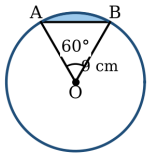
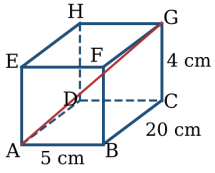
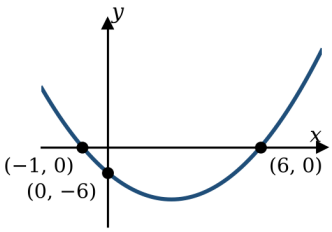
| Day 156 | S Tier 10-a-day |
|---|---|
| **1** A flight leaves London at 15:45 (London time).<br>It takes 5 hours 30 minutes.<br>When it is 12:00 in London it is 21:00 in Sydney.<br>At what time, in Sydney time, does the flight land? Say if it is on a different day. | |
| **2** The circle has centre O and radius 9 cm. A and B are points on the circle and angle AOB = 60°. (Calculator)<br>Work out the area of the shaded segment. Give your answer correct to 3 significant figures.<br>The diagram is not drawn accurately.<br> | |
| **3** The curve $y = x^2 + 2x - 3$ crosses the x-axis at the points A and B.<br>(a) Find the coordinates of A and B.<br>(b) Find the coordinates of the minimum point of the curve. | |
| **4** Here are five numbers: $x$, $2x - 2$, $x + 1$, $x + 6$, $2x + 2$.<br>The mean of the five numbers is 14.<br>(a) Work out the value of $x$.<br>(b) Work out the median of the five numbers. | |
| **5** The diagram shows a cuboid ABCDEFGH. (Calculator)<br>(a) Work out the length of the diagonal AG.<br>(b) Work out the angle between AG and the base ABCD, to 1 decimal place.<br>The diagram is not drawn accurately.<br> | |

| Day 156 | S Tier 10-a-day |
|---|---|
| **6** In one country, income tax is worked out like this:<br>The first £12,500 of income is not taxed.<br>The next £30,000 is taxed at 20%.<br>All income above that is taxed at 40%.<br>Dina earns £76,500 in a year.<br>Work out how much income tax Dina pays. | |
| **7** The diagram shows a sketch of a quadratic curve. It crosses the axes at the points shown.<br>Find an equation of the curve.<br>Give your answer in the form $y = ax^2 + bx + c$.<br> | |
| **8** A circular arc has a chord AB of length 14 cm.<br>The greatest distance between the chord and the arc is 1 cm.<br>Work out the radius of the circle. | |
| **9** The mean of the marks in a test for the boys is 51.<br>The mean of the marks in a test for the girls is 40.<br>The mean for all of the boys and girls together is 45.<br>Work out the ratio of the number of boys to the number of girls. | |
| **10** Show that the line $y = x + 12$ is a tangent to the circle $x^2 + y^2 = 72$.<br>Find the coordinates of the point where the line touches the circle. | |