Day 166 **A Tier 10-a-day**

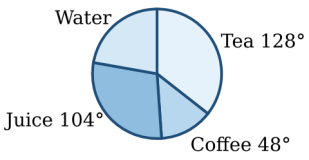
1 $E = \frac{1}{2}mv^2$

Work out the value of E when m = 2 and v = −5

2 Work out $1\frac{1}{2} + 2\frac{4}{9}$

Give your answer as a mixed number in its simplest form.

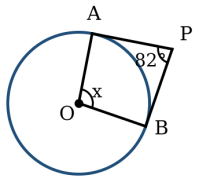
3 The pie chart shows how some students chose a drink.
16 students chose tea.
(a) Work out the angle for water.
(b) How many students chose water?



4 The size of each angle of a quadrilateral is shown as an expression:
(x + 55)°, (2x + 40)°, (3x − 30)°, (3x + 16)°
Work out the value of x.

5 The line L has equation $y = -\frac{1}{3}x + 8$

Find the equation of the line that is parallel to L and passes through the point (3, 1).

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6 A bag contains 5 yellow and 5 white balls. Two balls are taken at random without replacement. Work out the probability that the two balls are different colours.	
7 A runner travels 170 m in 9.7 s. The distance is measured to the nearest 10 metres and the time to the nearest 0.1 second. (Calculator) Work out the upper bound for the runner's speed in m/s. Give your answer correct to 3 significant figures.	
8 PA and PB are tangents to a circle with centre O. Angle APB = 82°. Work out the size of angle x (angle AOB). Give a reason for each step of your working. 	
9 y is inversely proportional to $\sqrt{x}$. When x = 100, y = 8. (a) Find a formula for y in terms of x. (b) Work out the positive value of x when y = 20.	
10 The value of a car falls by 20% each year. (Calculator) After 2 years it is worth £640. Work out its value at the start.	