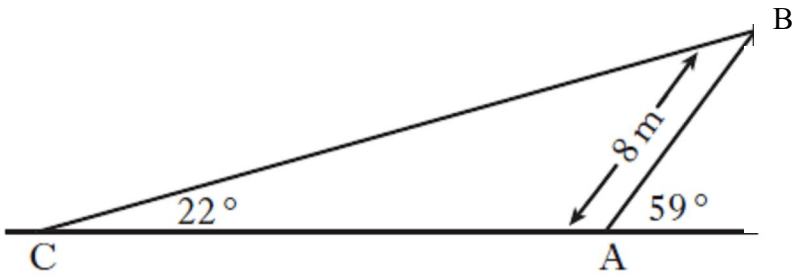
	S4 Nat 5 AB test – Non-Calculator	**20**
1.	Evaluate $2\frac{1}{4} - 1\frac{2}{3}$	**2**
2.	(a) Express $y = x^2 - 8x + 15$ in the form $y = (x - a)^2 + b$. (b) Hence state the coordinates of the turning point for this quadratic	**3**
3.	The diagram shows the graph of $y = ax^2$. Find the value of a  	**2**
4.	Solve the equation $5x + \frac{3x - 1}{2} = 19$	**3**
5.	Change the subject of the formula to r $A = 4\pi r^2$	**2**
6.	Find the equation of this straight line  	**3**
7.	(a) Factorise $x^2 - 4x - 21$ (b) Hence sketch the graph of $y = x^2 - 4x - 21$. Clearly mark roots, turning point and y-intercept	**2** **3**

	S4 Nat 5 AB test –Calculator	**30**
1.	There are 3.25 million vehicles in Scotland. It is estimates that this number will increase at a rate of 4% each year. If this estimate is correct, how many vehicles will there be in 3 year's time? Give your answer **correct to 3 significant figures**	**4**
2.	Factorise $2x^2 - 50$	**2**
3	A supermarket sells cylindrical cookie jars which are mathematically similar  The smaller jar has a height of 12 cm and a volume of 800 cubic centimeters The larger jar has a height of 21 centimeters Calculate the volume of the larger jar.	**3**
4.	A prism is formed by removing a section from a cylinder.  *end view* Given that the original cylinder had a radius of 5 m, find the volume of the prism	**4**
5.	The price for Finlay's summer holiday is £926.97. This includes a 6% booking fee. What is the price of his holiday without the booking fee?	**3**

6.	The graph below shows two straight lines $y = 2x - 3$ and $x + 2y = 14$  The straight lines intersect at the point P. **Algebraically** find the coordinates of point P.	**4**
7.	Paving stones are laid in the shape of a rhombus Each side of the rhombus is 20cm and the obtuse angles are 140°. Calculate the area of one paving stone  	**4**
8.	A function is given as $f(x) = 8x - 20$. Hence find x when $f(x) = 44$.	**2**
9.	Calculate the length of side CB  	**4**

Answers

Paper 1

1. 7/12
2. $(x - 4)^2 - 1$, TP (4, -1)
3. $12 = a(-2)^2$, $12 = 4a$, $a = 3$
4. $10x + 3x - 1 = 38$, $x = 3$
5. $r = \sqrt{(a/4\pi)}$
6. m = ½
   $y - 3 = ½ (x - 10)$
   $y = ½ x - 2$

7 (a) $(x + 3)(x - 7)$

(b) Roots (-3,0), (7,0)
y-intercept (0,-21)
TP (2, -25)

Paper 2

1. $3.25 \times 1.04^3 = 3.655808$ = 3.66 million
2. $2(x + 5)(x - 5)$
3. SF = 7/4
   Volume $800 \times (7/4)^3 = 4287.5$ cm³
4. Area = $\frac{260}{360} \times \pi \times 25^2 = 56.72$ m²
   Volume = area x 16 = 908m³
5. 106% = £926.97 100% = £874.50
6. rearrange $2x - y = 3$, $4x - 2y = 6$
   $x + 2y = 14$, $x + 2y = 14$
   $5x = 20$, $x = 4$, $y = 5$
   P(4,5)
7. (½ x 20 x 20 x sin140) x 2
   or (½ x 20 x 20 x sin40) x 2 = 257 cm²
8. $44 = x^2 - 20$, $x = 8$ or -8
9. angle CBA = 180° - 59° = 121°
   $\frac{CB}{\sin 121} = \frac{8}{\sin 22}$
   CB is 18.3 m

Extra Practice

1.	Fractions	Q1,2 Pg 341	1.	Percentage inc/dec	Q4-6 Pg 331
2.	Completing the square	Q3 Pg 43	2.	Factorising	Q1 Pg 38
3.	Graphs of $y = ax^2$	Q1,2 Pg 149	3.	Volume of similar figures	Q2-4 Pg 244
4.	Solving equations	Q1 Pg 116 Q1 Pg 117	4.	Simultaneous equations	Q2 Pg 123
5.	Changing the subject	Q1,2 Pg 142	5.	Reverse percentages	Q1-3 Pg 337
6.	Straight lines	Q2,3 Pg 102	6.	Arcs and Sector Area	Q1 Pg 70
7.	Quadratic Graphs	Q1 Pg 39	7.	Area formula	Q6-8 Pg 294
		Q1 Pg 163	8.	Functions	Q1,2 Pg 105
			9.	Sine Rule	Q2,5 Pg 300