Day 252 **S Tier 10-a-day**

1 Make r the subject of $P = \frac{9}{r^2}$

where r is positive.

2 In triangle PQR, side QR is extended to S.
Angle QPR = (4x + 10)°
Angle PQR = (x + 5)°
Angle PRS = (4x + 40)°
(a) Work out the value of x.
(b) Work out the size of angle PRQ.

3 The table shows the number of students in each of four groups.
(a) A stratified sample of 25 is taken. Work out how many come from Year 7.
(b) A different stratified sample has 9 from Year 8. Work out the size of this sample.

	Year 7	Year 8	Year 9	Year 10
Number	450	150	150	500

4 Solve $4x^2 - 5 = -19x$

5 R is 30% less than S.
S is 15% less than A.
Work out R as a percentage of A.

Day 252	S Tier 10-a-day
6 Two cones, P and Q, are mathematically similar. The volume of P is 40 cm^3 and the volume of Q is 135 cm^3. The curved surface area of P is 32 cm^2. Work out the curved surface area of Q.	
7 (a) Show that the equation $x^2 - x - 8 = 0$ has a solution between x = 3 and x = 4. (b) Show that the equation can be rearranged to give $x = 1 + \frac{8}{x}$	
8 Given that $\frac{5^3 \times 25^2}{25^3} = 5^n$, find the value of n.	
9 The point P(−3, −6) is rotated 90° clockwise about the origin. The image is then reflected in the line y = x. (a) Write down the coordinates of the final image of P. (b) Describe fully the single transformation that is equivalent to these two transformations.	
10 Pipe A can fill an empty pool in 24 minutes. Pipe B can fill an empty pool in 40 minutes. Both are turned on at the same time. How long do they take to fill an empty pool?	