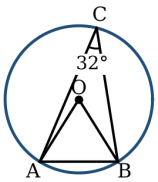
Day 94	S Tier 10-a-day

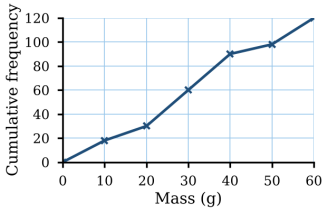
1 Work out the value of $3p - q^3$
when p = 1, q = 1 and r = 2.

2 The ratio of men to women in a school is 5 : 1.
80% of the men and 20% of the women own a car.
What percentage of all of these students own a car?

3 A, B and C are points on a circle, centre O.
Angle ACB = 32°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle OAB.
The diagram is not drawn accurately.



4 The cumulative frequency graph gives information about the masses of 120 apples picked from a tree.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 120 had a mass greater than 15.



5 A bag contains counters.
$\frac{1}{6}$ of the counters are red and $\frac{3}{5}$ of the counters are blue.
The rest of the counters, 14 of them, are green.
How many red counters are there?

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6 Simplify $(81x^4y^{-4})^{\frac{1}{2}}$

7 x is an obtuse angle and $\sin x = \frac{1}{7}$.

(a) Find the exact value of cos x.
(b) Find the exact value of tan x. Give each answer as a fraction or a surd. Do not use a calculator.

8 How many factors does 700 have?
Include 1 and 700.

9 The line $y = -x + k$ is a tangent to the curve $y = 3x^2 + 4x + 1$.
Find the value of k.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 3 : 1. N is on OB with ON : NB = 1 : 1. 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.

