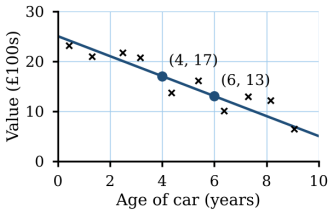
| Day 340 | S Tier 10-a-day |
|---|---|
| **1** Expand and simplify $(1 + 3\sqrt{6})(1 - \sqrt{6})$<br>Give your answer in the form $p + q\sqrt{6}$ | |
| **2** Two shapes are mathematically similar.<br>The smaller has height 6 cm and area 12 $cm^2$.<br>The larger has area 75 $cm^2$.<br>Work out the height of the larger shape. | |
| **3** Factorise $3x^2 + 14x + 15$ | |
| **4** Ravi cycles $\frac{4}{5}$ of a route before lunch.<br>After lunch he cycles $\frac{2}{7}$ of the remaining distance.<br>He still has 15 km to go.<br>How long is the route, in km? | |
| **5** The product of two positive numbers is 6.<br>The larger number is 1 more than the smaller number.<br>Let the smaller number be n.<br>(a) Show that $n^2 + n - 6 = 0$<br>(b) Work out the two numbers. | |

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|---|---|
| **6** The scatter graph shows age of car (x) and value (y).<br>The equation of the line of best fit is $y = -2x + 25$.<br>(a) Estimate y when x = 9.<br>(b) Explain why an estimate of y when x = 20 may be unreliable.<br><br> | |
| **7** A point A is on level ground in line with the base of a lighthouse. (Calculator)<br>The angle of elevation of the top of the lighthouse from A is 36°.<br>B is a point on the same line, 25 m further from the lighthouse than A.<br>The angle of elevation of the top of the lighthouse from B is 19°.<br>Work out the height of the lighthouse. Give your answer to 1 decimal place. | |
| **8** A is the point $(-1, -2)$ and B is the point (9, 0).<br>Find an equation of the perpendicular bisector of AB.<br>Give your answer in the form ax + by = c, where a, b and c are integers. | |
| **9** The mean of the marks in a test for the boys is 79.<br>The mean of the marks in a test for the girls is 61.<br>The mean for all of the boys and girls together is 71.<br>Work out the ratio of the number of boys to the number of girls. | |
| **10** Triangle P has vertices $A(-1, 4)$, B(3, 0) and $C(-7, 6)$.<br>Triangle Q has vertices $A'(-1, 1)$, $B'(-3, 3)$ and $C'(2, 0)$.<br>Q is an enlargement of P.<br>Describe fully the single transformation that maps P onto Q. | |