

Starter

1. Convert the following

a. 0.5 km to m

b. 3870 mm to cm

c. 563 cm³ to L

2. Fully factorise

a. $7gh^2 + 21g^2h$

b. $18a^2b^3c^3 + 2ab^2c^2 - 8a^4b^2c^2$

3. Sam and Adam are in the final of a hotdog eating contest.

They will share the £600 prize money in the ratio of how many they eat: Sam eats 14 hotdog's and Adam eats 16 hotdog's.

How much **more** money does Adam win?

4. A sample of fresh soil from a woodland ecosystem was weighed, dried in an oven at 95°C for one week and reweighed.

Mass of fresh soil = 50 g

Mass of dried soil = 32 g

What percentage of the soil sample was water?

Starter

1. Round the following to 2 d.p.
a. 56.927 b. 4.294 c. 0.1989
2. If $x = (-2)$, $y = 6$, and $z = 5$, find
a. $3x^2 - 2yz$ b. $z(y - x)^2$
3. On Rudi's fruit stall, the ratio of apples : oranges : pears is 5 : 8 : 2.
If there are 64 oranges, how many pieces of fruit are there altogether?
4. Last year a bookshop sold 38500 books.
Estimates suggest that the number of books sold is decreasing by 8% every year.
How many books should the shop expect to sell in 3 years time?

Starter

1. Find

a. $2\frac{3}{7} + 1\frac{1}{3}$

b. $3\frac{2}{5} \times 2\frac{3}{4}$

2. Find the volume of a cuboid with dimensions 25 cm by 70 cm by 38 cm. Express your answer in **litres**.

3. This table shows the cost of hiring a car:

| | | | |
|----------------|----|----|----|
| Days (D) | 1 | 2 | 3 |
| Cost in £s (C) | 40 | 60 | 80 |

a. Find a formula for C in terms of D .

b. Find the cost of hiring a car for a fortnight.

c. I paid £420 for my car hire. For how long did I have the car?

4. In 2012, the USA planted 8.2 million hectares of land with genetically engineered crops. By 2013, this had increased to 20.5 million hectares.

What was the percentage increase in the area?

Starter

- Write in scientific notation
 - The average distance of the moon from the earth is 382000 km.
 - The time taken for light to travel 1 metre = 0.00000000334 s.
- Find
 - $3^{1/5} - 2^{3/7}$
 - $12 \div 1^{3/4}$
- Country Cycles sell four times more mountain bikes than other types .
 - Express the sales of mountain bikes : others as a ratio.
 - In a month when they sell a total of 475 bikes, how many mountain bikes are sold?
- Sledges are now on sale at a local garden centre with 25% off the original price.

If the sledges now cost £9, how much did they cost before the sale?

Starter

1. Round the following to 3 s.f.

a. 1250906

b. 0.008099

2. Write in number form

a. The radius of the moon is 1.738×10^6 m.

b. The speed of light = 2.998×10^8 m/s.

3. Solve the following

a. $2x - 14 = 3(x - 5)$

b. $7(2x + 3) - 4(x - 5) = 10$

4. The animals present in a sample of leaf litter were counted:

| | | | |
|----------------|----|------------|---|
| ground beetles | 13 | centipedes | 7 |
|----------------|----|------------|---|

| | | | |
|----------|----|-------|---|
| woodlice | 35 | slugs | 5 |
|----------|----|-------|---|

a. What is the percentage of woodlice in the sample?

b. Calculate the angles required to draw a pie chart.