Day 214 **A Tier 10-a-day**

1 (a) Write down all the prime numbers between 70 and 86.
(b) Write 209 as the product of two prime numbers.

2 Simplify fully
(a) $\frac{10x^7y^6}{3x^4y^5}$
(b) $\frac{(5x^3)^2}{2x^4}$

3 Two similar models are 10 cm and 25 cm tall.
The surface area of the smaller model is 80 cm^2.
Work out the surface area of the larger model.

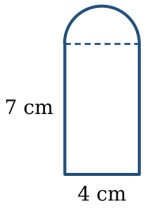
4 The table shows the probabilities of the outcomes of a biased spinner.
(a) Work out the value of x.
(b) The spinner is spun 300 times. Estimate the number of times it lands on green.

Colour	Red	Blue	Green	Yellow
Probability	0.3	x	3x	0.5

5 Solve the simultaneous equations
$2x - 2y = 0$
$-3x - 4y = -28$

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6 The diagram shows a shape made from a rectangle and a semicircle.
Work out the perimeter of the shape.
Give your answer in terms of π.
The diagram is not drawn accurately.



7 y is directly proportional to the cube of x.
When x = 4, y = 320.
(a) Find a formula for y in terms of x.
(b) Work out the positive value of x when y = 135.

8 (a) Show that $0.\dot{9}\dot{0} = \frac{10}{11}$

(b) Hence write $2.\dot{9}\dot{0}$ as a mixed number in its simplest form.

9 Cara invests £2500 in a savings account. (Calculator)
The account pays compound interest at a fixed rate each year.
After 2 years there is £3025 in the account.
Work out the annual rate of interest.

10 A, B, C and D are points on a circle.
Angle B = (3x + 25)° and angle D = (2x + 45)°.
(a) Work out the value of x.
(b) Work out the size of angle B.
The diagram is not drawn accurately.

