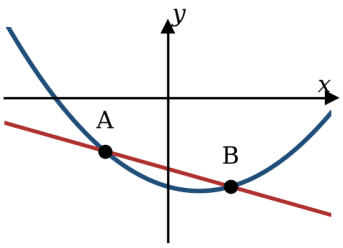
Day 110	A Level Maths: A Tier 10-a-day

1 X ~ B(11, 0.7). Find, to 3 significant figures:
(a) P(X = 10) (b) P(X ≥ 10) (c) P(X ≤ 9)

2 A sector of a circle has area 38.4 cm^2 and angle 1.2 radians.
Find the radius, the arc length and the perimeter of the sector.

3 X has a binomial distribution with mean 14 and variance 10.5.
(a) Find n and p.
(b) Find P(X = 16) to 3 significant figures.

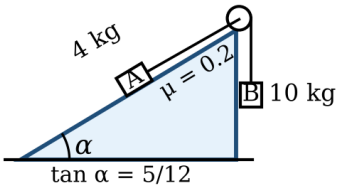
4 The diagram shows the curve $y = x^2 - x - 5$ and the line $y = -x - 4$, meeting at A and B.
(a) Find the coordinates of A and B.
(b) Find the coordinates of the midpoint of AB.



5 Find the exact value of $\sin(\arcsin \frac{3}{5} + \arcsin \frac{7}{25})$.

Day 110 **A Level Maths: A Tier 10-a-day**

6 The system is released from rest and A moves up the rough plane. Find (a) the acceleration, (b) the tension in the light string. Take g = 9.8. Give answers to 3 s.f. if not exact.



7 The tangent to the curve $y = e^{2x}$ at the point P passes through the origin.
Find the coordinates of P and the equation of the tangent.

8 $u_1 = 0$ and $u_{n+1} = \frac{1}{2} u_n + 3$.
(a) Find the limit L of the sequence as $n \to \infty$.
(b) Find the least n for which $|u_n - L| < 0.1$.

9 $f(x) = \frac{-7x - 1}{(1 - 3x)(1 - x)}$.
(a) Express f(x) in partial fractions.
(b) Hence expand f(x) up to x^2.
(c) State the range of x for which the expansion is valid.

10 A ball is projected from a point O on horizontal ground at angle α above the horizontal, $\tan \alpha = \frac{4}{3}$, and passes through A, 24 m horizontally from O and 22 m above the ground. Find the speed of projection. Take g = 9.8.