Planner

Fractions and percentages of amounts

- Calculating a fraction of an amount
- Calculating a percentage of an amount

Keywords

You should know

explanation 1 online

1 Here are some diagrams divided into smaller parts.

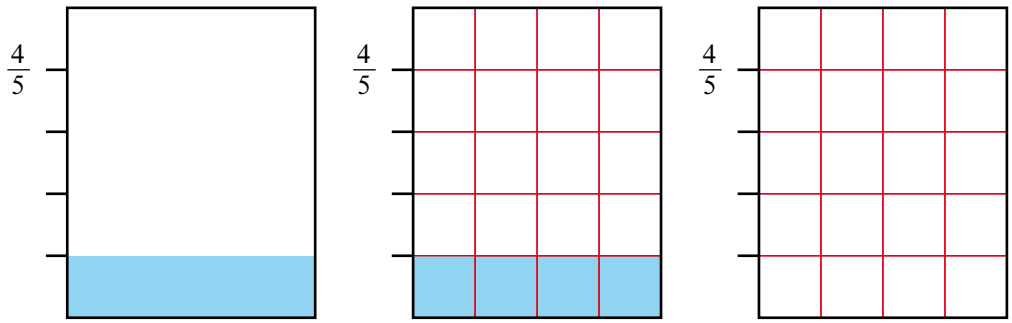


Diagram 1 Diagram 2 Diagram 3

a What fraction of Diagram 1 is blue?

b Copy Diagram 2 and write the missing fractions on the vertical scale.

c Copy and complete.

The number of blue squares in Diagram 2 is $\frac{\square}{\square}$ of 20 $= \frac{20}{\square}$

$= \square$.

d Copy Diagram 3 and shade $\frac{4}{5}$ of the squares.

e Copy and complete.

The number of shaded squares in Diagram 3 is $\frac{4}{5}$ of 20 $= \square \times \frac{1}{5}$ of 20

$= \square \times \square$

$= \square$.

2 **a** $\frac{1}{5}$ of a number is 23. What is of $\frac{2}{5}$ the number?

b $\frac{1}{11}$ of a number is 32. What is $\frac{3}{11}$ of the number?

3 **a** **i** Copy and complete. $\frac{1}{3} = \frac{\square}{9}$

ii $\frac{1}{9}$ of a number is 42. What is $\frac{1}{3}$ of the number?

b **i** Copy and complete. $1 = \frac{\square}{5}$

ii $\frac{1}{5}$ of a number is 61. What is the number?

4 A man spent $\frac{1}{3}$ of each day sleeping.
He lived for 78 years.
How much time did he spend asleep?

5 Work out these amounts.

a **i** $\frac{1}{5}$ of 40 **ii** $\frac{2}{5}$ of 40 **iii** $\frac{3}{5}$ of 40

b **i** $\frac{1}{10}$ of 60 **ii** $\frac{3}{10}$ of 60 **iii** $\frac{7}{10}$ of 60

c **i** $\frac{1}{12}$ of 36 **ii** $\frac{5}{12}$ of 36 **iii** $\frac{11}{12}$ of 36

d **i** $\frac{1}{7}$ of 28 **ii** $\frac{2}{7}$ of 28 **iii** $\frac{5}{7}$ of 28

6 Write down the missing numbers.

a $\frac{\square}{5}$ of 20 = 12 **b** $\frac{3}{8}$ of $\square$ = 21 **c** $\frac{11}{\square}$ of 24 = 22

d $\frac{5}{\square}$ of 27 = 15 **e** $\frac{7}{20}$ of $\square$ = 35 **f** $\frac{\square}{50}$ of 200 = 52

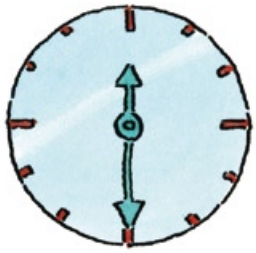
7 Find the number of minutes in these fractions of an hour.

a $\frac{1}{2}$ **b** $\frac{1}{4}$ **c** $\frac{3}{4}$

d $\frac{5}{12}$ **e** $\frac{1}{6}$ **f** $\frac{5}{6}$

g $\frac{2}{3}$ **h** $\frac{7}{10}$ **i** $\frac{2}{5}$

j $\frac{4}{15}$ **k** $\frac{3}{5}$ **l** $\frac{9}{20}$



8 Find the number of degrees in these fractions of a turn.

a $\frac{1}{2}$ **b** $\frac{1}{3}$ **c** $\frac{1}{4}$

d $\frac{3}{4}$ **e** $\frac{2}{3}$ **f** $\frac{3}{10}$

g $\frac{5}{12}$ **h** $\frac{1}{5}$ **i** $\frac{4}{9}$

There are 360° in a complete turn.

explanation 2a explanation 2b

9 Work out these values.

a $\frac{2}{5} \times 30$ **b** $\frac{3}{4} \times 64$ **c** $\frac{6}{25} \times 75$

d $20 \times \frac{7}{10}$ **e** $32 \times \frac{11}{16}$ **f** $21 \times \frac{3}{7}$

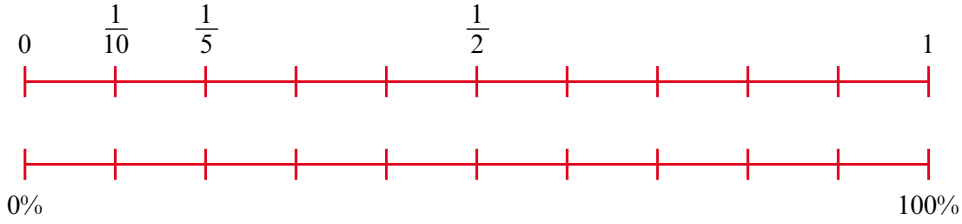
10 Write the following as mixed numbers.

a $\frac{1}{3}$ of 8 **b** $15 \times \frac{1}{4}$ **c** $\frac{2}{3}$ of 11

d $\frac{3}{5} \times 9$ **e** $\frac{3}{4}$ of 21 **f** $44 \times \frac{5}{8}$

explanation 3 online

11 **a** Copy the diagram and fill in the missing values.



b Use your diagram to write these fractions as percentages.

i $\frac{1}{10}$ **ii** $\frac{3}{5}$ **iii** $\frac{9}{10}$ **iv** $\frac{2}{5}$

c Use your diagram to write these percentages as fractions.

i 20% **ii** 50% **iii** 70% **iv** 60%

12 Copy and complete.

a 30% of 40 = $\frac{3}{\square}$ of 40

$= \square$

b 80% of 30 = $\frac{\square}{\square}$ of 30

$= \square$

13 Work these out by writing the percentages as fractions.

a 20% of 60 **b** 50% of 86 **c** 25% of 36

d 10% of 3000 **e** 75% of 140 **f** 90% of 1200

g 40% of 65 **h** 25% of 24 **i** 60% of 25

explanation 4 online

14 Work these out and give your answers as decimals.

a 10% of 34 **b** 50% of 8.6 **c** 25% of 18

d 30% of 25 **e** 70% of 24 **f** 10% of 6.9

15 Find 10% of each of these amounts.

a £80 **b** £300 **c** £1700 **d** £25 000

e £92 **f** £7 **g** £234 **h** £67.50

i £9.40 **j** £27.80 **k** £0.70 **l** £1.50

16 Work out these values.

a 10% of £64 **b** 5% of £64 **c** 15% of £64 **d** 15% of £128

17 Work out these amounts.

a 10% of 46 kg **b** 20% of 46 kg **c** 30% of 46 kg

d 15% of 46 kg **e** 10% of £24 **f** 5% of £24

g 2.5% of £24 **h** 17.5% of £24 **i** 50% of 60 m

j 5% of 60 m **k** 45% of 60 m **l** 55% of 60 m

m 50% of 84 g **n** 25% of 84 g **o** 12.5% of 84 g

Look for ways to use one answer to work out another.

18 Use the methods of question **17** to work these out.

a 20% of £70 **b** 5% of 80 cm **c** 25% of 140 mm

d 30% of £16 **e** 12.5% of 48 g **f** 45% of 40 litres

g 15% of 32 km **h** 7.5% of 120 people **i** 55% of 800 tonnes

19 **a** Copy and complete.

$3 \times 33\frac{1}{3} = 3(33 + \square)$

$= 99 + \square$

$= \square$

b Write $33\frac{1}{3}\%$ as a fraction in its lowest terms.

20 **a** Find $33\frac{1}{3}\%$ of 21 m **b** Find $66\frac{2}{3}\%$ of 45 oz

21 A top sprinter can run at a speed of about 10 m/s.

A little-known fact is that some crocodiles can reach up to 40% of this speed.

How fast can these crocodiles run?

22 Find the sale price for each of these marked prices.

a Coat £93 **b** Jacket £45

c Jeans £27 **d** Shirt £36

e Boots £57 **f** Jumper £25.80

23 A salesperson earns 15% commission on sales.

Find the commission earned on each of these amounts.

a £340 **b** £624 **c** £2700

d £84.60 **e** £112.40 **f** £99

24 A car costing £81 000 lost $66\frac{2}{3}\%$ of its value after 4 years.

What was it then worth?