Day 364	A Level Maths: C Tier 10-a-day
1 Simplify $\sqrt{27} + \sqrt{108}$, giving your answer in the form $p\sqrt{3}$.	
2 Here are 7 values: 63, 65, 66, 42, 73, 18, 47 Find the median and the interquartile range.	
3 A sector has radius 6 cm and angle $\frac{\pi}{2}$ radians. Find the arc length, leaving π in your answer, and the perimeter.	
4 Find the sum of the first 30 terms of the series $-8 - 2 + 4 + 10 + ...$	
5 Solve $\log_2 (5x + 4) = 3$.	

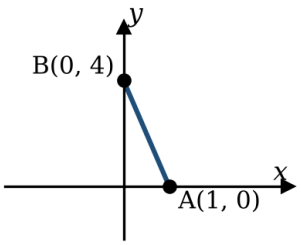
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6 Car A passes a point O at constant speed 10.5 m s^{-1}.
At that instant car B starts from rest at O with constant acceleration 1.5 m s^{-2} in the same direction. Find the time when B catches up A.

7 A population is N(μ, 8^2). H_0: μ = 120, H_1: μ > 120.
A sample of 25 has mean $\bar{x}$ = 124.48.
Test at the 5% level. Critical value: z = 1.645.

8 Solve $\cos(x - 60°) = -\frac{\sqrt{3}}{2}$ for $0° \leq x \leq 360°$.

9 The diagram shows a line meeting the axes at A and B.
Find (a) the equation of AB in the form px + qy = r with integers p, q and r, (b) the length AB.



10 A ball is dropped from rest from the top of a tower of height 122.5 m. Take g = 9.8 m s^{-2} and ignore air resistance. Find (a) the time taken to reach the ground, (b) its speed on hitting the ground.