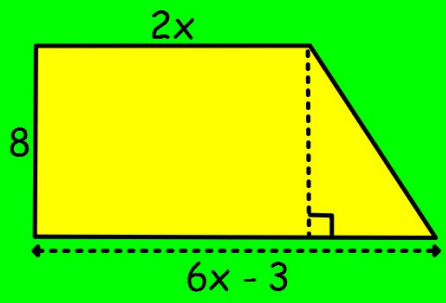
Starter

1. Round to 3 s.f.
   a. 0.09278 b. 11583 c. 12.982

2. Calculate
   a. $2\frac{3}{4} + 1\frac{2}{5}$ b. $6\frac{2}{5} \div 1\frac{1}{15}$

3. a. Find an expression for the area of this shape.

   b. If the area is 84 cm^2, find x.



4. Egg shells can be removed by dissolving them in vinegar for 2-3 days. An egg weighed 52.1 g at the start of an experiment; after 2 hours dipped in vinegar, it weighed 47.8 g.
   Calculate the percentage change in mass.

Starter

1. Round to 2 d.p.
   a. 0.6925 b. 11.067 c. 152.7992

2. Multiply out the brackets and simplify
   a. $7(x + 2) - 11(x - 3)$ b. $9 - 3g(g - 4) + 2(g^2 - 9)$

3. The width of an ivy leaf from different stems was recorded (in mm):

   32, 34, 44, 37, 35, 29, 31, 41, 35, 34

   a. Find the 5-figure summary for this data.
   b. What is the semi-interquartile range?

4. The colours of cars in a car park were as follows:
   a. White (7) b. Blue (5) c. Red (4) d. Green (2)
   Calculate the angles required to create a pie chart.

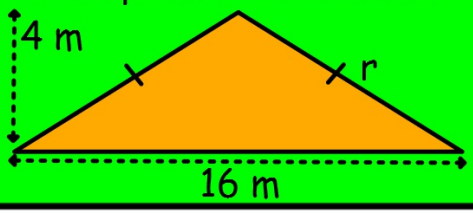
Starter

1. There are 640 people at a cinema.
   $^{5}/_{8}$ of the people at the cinema are aged under 25.
   How many people at the cinema are aged over 25?

2. An extra large bottle of perfume contains 230 mL. This is 15% more than a standard bottle. How much does a standard bottle hold?

3. Sarah buys a necklace and a pair of earrings. The necklace costs £35 more than the pair of earrings. Sarah paid £81 for both items. How much did each item cost?

4. The side view of the roof of a house is in the shape of an isosceles triangle, as shown.
   Calculate the length, r, of the sloping side of the roof.



Starter

1. Fully factorise
   a. $56d^2f^2 - 32df^3$ b. $21x^3yz^3 + 28xy^2z^4 - 49x^2y^4z^3$

2. Jane has twin sisters, June and Jean. The twins are 3 years older than Jane. Altogether their ages total 42.
   How old is each girl?

3. Find the area **and** circumference of a circle which has radius = 7 cm.

4. DDT is an insecticide which can find its way into the food chain and concentrate as shown:
   Food chain: algae ⟶ stickleback ⟶ trout ⟶ osprey
   DDT concentration: 0.001 2.0 5.0 20.0
   What is the percentage increase in DDT concentration between a trout and an osprey?

Starter

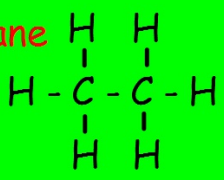
1. Solve the following
   a. $5(3x - 1) - 9 = 16$ b. $2 - 2(x - 3) = 4x - 4(x - 3)$

2. A cubical tea chest will hold 2.7 m^3 of tea.
   Calculate the length of one of the edges of the chest.

3. In chemistry, compounds can be represented by patterns, e.g.
   a. Find a formula to represent the pattern

No. C atoms	1	2	3	4
No. H atoms	4	6		

Ethane



   b. How many hydrogens are there in octane (8 C atoms)?
   c. How many carbon atoms are there in tridecene (28 H atoms)?

4. Find the distance between the points (-3, 4) and (1, -5).