Day 196	S Tier 10-a-day
1 ABC is an isosceles triangle with AB = AC. Angle BAC = (4x + 20)° Angle ABC = (x + 5)° (a) Work out the value of x. (b) Work out the size of angle BAC.	
2 A bag contains sweets. $\frac{3}{10}$ of the sweets are orange and $\frac{1}{10}$ of the sweets are lemon. The rest of the sweets, 12 of them, are strawberry. How many orange sweets are there?	
3 Expand and simplify $(x + 2)^2(x - 3)$	
4 In a coach, the ratio of the number of adults to the number of children is 3 : 2. Then 11 adults are removed and 12 children are removed. The ratio is now 2 : 1. How many children were there at the start?	
5 A is the point (−3, 2) and B is the point (−11, 8). Find an equation of the perpendicular bisector of AB. Give your answer in the form ax + by = c, where a, b and c are integers.	

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6 Write $\frac{10}{2+\sqrt{5}}$ in the form $p + q\sqrt{5}$
where p and q are integers.

7 The table gives information about the times of some people.
Work out an estimate for the mean time.
Give your answer correct to 1 decimal place.
(Calculator)

Time, t (minutes)	Frequency density
$0 < t \leq 10$	1.2
$10 < t \leq 30$	0.6
$30 < t \leq 60$	0.8
$60 < t \leq 100$	1.8

8 A sector of a circle has radius 30 cm and angle 288°.
The sector is made into a cone by joining the two straight edges together.
(a) Work out the radius of the base of the cone.
(b) Work out the exact volume of the cone.
Give your answer in terms of π, as a surd if necessary.

9 Solve the simultaneous equations
$-2x + 5y = -22$
$-5x + y = -32$

10 Beth invested £3,500 in a savings account for 2 years.
Compound interest was paid at a fixed rate per year.
At the end of the 2 years the account held £4,235.
Work out the annual rate of interest.
(Calculator)