Day 269 **S Tier 10-a-day**

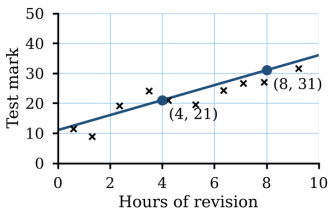
1 Jamal changes £1100 into dollars at £1 = $1.15.
Jamal spends $70 and then changes the rest back into pounds at £1 = $1.25.
How many pounds does Jamal get back?

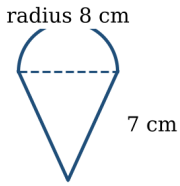
2 Work out the value of $\sqrt{n^2 - 4mk}$
when m = 3, n = −2 and k = −1.

3 Work out the exact value of tan 60° + cos 45°
Give your answer in its simplest form, as a fraction or surd. Do not use a calculator.

4 Simplify fully $\frac{2\sqrt{24}}{\sqrt{6}}$

5 The scatter graph shows hours of revision (x) and test mark (y).
The equation of the line of best fit is y = 2.5x + 11.
(a) Estimate y when x = 5.
(b) Explain why an estimate of y when x = 25 may be unreliable.



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6 Jess puts £1,000 in a savings account. Compound interest is paid at 6% in year 1, 5% in year 2 and 1% in year 3. Work out the amount in the account at the end of year 3. Give your answer to the nearest penny. (Calculator)	
7 A solid is made from a cone of height 7 cm and a hemisphere. Both have radius 8 cm. Work out the total volume of the solid. Give your answer in terms of π. 	
8 Prove algebraically that $k^3 + 5k$ is a multiple of 6 for all integer values of k.	
9 Without using a calculator, work out $0.\dot{5}\dot{6} - 0.\dot{1}$ Give your answer as a fraction in its simplest form.	
10 The line $y = x + k$ is a tangent to the circle $x^2 + y^2 = 4$. Find the possible values of k. Give any surds in their simplest form.	