| Day 81 | S Tier 10-a-day |
|---|---|
| **1** Here are five numbers: $x - 2$, $x$, $3x + 4$, $2x + 2$, $3x + 6$.<br>The mean of the five numbers is 8.<br>(a) Work out the value of $x$.<br>(b) Work out the range of the five numbers. | |
| **2** The radius of a circle is increased by 50%.<br>Work out the percentage change in the area of the circle. | |
| **3** Solve $x^2 + 5x - 14 = 0$ | |
| **4** Here are six numbers.<br>$2\pi - \pi$, $3 + \sqrt{12}$, $\sqrt{8} \times \sqrt{2}$, $\sqrt{49}$, $\sqrt{50}$, $\sqrt{0.25}$<br>Write down the rational numbers. | |
| **5** Triangle ABC has AB = 12 cm and BC = 6 cm.<br>The area of triangle ABC is 18 $cm^2$.<br>Angle ABC is obtuse.<br>Work out the size of angle ABC.<br>Do not use a calculator. | |

| Day 81 | S Tier 10-a-day |
|---|---|
| **6** Nadia and Callum share some money in the ratio 1 : 5.<br>Nadia gives Callum £5.<br>The ratio of their money is now 1 : 7.<br>How much money do they have altogether? | |
| **7** Solve $x - 3\sqrt{x} + 2 = 0$ | |
| **8** A walker leaves a camp P and travels 37 km on a bearing of 340° to Q. (Calculator)<br>It then travels 91 km on a bearing of 230° to R.<br>(a) Work out the distance PR.<br>(b) Work out the bearing of R from P.<br>Give distances to 1 decimal place and the bearing to the nearest degree. | |
| **9** A rare car is worth £800.<br>Its value increases by 8% each year.<br>After how many whole years will it first be worth more than £1,200? (Calculator) | |
| **10** A circle has equation $x^2 + y^2 = 289$.<br>The point P(8, −15) lies on the circle.<br>(a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers.<br>(b) The tangent meets the x-axis at the point T.<br>Write down the coordinates of T. | |