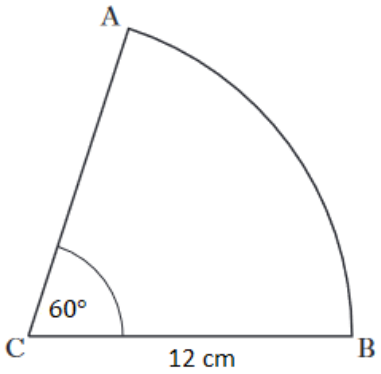
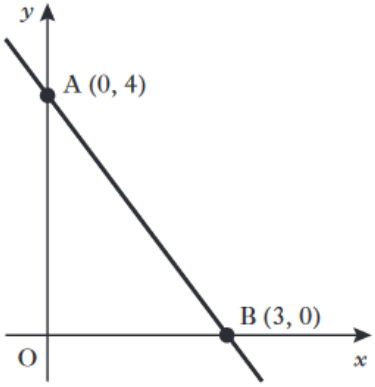
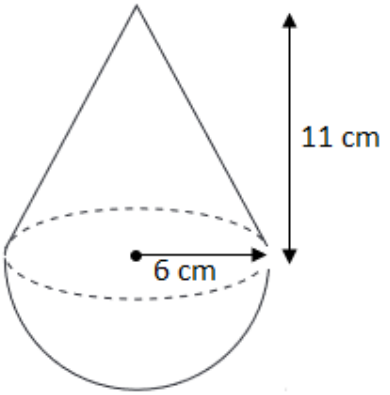
C	S3 Nat 5 May Revision – Non Calculator	**20**
1	Evaluate $\frac{1}{3} \div 2\frac{2}{3}$	**2**
2	Multiply out the brackets and collect like terms $5x + (4x - 3)(x - 7)$	**3**
3	The diagram shows a sector of a circle with a centre at C. The radius of the circle is 12 cm and angle ACB is $60°$. Calculate the length of the arc AB. Use $\pi = 3.14$ 	**3**
4	The straight line AB passes through the points A $(0,4)$ and B $(3,0)$. Find the equation of this straight line 	**2**
5	Solve the inequality $3 - x > \frac{x-6}{2}$	**3**
6	Change the subject of the formula $a = \frac{b^2}{3}$ to b	**2**
7	Simplify a surd in the form $\sqrt{50} + \sqrt{2} - \sqrt{18}$	**3**
8	Baillie and Nikola enter an archery tournament with 5 rounds. Their coach calculates each girl's mean score and her standard deviation as shown in the table. Make two comments comparing the performance of the two girls.	**2**

	Mean	Standard Deviation
Baillie	62	7.02
Nikola	56	4.18

C	S3 Nat 5 May Revision –Calculator	**20**
9	There are 984 pupils on the school roll for Banchory High School. It is forecast that the school roll will decrease by 10% per year for the next three years. What is the expected school roll after three years? Give your answer rounded to two significant figures.	**4**
10	Factorise $x^2 - 4x - 21$	**2**
11	A shape is made by placing a cone on top of a hemisphere. The hemisphere has a radius of 6 cm The cone has a radius of 6 cm and a height of 10 cm. Calculate the volume of this shape.  	**4**
12	Write $x^2 - 12x + 21$ in completed square form $(x + p)^2 + q$	**2**
13	Simplify $k^8 \times (k^2)^{-3}$	**2**
14	The price of Bella's summer holiday is £924. This price includes a 5% booking fee. What is the price of the holiday without the booking fee?	**3**
15	Express $\frac{3}{x} + \frac{4}{x-5}$, $x \neq 0$, $x \neq 5$ as a single fraction in the simplest form	**3**
	40 marks	

Answers

	Non Calculator		Calculator
1	$\frac{1}{3} \div \frac{8}{3} = \frac{1}{3} \times \frac{3}{8} = \mathbf{\frac{1}{8}}$	9	$984 \times 0.9^3 = 717.336$ 720 pupils
2	$5x + 4x^2 - 28x - 3x + 21$ $= \mathbf{4x^2 - 26x + 21}$	10	$\mathbf{(x - 7)(x + 3)}$
3	$Arc = \frac{60}{360} \times 3.14 \times 24$ $Arc = \frac{1}{6} \times 24 \times 3.14$ $Arc = 4 \times 3.14$ $Arc = \mathbf{12.56\ cm}$	11	Volume of the cone is $V = \frac{1}{3} \times \pi \times 6^2 \times 11 = 414.69 \ldots$ Volume of the hemisphere is $V = \frac{4}{3} \times \pi \times 6^3 \div 2 = 452.38 \ldots$ Volume of the shape is $\mathbf{867.07\ cm^3}$
4	Gradient is $\frac{4-0}{0-3} = -\frac{4}{3}$, y-intercept is 4 Equation of line AB is $\mathbf{y = -\frac{4}{3}x + 4}$	12	$(x - 6)^2 - 15$
5	$3 - x > \frac{x - 6}{2}$ $6 - 2x > x - 6$ $12 > 3x$ $\mathbf{4 > x\ \ or\ x < 4}$	13	$k^8 \times k^{-6} = \mathbf{k^2}$
6	$\frac{b^2}{3} = a \rightarrow\ \ b^2 = 3a\ \ \rightarrow\ \ b = \sqrt{3a}$	14	£924 = 105%, £880 =100%. **£880**
7	$\sqrt{50} + \sqrt{2} - \sqrt{18}$ $5\sqrt{2} + \sqrt{2} - 3\sqrt{2} = \mathbf{3\sqrt{2}}$	15	$\frac{3(x-5) + 4x}{x(x-5)} = \mathbf{\frac{7x - 15}{x(x - 5)}}$
8	On average Nikola had lower scores in the tournament, however her scores were more consistent. Or On average Ballie has higher scores in the tournament, but her scores were more varied (less consistent)		