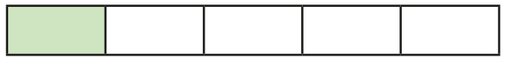
Know and use mental arithmetic strategies for fractions

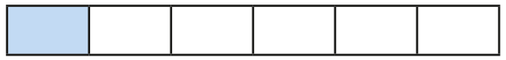
1 Work out the calculations mentally.

You may use the bar models to help you.

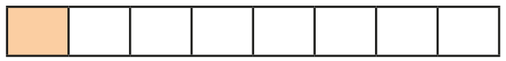
a) $\frac{1}{5}$ of 30 kg = 6 kg



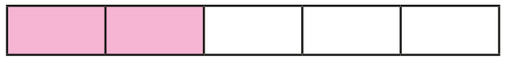
b) $\frac{1}{6}$ of £12 = £ 2



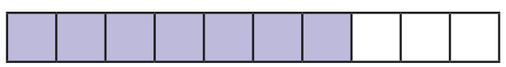
c) $\frac{1}{8}$ of 72 ml = 9 ml



d) $\frac{2}{5}$ of 60 fish = 24 fish



e) $\frac{7}{10}$ of £210 = £ 147



2 Work out the amounts.

a) $\frac{1}{2}$ of £10 = £ 5

b) $\frac{1}{4}$ of £10 = £ 2·50

c) $\frac{1}{8}$ of £10 = £ 1·25

Explain your method to a partner.

3 Show two different methods you could use to work out this calculation mentally.

$\frac{7}{8}$ of £40

e.g.

Method 1

$\frac{1}{8}$ of £40 = £5

so $\frac{7}{8}$ of £40 = 7 × £5

= £35

Method 2

$\frac{1}{8}$ of £40 = £5

£40 − £5 = £35

4 Work out these problems mentally.

a) Here is a number card. A

$\frac{2}{3}$ of A is 6

What is $\frac{1}{2}$ of A? 4·5

b) Here are two more number cards. B C

$\frac{1}{4}$ of B is 10

$\frac{3}{5}$ of C is 9

What is the difference between B and C? 25

c) What is the range of A, B and C? 31

5 Annie has a rail discount card.

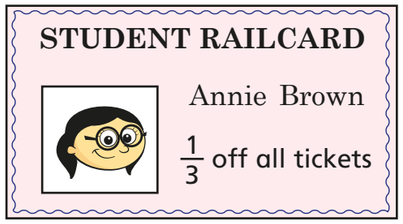
The price of a ticket from Leeds to London is £39

Annie uses her discount card.

She is charged £26

Annie thinks she should have been charged £13

What mistake has Annie made?



She has worked out $\frac{1}{3}$ of the ticket price not $\frac{1}{3}$ off the ticket price.

6 In a sale, there is $\frac{1}{5}$ off all clothing.

How much do each of these items cost in the sale?

The jumper is £ 28 in the sale.

The T-shirt is £ 4·80 in the sale.

7 $\frac{1}{2}$ of a number is 36

What is $\frac{1}{4}$ of the number?

18

Explain to a partner how you worked this out.

8 Add the fractions mentally.

You may use the fraction wall to help you.

1							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

a) $\frac{1}{2} + \frac{1}{4} =$ $\frac{3}{4}$

b) $\frac{1}{2} + \frac{3}{8} =$ $\frac{7}{8}$

c) $\frac{1}{4} + \frac{1}{8} =$ $\frac{3}{8}$

d) $\frac{7}{8} - \frac{1}{2} =$ $\frac{3}{8}$

e) $\frac{7}{8} - \frac{1}{4} =$ $\frac{5}{8}$

f) $\frac{1}{2} - \frac{1}{4} =$ $\frac{1}{4}$

9 Work out the calculations in your head.

a) $\frac{1}{5} + \frac{1}{10} =$ $\frac{3}{10}$

b) $\frac{2}{5} + \frac{3}{10} =$ $\frac{7}{10}$

c) $\frac{7}{10} - \frac{1}{5} =$ $\frac{1}{2}$

d) $1 - \frac{1}{5} - \frac{1}{10} =$ $\frac{7}{10}$

10 Work out the amounts.

a) $\frac{1}{10}$ of £750 = £75

$\frac{1}{10}$ of £75 = £7·50

$\frac{1}{10}$ of £7.50 = 75p

$\frac{1}{10}$ of 75p = 7·5p

b) $\frac{1}{100}$ of 600 kg = 6 kg

$\frac{1}{100}$ of 60 kg = 0·6 kg

$\frac{1}{100}$ of 6 kg = 0·06 kg

Discuss your method and any patterns you notice with a partner.