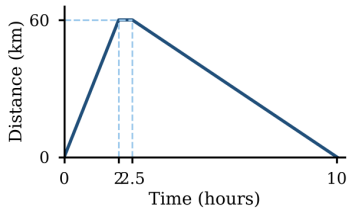
Day 347	IGCSE 10-a-day
1 A curve has equation $y = x^3 - 27x - 1$. Find the coordinates of the turning points of the curve. Use the second derivative to determine whether each is a maximum or a minimum.	
2 Solve $x^2 - 4 = 3x$	
3 The graph shows Zane's cycle ride to a café and back. (a) Work out Zane's speed on the way back. (b) Work out Zane's average speed for the whole ride, including the stop. 	
4 The curve $y = x^3 + 3x^2 + 3x - 3$ crosses the y-axis at the point A. The tangent to the curve at A meets the x-axis at B. Find the coordinates of B.	
5 A set P has 512 subsets. How many elements does P have?	

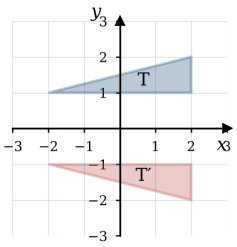
Day 347 **IGCSE 10-a-day**

6 A right-angled triangle has hypotenuse 17.8 cm and one other side 3.1 cm, both correct to 1 decimal place. (Calculator)
Work out the upper bound of the length of the third side. Give your answer correct to 3 significant figures.

7 Write $\frac{4^{n+2} \times 2^{n-2}}{2^n}$ in the form 2^{an+c}
where a and c are integers.

8 Solve the simultaneous equations
$x^2 + y^2 = 85$
$x + y = 13$

9 Triangle T is mapped onto triangle T′ by a single transformation.
(a) Describe fully this transformation.
(b) Write down the matrix that represents it.



10 The diagram shows the graph of $s = 2t^3 - 12t^2 + 18t$, the displacement in metres of a particle P from O after t seconds.
P changes direction at A and B. Work out the total distance travelled in the first 5 seconds.

