Fractions of a Quantity

Be able to find any fraction of a quantity

To find $\frac{2}{3}$ of a number (like 15), you do it **using 2 steps.**

Step 1 :- Find $\frac{1}{3}$ of 15 first ($\div 3$) => $\frac{1}{3}$ of $15 = 15 \div 3 = 5$

Step 2 :- Now find $\frac{2}{3}$ of 15 by ($\times 2$) => $\frac{2}{3}$ of $15 = 5 \times 2 = 10$

Set the working down as follows :-

$\frac{3}{5}$ of 25 => $(25 \div 5)$ => $5 \times 3 = 15$.

$\frac{2}{7}$ of 35 => $(35 \div 7)$ => $5 \times 2 = 10$.

$\frac{7}{10}$ of 60 => $(60 \div 10)$ => $6 \times 7 = 42$.

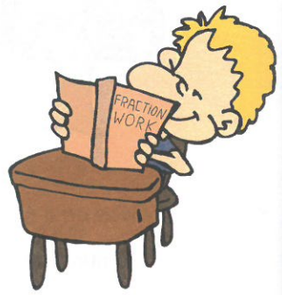
Rule :-

To find a fraction, like $\frac{5}{8}$ of something,

=> "divide by the denominator" (8)

=> then "multiply by the numerator" (5)

Exercise 5



1. Do the following :-

a $\frac{2}{5}$ of 30 = $(30 \div 5)$ => then 6×2 = ...

b $\frac{3}{4}$ of 24 = $(24 \div ...)$ => then ... $\times 3$ = ...

c $\frac{5}{6}$ of 18 d $\frac{4}{5}$ of 20 e $\frac{3}{8}$ of 40

f $\frac{7}{10}$ of 100 g $\frac{2}{3}$ of 66 h $\frac{2}{9}$ of 27

i $\frac{4}{9}$ of 63 j $\frac{3}{11}$ of 44 k $\frac{9}{10}$ of 80

l $\frac{2}{5}$ of 35 m $\frac{2}{7}$ of 21 n $\frac{7}{8}$ of 56

o $\frac{3}{4}$ of 400 p $\frac{3}{10}$ of 1000 q $\frac{2}{15}$ of 30

r $\frac{4}{7}$ of 35 s $\frac{7}{10}$ of 60 t $\frac{5}{9}$ of 63

u $\frac{5}{8}$ of 32 v $\frac{3}{16}$ of 32 w $\frac{9}{10}$ of 200

x $\frac{7}{100}$ of 300 y $\frac{7}{10}$ of 80 z $\frac{9}{20}$ of 60.

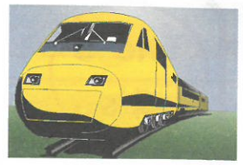
2. Do the following :-

a $\frac{2}{17}$ of 1700 grams b $\frac{2}{15}$ of £15 000 c $\frac{9}{11}$ of €330

d $\frac{18}{19}$ of 19 kg e $\frac{7}{20}$ of 60 ml f $\frac{3}{19}$ of 38 kg

g $\frac{3}{50}$ of \$100 h $\frac{4}{15}$ of 150 metres i $\frac{8}{12}$ of 6 litres.

3. a The ticket inspector on a train counted 36 passengers.
$\frac{3}{4}$ of the passengers were adults.
How many adults were on the train ?



b 

A gardener has 30 rose bushes in his garden.
$\frac{2}{5}$ of them are red, $\frac{3}{10}$ are yellow and the rest are white.

(i) How many of the bushes are red ?

(ii) How many are white ?

You may use a calculator for the rest of this exercise.

4. a Which would you prefer to have :-

- a $\frac{4}{5}$ share in prize money winnings of £5500 or
- a $\frac{5}{7}$ share in a lottery win of £6300 ?

b There are 365 days in a year. It rained on $\frac{2}{5}$ of them.

(i) On how many days did it rain ? (ii) How many dry days were there ?

c A group of bird watchers spent a weekend on an island.
They counted 1800 birds, of which $\frac{1}{6}$ were from Europe,
$\frac{2}{9}$ were from South Africa, $\frac{5}{12}$ were from South America
and the rest were local British birds.
List how many of the 1800 birds came from each area.

d Mandy started the day with £200. She spent $\frac{1}{4}$ of her money on the rail fare to London.
She spent $\frac{1}{5}$ of **what she had left** on her lunch. She then spent $\frac{3}{8}$ of **what was remaining** on a new pair of shoes. How much did Mandy then have left ?

5. a By finding $\frac{2}{3}$ of 12 first, go on to find $\frac{1}{2}$ of ($\frac{2}{3}$ of 12). Now find $\frac{1}{3}$ of 12 and compare.

b By finding $\frac{3}{4}$ of 16 first, go on to find $\frac{1}{2}$ of ($\frac{2}{3}$ of ($\frac{3}{4}$ of 16)). Now find $\frac{1}{4}$ of 16. Compare.

c Find $\frac{4}{5}$ of 30 first. Now find $\frac{1}{2}$ of ($\frac{2}{3}$ of ($\frac{3}{4}$ of ($\frac{4}{5}$ of 30))). Now find $\frac{1}{5}$ of 30. Compare.
Can you see what is happening ?

d Find $\frac{1}{2}$ of $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{4}{5}$ of $\frac{5}{6}$ of $\frac{6}{7}$ of $\frac{7}{8}$ of $\frac{8}{9}$ of $\frac{9}{10}$ of 200 in 10 without a calculator.

6. a **Hard** Here is a list of fractions :- $\frac{2}{3}$, $\frac{8}{9}$, $\frac{14}{15}$, $\frac{11}{12}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{9}{10}$ and $\frac{4}{5}$.
List them **in order** starting with the **largest** fraction.

b **Harder.** Here is another list of fractions :- $\frac{2}{3}$, $\frac{7}{9}$, $\frac{8}{11}$, $\frac{13}{16}$, $\frac{3}{4}$, $\frac{11}{15}$, $\frac{3}{5}$ and $\frac{5}{7}$.
Find a way of deciding which is the **largest** fraction and try to list the fractions **in order**.