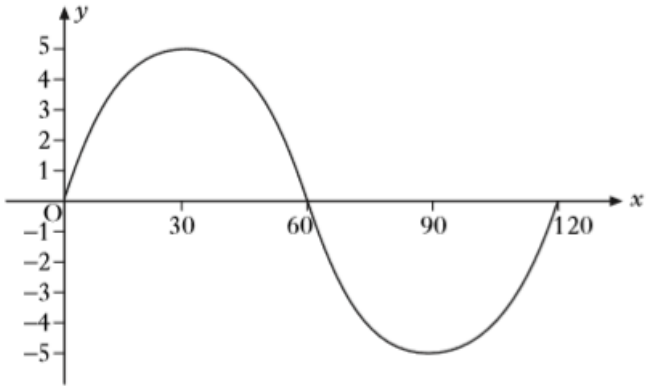
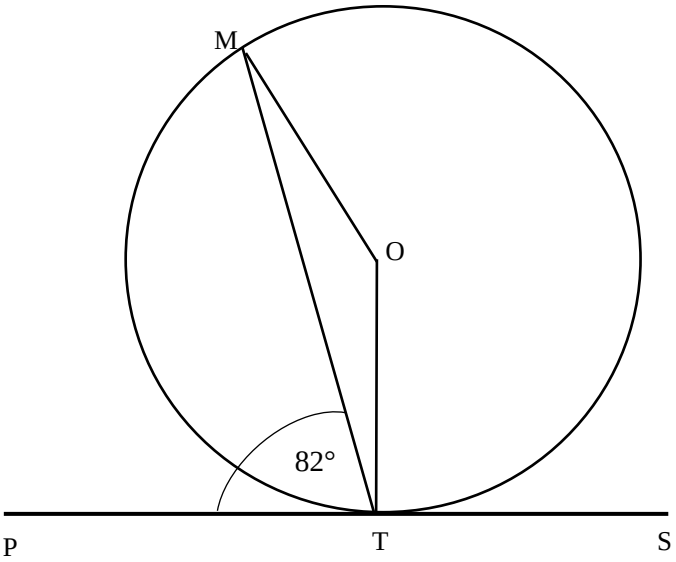
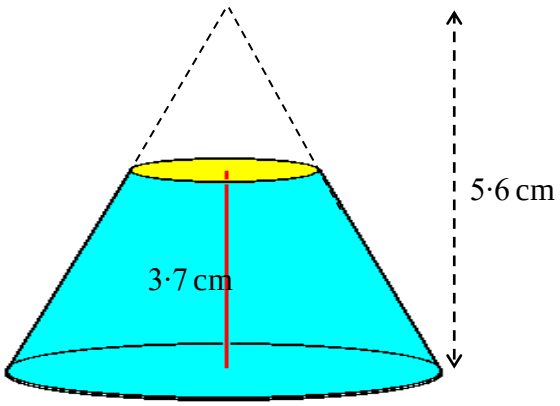
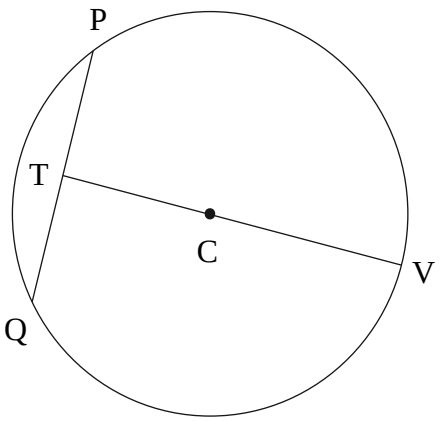
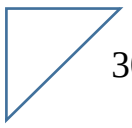
	January Prelim Revision 2 – Non Calculator	**2**
1	Calculate $\frac{3}{2}\left(\frac{1}{7}+\frac{2}{3}\right)$	**3**
2	Solve $11+2(5-x)>3$	**3**
3	(a) Show that the standard deviation for the data set 1, 1, 1, 3, 4 is equal to $\sqrt{2}$ (b) Write down the standard deviation of 101, 101, 101, 103, 104	**3** **1**
4	Simplify $(4ab^3)^2$	**3**
5	Part of the graph of $y = a\sin bx°$ is shown below  State the values for a and b	**2**
6	Change the subject of the formula $\frac{1}{4}x^2+a=b,$ to x	**3**
7	An angle $a°$, can be described by the following statements • $0 \leq a \leq 360°$ • sin a is negative • cos a is negative • tan a is positive Write down a possible value for a.	**1**
8	A function is given as $f(x)=3x^2-5x$ (a) Find $f(-1)$. (b) Given that $f(p)=2$, find two values for p.	**2** **4**

	January Prelim Revision 2 – Calculator	**35**
1	Susannah's annual salary is £29,500. Her boss tells her his salary will increase by 3.5% per annum. What will Susannah's annual salary be after 3 years? Give your answer to the nearest pound.	**3**
2	A straight line passes through the point A(-1, -1) and B(2, 5). State the equation of this straight line in the simplest form	**3**
3	For the circle below: • The tangent PS touches the circle, centre O, at T • Angle MTP is 82°  (a) Calculate the size of angle MOT (b) Given that the radius of the circle is 9 centimetres. Calculate the length of chord MT.	**2** **3**
4	On the morning ferry from the Isle of Cumbrae there are 11 cars and 35 passengers. The total takings for this ferry run is £516.50 (a) Write an equation to illustrate this information. On the evening crossing there were 15 cars and 26 passesngers. The total takings were £650 (b) Write a second equation to illustrate this information Find the cost for one passenger on this ferry	**1** **1** **3**

5	Express $\frac{4}{x-1} - \frac{2}{x+2}$ $x \neq 1,\ x \neq -2$ As a fraction in its simplest form	**3**
6	Solve the equation $2x^2 - 3x - 7 = 0$ Give your answer correct to one decimal place	**4**
7	This shape is a truncated cone [a cone with a 'slice' taken from the top]. The radius of the base of the shape is 4·1 cm. The radius of the top of the dessert is 2·6 cm. The height of the shape is 3.7cm. If the cone was complete the height of the cone would be 5.6 cm  Calculate the volume of the dessert, give your answers correct to **2 significant figures**	**5**
8	Solve the equation $7 \tan x° - 6 = 4,\ \ 0 \leq x \leq 360°$	**3**
9	 The radius of the circle with centre C is 30 centimetres. The length of chord PQ is 40 centimetres. Calculate the length of the line TV through the centre of the circle.	**4**

	Revision 2 Non Calculator Answers
1	$\frac{3}{2}\left(\frac{1}{7}+\frac{2}{3}\right)=\frac{3}{2}\times\left(\frac{17}{21}\right)=\mathbf{\frac{17}{14}}$
2	$11+10-2x>3, \quad 18>2x, \quad \mathbf{9>x \ \ or \ \ x<9}$
3	(a) Mean is $\frac{10}{5}=2$, Standard Deviation is $\sqrt{\frac{8}{4}}=\sqrt{2}$ (b) St Deviation is $\sqrt{2}$
4	$(4ab^3)^2=16a^2b^6$
5	$a=5, \ b=3 \qquad y=5\sin 3x°$
6	$\frac{1}{4}x^2+a=b \rightarrow \quad \frac{1}{4}x^2=b-a \quad \rightarrow \quad x^2=4(b-a) \rightarrow \quad x=\sqrt{4(b-a)}$
7	a is in the third quadrant $180°<a<270°$
8	(a) $f(-1)=3(-1)^2-5(-1)=8$. (b) $2=3p^2-5p, \quad 3p^2-5p-2=0, \quad (3p+1)(p-2)=0,$ $\mathbf{p=-\frac{1}{3}}$ **and** $\mathbf{p=2}$

	Revision 2 Calculator Answers
1	$29500\times 1.0.5^3=32707.177$ **£32707.18**
2	gradient is $\frac{6}{3}=2$, equation of the line is $\boldsymbol{y=2x+1}$
3	(a) $MTO=TMO=8°, \ MOT=180°-2\times 8°=164°$, (b) $MT^2=9^2+9^2-2\times 9\times 9\times\cos 164=317.72439$ $\boldsymbol{MT=17.8}$ **cm**
4	$11c+35p=516.50$ Scale $165c+525p=7747.50$ $15c+26p=650$ $165c+286p=7150$ **One passenger is £2.50** $239p=597.50, \quad p=2.5$
5	$\frac{4(x+2)-2(x-1)}{(x-1)(x+2)}=\frac{4x+8-2x+2}{(x-1)(x+2)}=\frac{2x+10}{(x-1)(x+2)}$
6	$x=\frac{-(3)\pm\sqrt{(-3)^2-4\times 2\times(-7)}}{2\times 2}\rightarrow \quad x=\frac{3\pm\sqrt{65}}{4}$ $x=2.76556\ldots \ x=-1.6556\ldots \ \boldsymbol{x=2.8}$ **and** $\boldsymbol{-1.3}$
7	$V_1=\frac{1}{3}\times\pi\times 4.1^2\times 5.6=98.578988\ldots$ $V_2=\frac{1}{3}\times\pi\times 2.6^2\times(5.6-3.7)=13.45020\ldots$ Total volume is $V_1-V_2=85.128788\ldots=\boldsymbol{85\ cm^3}$
8	$\tan x=\frac{10}{7}, \quad x=55°$ and $235°$
9	Establish a right-angled triangle 20 cm  30 cm Use Pythagoras $PA=\sqrt{30^2-20^2}=22.36\ cm$ TV is $22.36+30=\boldsymbol{52.36\ cm}$