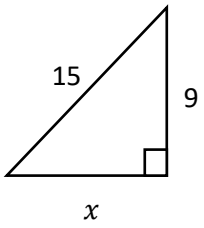
A2	Answers to the Calculator Paper	
1	Mark 1 know how to find a percentage increase $100 + 4.9 = 104.9\%\ or\ 1.049$ Mark 2 use this answer to find value over three years $3 \times 1.049^3\ \ or\ \ 3 \times \left(\frac{104.9}{100}\right)^3$ Mark 3 give the unrounded answer $3.462961 \ldots . million$ Mark 4 round answer to 2 significant figures $\boldsymbol{3.5\ million\ \ or\ 3500\ 000}$ 2 marks will be given for a percentage decrease $3 \times 0.951^3 = 2.6\ million$ or a percentage increase over 2 or 4 years.	
2	Mark 1 Correct fraction of the circle $\frac{320}{360}$ Mark 2 substitute into the formula for arc length $Arc = \frac{320}{360} \times \pi \times 18.4$ Mark 3 calculate arc length $\boldsymbol{Arc = 51.382.. = 51.4}$ Two marks will be given for the correct calculation of sector area $\rightarrow 236.4\ cm^2$	
3	Mark 1 once factor correct $(5x + 3)\ or\ (x - 2)$ Mark 2 complete factorisation $\boldsymbol{(5x + 3)(x - 2)}$	
4	Mark 1 find the gradient between two points $m = \frac{5}{10}\ or \frac{1}{2}$ Mark 2 substitute gradient and one point into the equation of the straight line. $4 = \frac{1}{2} \times 12 + c\ \ or\ \ y - 4 = \frac{1}{2}(x - 12)$ etc Mark 3 find c and state the equation in the simplest form $c = -2,\ \ \boldsymbol{y = \frac{1}{2}x - 2}$	
5	Mark 1 find the mean $\bar{x} = 2105 \div 5 = 421$ Mark 2 complete the table of values for either formula x | $x - \bar{x}$ | $(x - \bar{x})^2$ 543 | 122 | 14884 250 | −171 | 29241 441 | 20 | 400 339 | −82 | 6724 532 | 111 | 12321 $\sum x = 2105$ | $\sum (x - \bar{x}) = 0$ | $\sum (x - \bar{x})^2 = 63570$ x | x^2 543 | 294849 250 | 62500 441 | 194481 339 | 114921 532 | 283024 $\sum x = 2105$ | $\sum x^2 = 949775$ Mark 3 substitute into the correct formulae $s = \sqrt{\frac{63570}{5-1}}\ \ s = \sqrt{\frac{949775 - \frac{2105^2}{5}}{5-1}}$ Mark 4 calculate the standard deviation $s = 126.065.. = \boldsymbol{126}$	
6	Mark 1 expand the bracket $15 - 3x > 21$ Mark 2 solve the inequality $\boldsymbol{-2 > x\ \ or\ x\ < -2}$	
7	Mark 1 know that the new bill is $103.5\% = 269.10$ Mark 2 use a valid strategy to find 10% or 20% etc $1\% = 26.10 \div 103.5\ etc$	

	Mark 3 calculate answer correctly $\mathbf{£260}$	
8	Mark 1 correct substitution into the quadratic formula $x = \frac{-6\pm\sqrt{(6)^2-4\times5\times(-1)}}{2\times5}$ Mark 2 evaluate discriminant $b^2 - 4ac = 56$ Mark 3 calculate both roots correct to **one decimal place** $x = 0.148331\ldots$ *and* $x = -1.348331\ldots.$ *so* $\boldsymbol{x = 0.1 \text{ and } -1.3}$	
9	Mark 1 substitute into the correct formula $250 = \frac{4}{3} \times \pi \times r^3$ Mark 2 rearrange the formula $\frac{250\times3}{4\times\pi} = \boldsymbol{r^3},\ \boldsymbol{r^3 = 59.683}\ldots$ Mark 3 calculate a value for the radius $r = \sqrt[3]{answer} = \boldsymbol{3.9\ cm}$	
10	Mark 1 Find the square of the long side $29^2 = 841$ Mark 2 Find the sum of the squares of the two short sides $21^2 + 20^2 = 841$ Mark 3 state a conclusion **As $\mathbf{29^2 = 21^2 + 20^2}$ then by the converse of Pythagoras this triangle is right-angled.**	
11	Mark 1 correct denominator $\frac{}{n(n-2)}$ Mark 2 correct numerators $\frac{2(n-2)}{n(n-2)} - \frac{n}{n(n-2)}$ Mark 3 simplify numerator $\frac{n-4}{n(n-2)}$	
12	Mark 1 Recognise right angled triangle  Mark 2 consistent statement of Pythagoras $x^2 = 15^2 - 9^2$ Mark 3 calculate a value for the missing side $x = 12$ Mark 4 calculate the width $15 + 12 = \boldsymbol{27\ cm}$ 2 marks can be given for $x^2 = 15^2 + 9^2, x = 17.5$ so width is $32.5\ cm$ 2 marks can be given for $x^2 = 18^2 - 15^2, x = 9.9$ so width is $24.9\ cm$	