A2 *Using Fractions and Percentages* Data Sheets

Data Sheets

A2.1 Fractions, Decimals and Percentages
A2.2 Percentages and Fractions
A2.3 Percentages of Quantities
A2.4 Quantities as Percentages
A2.5 Addition and Subtraction of Fractions
A2.6 Multiplying Fractions
A2.7 Dividing Fractions
A2.8 Fraction Calculations
A2.9 Percentage Increase/Decrease
A2.10 Compound Interest
A2.11 Reverse Percentage Problems

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Data Sheet A2.1 *Fractions, Decimals and Percentages*

Fraction	Decimal	Percentage
$\frac{1}{10}$	0.1	
$\frac{1}{8}$		
		25%
$\frac{1}{3}$		
	0.5	
$\frac{2}{3}$		
	0.75	
1		

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Data Sheet A2.2 *Percentages and Fractions*

Convert each of the following percentages to its equivalent fraction, in its simplest form.

(≡ means 'is equivalent to')

(a) 14% ≡

(b) 45% ≡

(c) 60% ≡

(d) 23% ≡

Convert each of the following fractions to the percentage equivalent.

(a) $\frac{3}{4}$ ≡

(b) $\frac{7}{20}$ ≡

(c) $\frac{26}{25}$ ≡

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Data Sheet A2.3 *Percentages of Quantities*

1. Calculate

   (a) 20% of £84

   (b) 10% of £2000

   (c) 50% of 10 m

   (d) 75% of 50 kg

   (e) 5% of 20 euros

   (f) 15% of 200 cm

   (g) 60% of 450 g

   (h) 25% of £60

2. A farmer sells 25% of his 160 pigs.

   How many pigs does he sell?

3. The price of a car in the USA is $2500. In a sale, its price is reduced by 20%.

   What is the sale price?

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Data Sheet A2.4 *Quantities as Percentages*

1. A student scores 13 out of 20 marks in a test.
   Express this score as a percentage.

2. David earns £200 per week and saves £15 towards the cost of a DVD player.
   What percentage of his earnings does he save?

3. In a class of 40 students there are 18 boys.
   What percentage of the class are
   (a) boys, (b) girls?

4. A 500 ml bottle of shampoo includes 150 ml of free shampoo.
   What percentage is free?

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Data Sheet A2.5 *Addition and Subtraction of Fractions*

1. $\frac{4}{8} + \frac{3}{8} = \frac{\square + \square}{8} = \frac{\square}{\square}$

2. $\frac{1}{4} + \frac{3}{5} = \frac{\square}{20} + \frac{\square}{20}$

$= \frac{\square + \square}{20} = \frac{\square}{\square}$

3. $\frac{7}{12} - \frac{1}{3} = \frac{7}{12} - \frac{\square}{12}$

$= \frac{7 - \square}{12} = \frac{\square}{12} = \frac{\square}{\square}$

4. $1\frac{4}{5} + 2\frac{3}{4} - 4\frac{1}{10}$

$= \frac{\square}{5} + \frac{\square}{4} - \frac{\square}{10}$

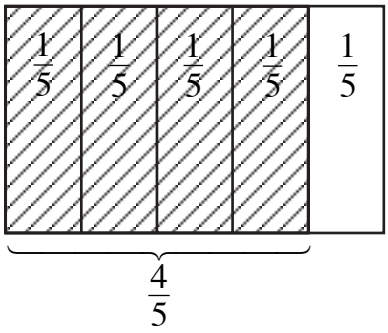
$= \frac{\square}{20} + \frac{\square}{20} - \frac{\square}{20}$

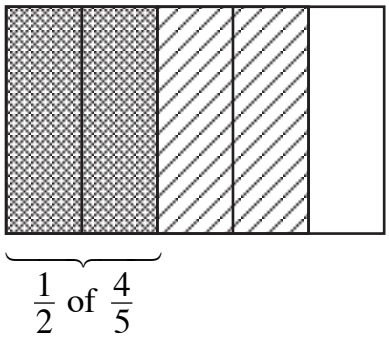
$= \frac{\square + \square - \square}{20} = \frac{\square}{20}$

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Data Sheet A2.6 *Multiplying Fractions*

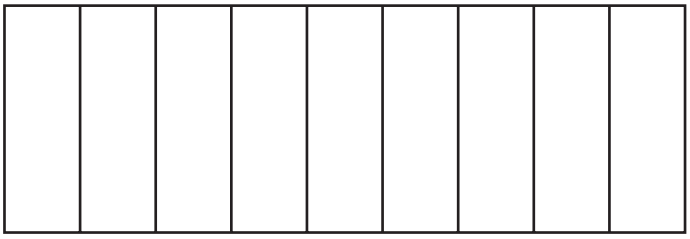
$\frac{1}{2} \times \frac{4}{5}$

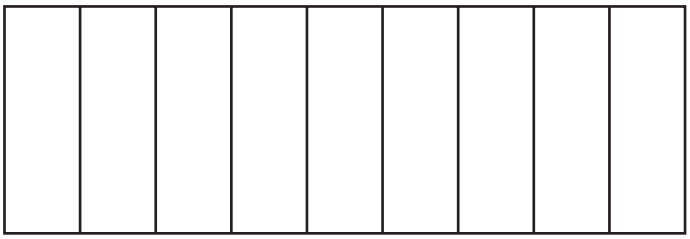




$\frac{1}{2} \times \frac{4}{5} = \frac{2}{5}$

$\frac{1}{4} \times \frac{8}{9}$





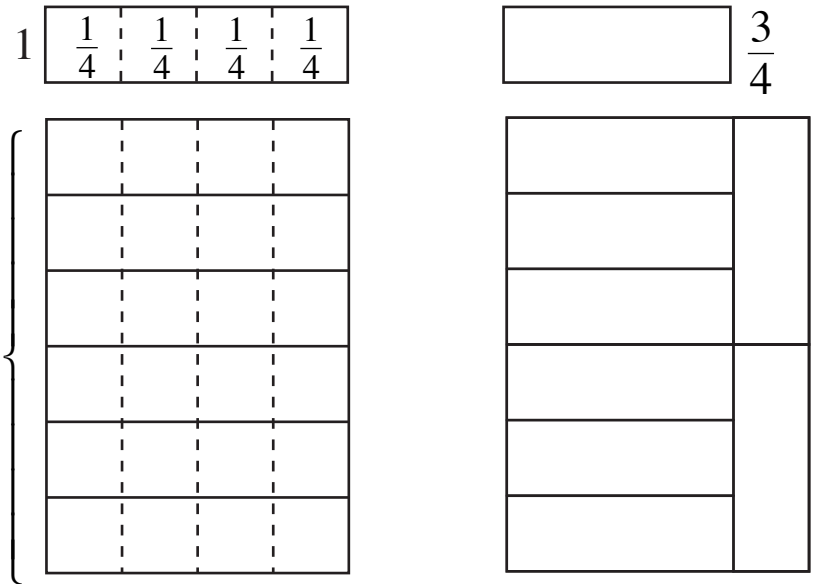
$\frac{1}{4} \times \frac{8}{9} =$

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Data Sheet A2.7

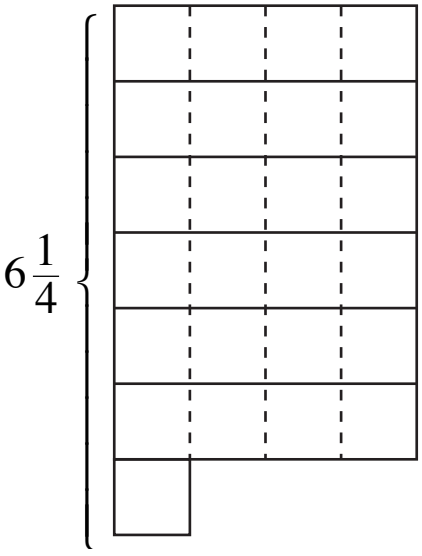
Dividing Fractions

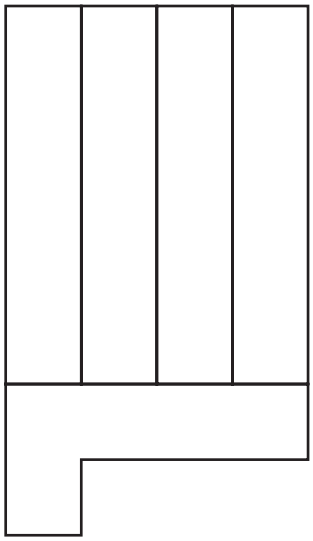
$6 \div \frac{3}{4}$



$$6 \div \frac{3}{4} = 8$$

$6\frac{1}{4} \div 1\frac{1}{4}$

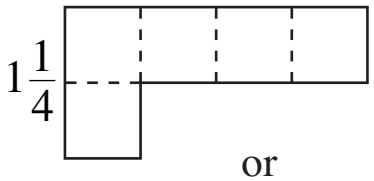




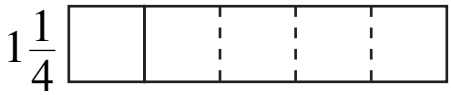
$$6\frac{1}{4} \div 1\frac{1}{4} = 5$$

or

$$\frac{25}{4} \div \frac{5}{4} = \frac{25}{4} \times \frac{4}{5} = 5$$



or



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Data Sheet A2.8

Fraction Calculations

1. $\dfrac{\frac{1}{5} \times \frac{3}{10}}{2\frac{1}{2}} = \dfrac{\frac{1}{5} \times \frac{3}{10}}{\frac{5}{2}}$

$= \dfrac{\square}{\square} \div \dfrac{5}{2}$

$= \dfrac{\square}{\square} \times \dfrac{\square}{\square}$

$= \dfrac{\square}{\square} = \dfrac{\square}{\square}$

2. $1\frac{3}{4} \div \left(2\frac{1}{2} - 1\frac{1}{3}\right) = \dfrac{\square}{4} \div \left(\dfrac{\square}{2} - \dfrac{\square}{3}\right)$

$= \dfrac{\square}{4} \div \left(\dfrac{\square - \square}{6}\right)$

$= \dfrac{\square}{4} \div \dfrac{\square}{6}$

$= \dfrac{\square}{4} \times \dfrac{6}{\square}$

$= \dfrac{\square}{\square} = \dfrac{\square}{\square}$

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Data Sheet A2.9 *Percentage Increase/Decrease*

1. During one year the population of a village increased from 234 to 275.

   What was the percentage increase?

2. The price of a packet of biscuits was reduced from £1.60 to £1.40.

   What was the percentage decrease?

3. In 12 months a boy's height increased from 120 cm to 135 cm.

   What was the percentage increase in his height?

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Data Sheet A2.10 *Compound Interest*

£200 is invested in a savings account that pays 4% compound interest per annum. The interest is added to the account at the end of each year.

What is the balance of the account at the end of 3 years?

Interest after 1 year $= £200 \times \frac{4}{100} = £8$

Balance of account after 1 year $= £200 + £8 = £208$

Interest after 2 years $= £200 \times \frac{4}{100} = £$ ☐

Balance of account after 2 years $= £200 + £$ ☐

$= £$ ☐

Interest after 3 years $= £$ ☐ $\times \frac{4}{100} = £$ ☐

Balance of account after 3 years

$= £$ ☐ $+ £$ ☐ $= £$ ☐

It is much quicker to calculate:

$£200 \times 1.04 \times 1.04 \times 1.04$

$= £200 \times 1.04^{\square}$

$= £$ ☐

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Data Sheet A2.11 *Reverse Percentage Problems*

The price of a computer is £1398, including VAT at $16\frac{1}{2}\%$.

Find the actual cost of the computer and the amount of VAT which has to be paid.

Price = actual cost plus VAT

= $1.165 \times$ (actual cost)

£1398 = $1.165 \times$ (actual cost)

Actual cost = $£\frac{1398}{\square}$

= £ ☐

VAT = £1398 − £ ☐

= £ ☐

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