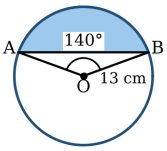
| Day 280 | S Tier 10-a-day |
|---|---|
| **1** Solve $x^2 + 9x + 8 \geq 0$ | |
| **2** ABC is an isosceles triangle with AB = AC.<br>Angle BAC = $(4x - 20)°$<br>Angle ABC = $(2x - 20)°$<br>(a) Work out the value of x.<br>(b) Work out the size of angle BAC. | |
| **3** The mean of 9 numbers is 71.<br>One number is removed and the mean of the remaining 8 numbers is 75.<br>Work out the number that was removed. | |
| **4** Expand and simplify $(3x - 6)(x - 4)(x + 6)$ | |
| **5** Write $30^2 \times 15^4$ as a product of powers of prime numbers. | |

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|---|---|
| **6** The circle has centre O and radius 13 cm. A and B are points on the circle and angle AOB = 140°. (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> | |
| **7** Carlos and Dina play a match. The first to win 2 tennis sets wins the match.<br>The probability that Carlos wins any one of the tennis sets is $\frac{7}{10}$.<br>Work out the probability that the match needs a third one to decide it. | |
| **8** Solve the simultaneous equations<br>$y = x^2 - 4$<br>$y = -4x - 4$ | |
| **9** A sector of a circle has radius 24 cm and angle 90°.<br>The sector is made into a cone by joining the two straight edges together.<br>(a) Work out the radius of the base of the cone.<br>(b) Work out the exact volume of the cone.<br>Give your answer in terms of $\pi$, as a surd if necessary. | |
| **10** Light travels at $3 \times 10^8$ metres per second.<br>A planet is $1.83 \times 10^{15}$ metres from a spacecraft.<br>How many seconds does a light signal take to travel from the planet to the spacecraft?<br>Give your answer in standard form. | |