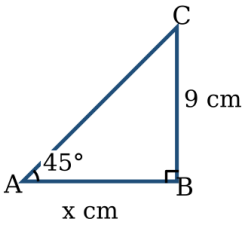
| Day 344 | IGCSE 10-a-day |
|---|---|
| **1** A flight leaves London at 16:30 (London time). It takes 8 hours 45 minutes. When it is 12:00 in London it is 07:00 in New York. At what time, in New York time, does the flight land? Say if it is on a different day. | |
| **2** Carlos changes £400 into euros at £1 = €1.35. Carlos spends €120 and then changes the rest back into pounds at £1 = €1.6. How many pounds does Carlos get back? | |
| **3** ABC is a right-angled triangle. Work out the exact value of x. Give your answer in its simplest form. The diagram is not drawn accurately.   | |
| **4** A sequence is defined by $u_{n+2} = u_{n+1} + u_n$. $u_1 = 5$ and $u_2 = x$. (a) Show that $u_5 = 3x + 10$. (b) Given that $u_5 = 28$, find x and hence work out $u_8$. | |
| **5** A curve has equation $y = x^3 - 9x^2 + 20x - 3$. Find the equations of the two tangents to the curve that are parallel to the line $y = 5x + 1$. | |

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|---|---|
| **6** Prove algebraically that the sum of the squares of any five consecutive integers is always a multiple of 5. | |
| **7** A curve has equation $y = -x^2 - 4x + k$, where k is a constant.<br>The tangent to the curve at the point where $x = -3$ passes through (4, 16).<br>Find the value of k. | |
| **8** Points A and B are on level ground, 118 m apart, with B between A and the foot of a flagpole.<br>The angle of elevation of the top of the flagpole is 42° from A and 71° from B.<br>Work out the height of the flagpole. Give your answer to 3 significant figures. (Calculator) | |
| **9** OA = $\mathbf{a}$ and OB = $\mathbf{b}$.<br>OP = $\mathbf{a} + 5\mathbf{b}$, OQ = $3\mathbf{a} + 11\mathbf{b}$ and OR = $7\mathbf{a} + 23\mathbf{b}$.<br>(a) Show that P, Q and R lie on a straight line.<br>(b) Work out the ratio PQ : QR in its simplest form. | |
| **10** $y = -2x - \frac{32}{x}$<br>Find the coordinates of the stationary points and determine whether each is a maximum or a minimum. | |