

Simplifying fractions

- 1 What fraction of the bar is shaded? Give your answer in its simplest form.



- 2 Simplify (a) $\frac{12}{16}$ (b) $\frac{30}{45}$ (c) $\frac{84}{120}$

Ordering fractions

- 3 Write in order, smallest first.
 (a) $\frac{3}{4}$, $\frac{5}{8}$, $\frac{7}{12}$ (b) $\frac{4}{5}$, $\frac{7}{10}$, $\frac{3}{4}$, $\frac{13}{20}$
- 4 Ella eats $\frac{3}{8}$ of a pizza. Sam eats $\frac{2}{5}$ of an identical pizza. Who eats more?

Mixed numbers and improper fractions

- 5 Write the shaded amount as
 (a) a mixed number (b) an improper fraction.



- 6 (a) Write $5\frac{2}{3}$ as an improper fraction.
 (b) Write $\frac{31}{6}$ as a mixed number.

Adding and subtracting fractions

- 7 (a) $\frac{1}{3} + \frac{1}{5}$ (b) $\frac{3}{4} - \frac{2}{7}$ (c) $\frac{5}{6} + \frac{3}{8}$
- 8 Jack spends $\frac{1}{4}$ of his money on a game and $\frac{2}{5}$ of it on clothes. What fraction of his money is left?

One number as a percentage of another

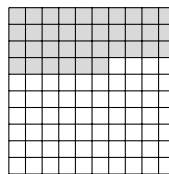
- 9 Write as a percentage.
 (a) 12 out of 50 (b) 27 out of 60
 (c) 35 cm out of 2 m
- 10 Priya scores 34 out of 40 in a test. Leo scores 41 out of 50. Who did better?

Percentages without a calculator

- 11 Find (a) 10% of 470 (b) 50% of 86
 (c) 1% of 650 (d) 15% of 360
- 12 A £45 jacket is reduced by 20% in a sale. What is the sale price?

Converting between fractions, decimals and percentages

- 13 Write the shaded part of the grid as a fraction in its simplest form, as a decimal and as a percentage.



- 14 Copy and complete the table.

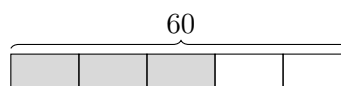
Fraction	Decimal	Percentage
$\frac{3}{5}$		
	0.45	
		4%

Ordering fractions, decimals and percentages

- 15 Write in order, smallest first.
 (a) 0.4, $\frac{3}{8}$, 41% (b) $\frac{1}{3}$, 0.3, 33%
- 16 Shop A takes $\frac{1}{3}$ off its prices. Shop B takes 30% off. Shop C takes 0.35 of the price off. Which shop gives the biggest discount?

Fractions of amounts

- 17 Use the bar model to find $\frac{3}{5}$ of 60.



- 18 (a) Without a calculator, find $\frac{3}{8}$ of 64.
 (b) With a calculator, find $\frac{7}{9}$ of 504.
- 19 A school has 840 pupils. $\frac{3}{7}$ of them have school dinners. How many pupils do not have school dinners?

Percentages of amounts

- 20 Without a calculator, find
 (a) 35% of 140 (b) 12.5% of 64
- 21 With a calculator, find
 (a) 23% of 85 (b) 4.5% of £2400

Percentage change

- 22 Find the percentage change.
 (a) 50 kg to 62 kg (b) £80 to £68
- 23 A car bought for £12 000 is sold two years later for £9000. Find the percentage decrease.

Simple interest

- 24** £500 is invested at 2% simple interest per year. Copy and complete the table.

Year	0	1	2	3	4
Balance (£)	500				

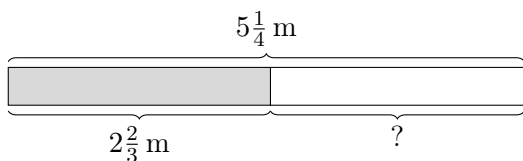
- 25** Amy invests £800 at 5% simple interest per year. After how many years will she have £1000?

Calculating with mixed numbers and negatives

- 26** (a) $1\frac{2}{3} + 2\frac{1}{4}$ (b) $4\frac{1}{5} - 1\frac{1}{2}$ (c) $1\frac{1}{2} \times 2\frac{2}{3}$
- 27** (a) $3\frac{3}{4} \div 1\frac{1}{4}$ (b) $-\frac{2}{3} \times \frac{9}{10}$
- (c) $-1\frac{1}{4} \div \left(-\frac{5}{8}\right)$

Word problems with mixed numbers

- 28** A plank is $5\frac{1}{4}$ m long. A piece $2\frac{2}{3}$ m long is cut off. How long is the piece that is left?



- 29** How many $\frac{1}{3}$ litre glasses can be completely filled from a jug holding $2\frac{3}{4}$ litres?
- 30** A rectangular garden is $6\frac{1}{2}$ m long and $3\frac{1}{3}$ m wide. Find its area.

Recurring decimals to fractions

- 31** Copy and complete to write $0.\dot{4}$ as a fraction.

Let $n = 0.444\dots$

$10n = \underline{\hspace{2cm}}$

subtract: $\underline{\hspace{1cm}}n = \underline{\hspace{2cm}}$

$n = \underline{\hspace{2cm}}$

- 32** Write as fractions in their simplest form.

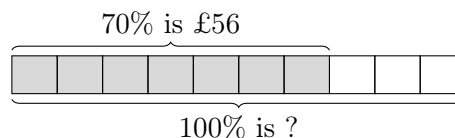
(a) $0.\dot{3}\dot{6}$ (b) $0.8\dot{3}$

Percentage increase and decrease with multipliers

- 33** Write down the multiplier for
- (a) an increase of 8% (b) a decrease of 30%
- (c) an increase of 2.5%
- 34** (a) Increase £64 by 35%.
(b) Decrease 1250 by 12%.

Finding the original amount

- 35** In a sale, everything is 30% off. A coat costs £56 in the sale. What was the original price?



- 36** After a 10% increase, a bill is £77. What was the bill before the increase?
- 37** A price including 20% VAT is £54. What was the price before VAT was added?

Problem solving

- 38** A £90 coat is on sale in two shops. Shop A takes $\frac{1}{3}$ off. Shop B takes 30% off, then a further 5% off the sale price. Which shop is cheaper, and by how much?
- 39** Kim says, "After 30% off, a bike costs £280, so the original price was $280 \times 1.3 = \text{£}364$." Explain Kim's mistake, and find the correct original price.
- 40** Write down three different fractions between $\frac{3}{5}$ and $\frac{7}{10}$. Show how you know that each one is in this range.