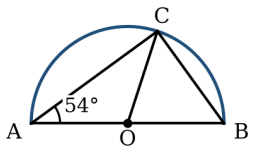
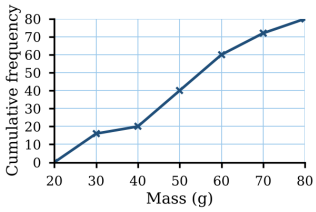
Day 164	S Tier 10-a-day
1 Work out $(4\frac{2}{3} - 2\frac{1}{3}) \times \frac{2}{3}$ Give your answer as a mixed number or a fraction in its simplest form.	
2 The ratio of Year 10 students to Year 11 students in a school is 2 : 1. 70% of the Year 10 students and 40% of the Year 11 students have a part-time job. What percentage of all of these students have a part-time job?	
3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 54°. (a) Work out the size of angle ACB. (b) Work out the size of angle COB. The diagram is not drawn accurately. 	
4 The 3rd term of a geometric sequence is 384. The 5th term of the sequence is 1536. All the terms of the sequence are positive. (a) Work out the common ratio. (b) Work out the first term.	
5 Jess invests £1,000 for 3 years at 1.5% per year simple interest. Tom invests £1,000 for 3 years at 1.5% per year compound interest. Work out how much more interest Tom earns than Jess. Give your answer to the nearest penny. (Calculator)	

Day 164 **S Tier 10-a-day**

6 Show that the line $y = 3x - 10$ is a tangent to the circle $x^2 + y^2 = 10$.
Find the coordinates of the point where the line touches the circle.

7 The cumulative frequency graph gives information about the masses of 80 apples picked from a tree.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 80 had a mass greater than 55.



8 Given that $(a + \sqrt{15})(b + \sqrt{15}) = 30 + 8\sqrt{15}$, where a and b are positive integers with $a < b$, find the values of a and b.

9 In a fruit box, the ratio of the number of apples to the number of pears is 6 : 5.
Then 10 apples are removed and 3 pears are removed.
The ratio is now 2 : 3.
How many pears were there at the start?

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 4. N is on OB with ON : NB = 2 : 3. AN and BM intersect at X.
(a) Find BM in terms of **a** and **b**.
(b) Find OX in terms of **a** and **b**.
The diagram is not drawn accurately.

