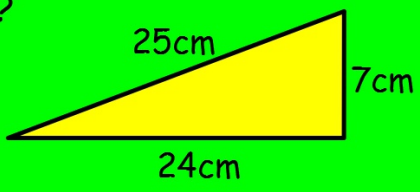
Starter

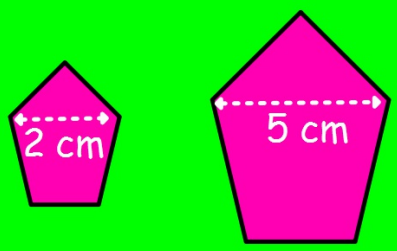
1. Solve
   a. $8(x + 3) = 2(2x + 13)$ b. $2x + 11 < 4x + 5$

2. Is this a right-angled triangle?



3. A sector of a circle has a radius of 6cm and an area of $14.14cm^2$.
   a. Find the size of the angle at the centre of this sector.
   b. Hence, or otherwise, find the perimeter of the sector.

4. These two pentagons are mathematically similar.
   If the area of the smaller one is $8cm^2$, find the area of the larger pentagon.



Starter

1. Fully factorise
   a. $16p^2 - 18p^3$ b. $72f^2gh^3 + 9fgh^2 - 27fg^2h^4$

2. Light travels at 1.85×10^5 miles per second.
   How far will it travel in one hour?

3. Find the 5-figure summary for this data set:

   58, 69, 43, 49, 57, 41, 51, 70, 63, 65

4. Helium gas is stored in a cylindrical container with radius 9.1cm and height 78cm.
   a. Find the volume of the gas.
   b. This gas is now used to fill a spherical weather balloon.
      If all of the gas is used, what will be the **diameter** of the balloon?

Starter

1. Solve

   a. $\frac{2x}{3} = 1 - \frac{x}{6}$ b. $5(x + 4) - 2(x - 6) = 12$

2. Whilst on a mission in outer space, an astronaut's weight decreases from 73kg to 67kg.
   Express this decrease in weight as a percentage of her original weight.

3. Over the course of a week, a toy shop recorded the number of each type of Lego set it sold.
   (i) Scooby Doo (6) (ii) Disney Princess (18)
   (iii) Star Wars (25) (iv) Minecraft (11)
   a. Find the angles required to create a pie chart.
   b. The following week, the shop sold 150 sets of lego in the same ratio. How many of these were Scooby Doo?

Starter

1. Calculate

   a. $^{2}/_{5} \times {}^{3}/_{7}$ b. $^{3}/_{4} - {}^{1}/_{5}$ c. $2^{1}/_{3} \div {}^{4}/_{9}$

2. Line AB passes through the point (0, -5).
   Line AB is parallel to the line with equation $y - 4x = 5$.
   What is the equation of line AB?

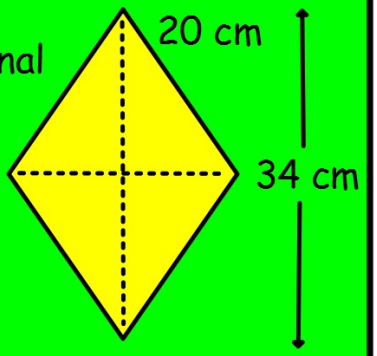
3. Milkshake is served in a cone shaped cup with a radius of 4.1cm.
   It takes 96.82cm^3 of milkshake to fill half the volume of the cup.
   Find the height of the cup.
   Round your answer to 1 significant figure.

4. Jane bought a painting in an auction. Unfortunately the painting depreciated in value by 7% and is now worth £4185.
   How much was the painting worth when it was bought?

Starter

1. Sarah invests £890 in an account with an interest rate of 14.5% p.a. How much compound interest would she receive over a period of 18 years?

2. A rhombus has sides of 20 cm and its longest diagonal measuring 34 cm.
   a. Calculate the length of the shorter diagonal.
   b. Calculate the area of the rhombus.



3. These star-shaped bath toys are mathematically similar. If the volume of the smaller star is $20cm^3$, find the volume of the larger star.