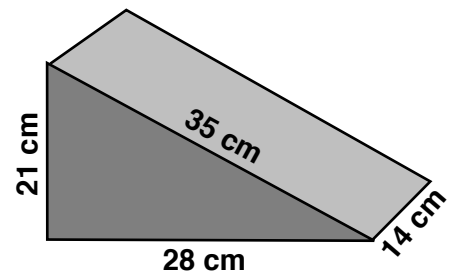


Equivalent Ratios

Starter

1. **(Review of last lesson)**
Calculate the surface area of the prism.



2. Cancel the following fractions: (a) $\frac{6}{8}$ (b) $\frac{16}{56}$
3. Cancel these ratios: (a) 63 : 54 (b) 2.4 : 40

Notes

Cancelling ratios follows the same principles as cancelling fractions.

With decimals: multiply by 10, 100, 1000, etc to get whole numbers and then cancel the resulting ratio.

With mixed units: convert to the smallest unit to avoid decimals and then cancel the resulting ratio.

E.g. Cancel these ratios: (a) 50 g : 1.3 kg (b) 3.2 mm : 4 cm

Working:

(a)	Make sure the units are the same (g)	50 : 1300
		1 : 26
(b)	Make sure the units are the same (mm)	3.2 : 40
	Multiply by 10 to get rid of the decimal	32 : 400
		2 : 25

Expressing ratios in the form 1 : n

By expressing in the form 1 : n we can compare ratios easier.

E.g. Express 7 : 29 in the form 1 : n.

Working: Divide both ratios by 7:

$$\frac{7}{7} : \frac{29}{7}$$

$$1 : 4.14 \text{ (3 s.f.)}$$

With fraction or mixed numbers: Find equivalent fractions with a common denominator.
Express mixed numbers as improper fractions.
Multiply by the ratios by the common denominator.

E.g. Cancel these ratios: (a) $\frac{2}{5} : \frac{3}{4}$ (b) $4\frac{2}{3} : 1\frac{1}{2}$

Working: (a) Get a common denominator $\frac{8}{20} : \frac{15}{20}$

Multiply by 20 $8 : 15$

(b) Form improper fractions $\frac{14}{3} : \frac{3}{2}$

Get a common denominator $\frac{28}{6} : \frac{9}{6}$

Multiply by the common denominator $28 : 9$

E.g. 1 Write each ratio in its simplest form:

(a) $12 : 9 : 15$

(b) $0.8 : 1.24$

(c) $2\frac{1}{5} : 3\frac{1}{4}$

(d) $54 \text{ cm} : 2 \text{ m}$

(e) $25 \text{ minutes} : 1 \text{ hour}$

E.g. 2 Express $5 : 12$ in the form $1 : n$.

E.g. 3 The ratio of **bread to meat** in two brands of sausage are A $25 : 36$ and B $40 : 72$. Which has the higher proportion of meat? Explain your answer.

Video: [Simplifying ratios](#)
Video: [Expressing as 1 : n](#)

[Solutions to Starter and E.g.s](#)

Exercise

p115 Ex 7.1 Qu 1ace..., 2ace..., 3ac, 4-12

Summary

Simplifying ratios:

With decimals — multiply by 10, 100, 1000, etc to get whole numbers and then cancel

With mixed units — convert to the smallest unit and then cancel

Expressing in the form $1 : n$ — divide each number by the smallest number in the ratio

With fraction or mixed numbers:

Find equivalent fractions with a common denominator.

Express mixed numbers as improper fractions.

Multiply by the ratios by the common denominator.

[Textbook answers \(only available during a lockdown\)](#)