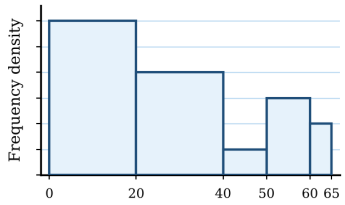
**Day 43** **IGCSE 10-a-day**

**1** A flight leaves London at 19:50 (London time).
It takes 6 hours 15 minutes.
When it is 12:00 in London it is 14:00 in Cairo.
At what time, in Cairo time, does the flight land? Say if it is on a different day.

**2** The histogram shows the masses, in kg, of some parcels.
The bar for 20 to 40 represents 32 parcels.
(a) Work out the frequency of the class 0 to 20.
(b) Work out the total frequency.




**3** A rectangular pen is x metres wide and y metres long. It is fenced all round and divided into two equal parts by a fence each of length x metres, parallel to the width.
The total length of fencing used is 36 m.
(a) Show that the area of the pen is $A = -\frac{3}{2}x^2 + 18x$.
(b) Find the maximum possible area, justifying that it is a maximum.

**4** The curve $y = -x^2 + 4x - 3$ crosses the x-axis at the points A and B.
(a) Find the coordinates of A and B.
(b) Find the coordinates of the maximum point of the curve.

**5** A curve has equation $y = -3x^2 - \frac{2}{x}$.
Find the equation of the tangent to the curve at the point where $x = 4$.

| Day 43 | IGCSE 10-a-day |
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| **6** x is an acute angle and $\cos x = \frac{3}{11}$.<br>(a) Find the exact value of sin x.<br>(b) Find the exact value of tan x. Give each answer as a fraction or a surd. Do not use a calculator. | |
| **7** The 3rd term of a geometric sequence is 108.<br>The 5th term of the sequence is 432.<br>All the terms of the sequence are positive.<br>(a) Work out the common ratio.<br>(b) Work out the first term. | |
| **8** y is directly proportional to x and inversely proportional to the square of z.<br>When x = 8 and z = 8, y = 0.625.<br>Find y when x = 10 and z = 2. | |
| **9** The normal to the curve $y = -x^2 - 3x + 5$ at the point P where $x = -2$ meets the curve again at Q.<br>Find the coordinates of Q. | |
| **10** The probability that it rains on a day is 0.5.<br>If it rains, the probability that Ali is late for school is 0.3.<br>If it does not rain, the probability that Ali is late is 0.4.<br>(a) Work out the probability that Ali is late.<br>(b) Ali is late. Work out the probability that it rained. | |