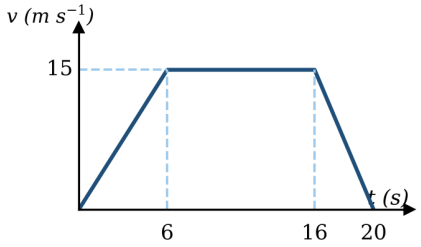
Day 145 **A Level Maths: B Tier 10-a-day**

1 Solve $\log_5 x + \log_5(x + 20) = 3$.

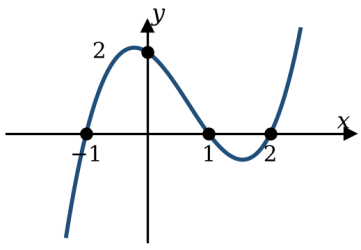
2 Solve $-5 \leq 5x - 2 < 3$.

3 Ordered data, goals scored by a player in 12 seasons:
13, 14, 21, 22, 24, 28, 31, 33, 34, 34, 38, 39.
Find Q_1, Q_3, the IQR and any outliers (more than 1.5 × IQR beyond a quartile).

4 The diagram shows the speed-time graph of a train between two stations.
Find (a) the acceleration in the first 6 s, (b) the distance between the stations.

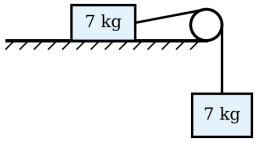


5 The diagram shows a sketch of the curve y = f(x), where f is a cubic. The curve meets the axes at the labelled points. Find f(x) in factorised form.



Day 145	A Level Maths: B Tier 10-a-day

6 A block of mass 7 kg lies on a rough horizontal table (coefficient of friction 0.2). It is joined by a light string over a smooth pulley to a particle of mass 7 kg hanging freely.
Take g = 9.8 m s^{-2}.
The system is released. Find the acceleration and the tension in the string.



7 Given that $\sin A = \frac{9}{41}$ and $\sin B = \frac{4}{5}$, where A is obtuse and B is acute,
find the exact value of $\cos(A - B)$.

8 The probability that a student passes a driving test first time is thought to be 0.3. In a sample of 20 students, 1 pass first time.
Test, at the 5% significance level, whether the probability is different from 0.3.

9 Find the exact value of
$\int_1^2 (3e^{2x} + \frac{3}{x})\, dx$.

10 Solve $|x - 4| = |3x - 6|$.