

2.8 Answers

GCSE Mathematics Ratio and Similarity

2.8.1 Solutions to 2.1 Starter : Squaring Vulgar Fractions

$$(i) \left(\frac{4}{5}\right)^2 = \frac{16}{25} \quad (ii) \left(\frac{7}{3}\right)^2 = \frac{49}{9} \quad (iii) \left(\frac{6}{11}\right)^2 = \frac{36}{121}$$

$$(iv) \left(\frac{1}{8}\right)^2 = \frac{1}{64} \quad (v) \left(\frac{10}{9}\right)^2 = \frac{100}{81} \quad (vi) \left(\frac{5}{7}\right)^2 = \frac{25}{49}$$

$$(vii) \left(\frac{11}{6}\right)^2 = \frac{121}{36} \quad (viii) \left(\frac{3}{1}\right)^2 = \frac{9}{1} \quad (ix) \left(\frac{13}{14}\right)^2 = \frac{169}{196}$$

[9 marks]

2.8.2 Solutions to 2.2 Starter : Square-Rooting Vulgar Fractions

$$(i) \sqrt{\left(\frac{16}{25}\right)} = \frac{4}{5} \quad (ii) \sqrt{\left(\frac{49}{100}\right)} = \frac{7}{10}$$

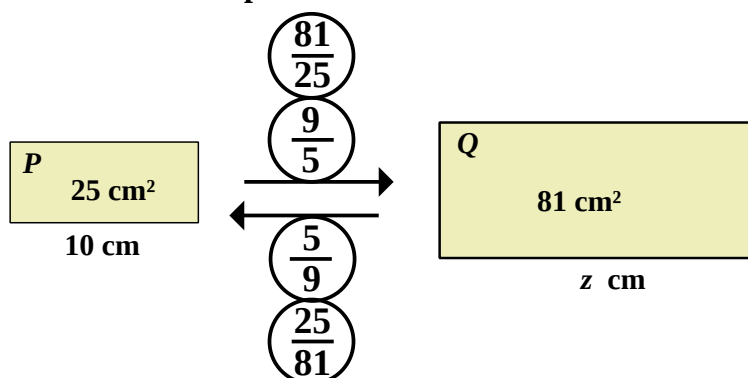
$$(iii) \sqrt{\left(\frac{25}{36}\right)} = \frac{5}{6} \quad (iv) \sqrt{\left(\frac{1}{9}\right)} = \frac{1}{3}$$

$$(v) \sqrt{\left(\frac{4}{1}\right)} = \frac{2}{1} \quad (vi) \sqrt{\left(\frac{81}{16}\right)} = \frac{9}{4}$$

$$(vii) \sqrt{\left(\frac{400}{49}\right)} = \frac{20}{7} \quad (viii) \sqrt{\left(\frac{196}{225}\right)} = \frac{14}{15}$$

Challenge: $\left(\frac{4}{9}\right)^{\frac{1}{2}} = \sqrt{\left(\frac{4}{9}\right)} = \frac{2}{3}$

2.8.3 Solution to 2.4 Example

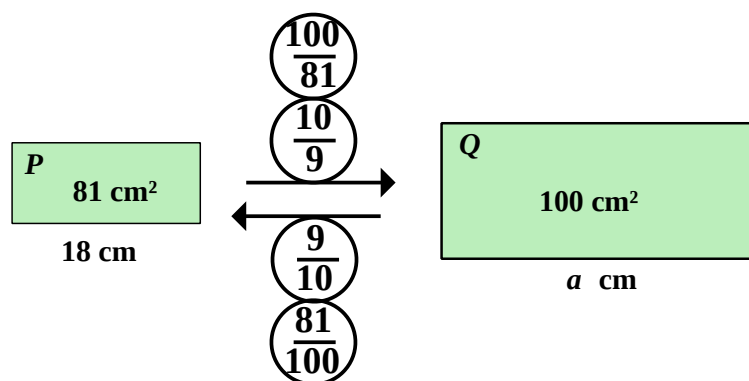


$$z = 10 \times \frac{9}{5} = 18 \text{ cm}$$

[3 marks]

2.8.4 Solutions to 2.5 Exercise

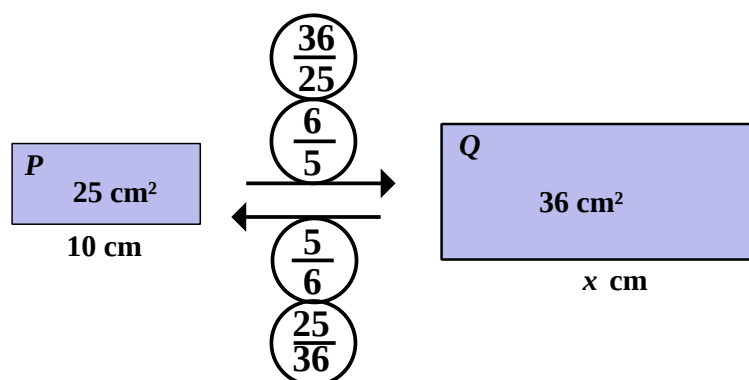
Answer 1



$$a = 18 \times \frac{10}{9} = 20 \text{ cm}$$

[3 marks]

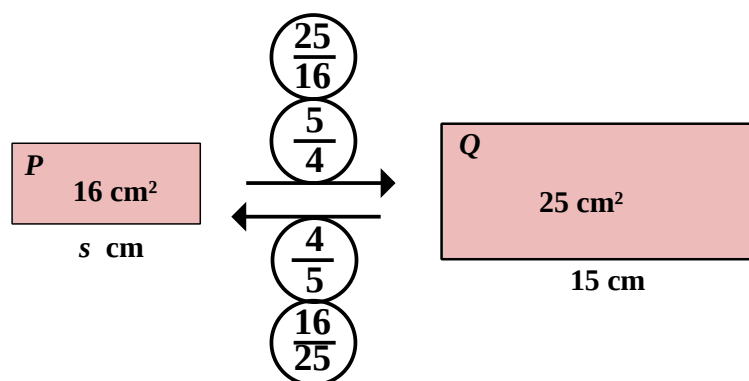
Answer 2



$$x = 10 \times \frac{6}{5} = 12 \text{ cm}$$

[3 marks]

Answer 3



$$s = 15 \times \frac{4}{5} = 12 \text{ cm}$$

[3 marks]

Answer 4

Cancel down the fraction, then square root.

$$\begin{aligned}
 asf &= \left(\frac{50}{32} \right) \\
 &= \left(\frac{25}{16} \right) \\
 lsf &= \sqrt{asf} \\
 &= \sqrt{\left(\frac{25}{16} \right)} \\
 &= \frac{5}{4}
 \end{aligned}$$

[3 marks]

2.8.5 Solutions to 2.6 Exercise**Answer 1**

(i) $\frac{9}{64}$

(ii) $\frac{25}{16}$

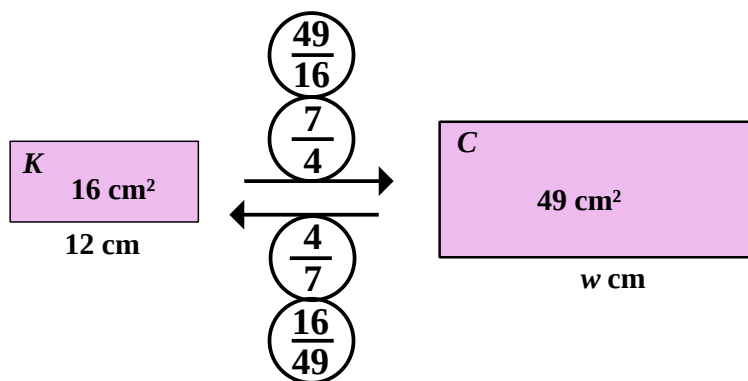
(iii) $\frac{49}{81}$

(iv) $\frac{6}{7}$

(v) $\frac{10}{3}$

(vi) $\frac{8}{9}$

[6 marks]

Answer 2

$$w = 12 \times \frac{7}{4} = 21 \text{ cm}$$

[3 marks]

Answer 3

$$\frac{36}{25}$$

Answer 4

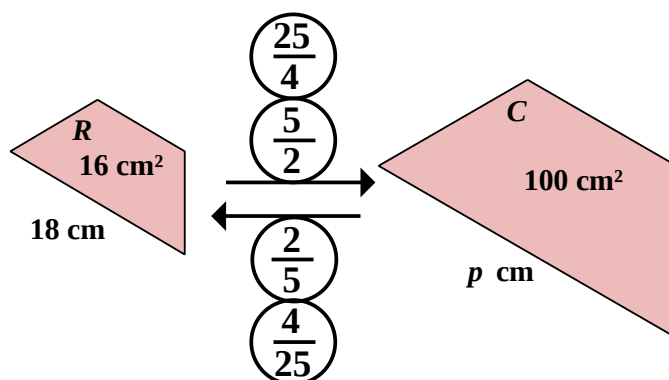
$$\frac{3}{4}$$

Answer 5

$$\frac{16}{81}$$

[1, 1, 1 marks]

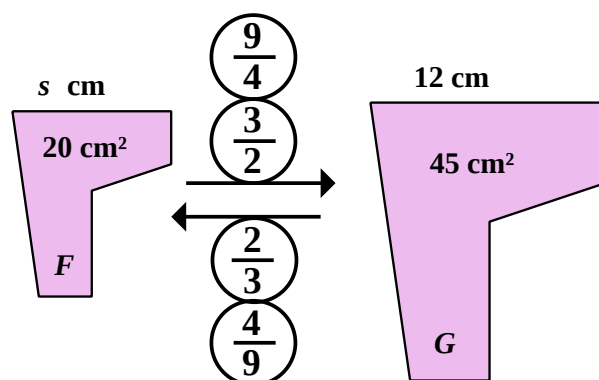
Answer 6



$$p = 18 \times \frac{5}{2} = 45 \text{ cm}$$

[3 marks]

Answer 7



(i) $asf = \frac{9}{4}$

[1 mark]

(ii) $s = 12 \times \frac{2}{3} = 8 \text{ cm}$

[2 marks]

Answer 8

(i) 196 cm²

[3 marks]

(ii) (a) $lsf = \frac{8}{7}$

[1 mark]

(b) $asf = \frac{64}{49}$

[1 mark]

(c) 256 cm²

[2 marks]

Answer 9

- | | | | |
|--------|-------|--------------------|-------------|
| (i) | (a) | 16 cm^2 | [1 mark] |
| | (b) | 240 cm^2 | [2 marks] |
| (ii) | (a) | 10 cm | [1 mark] |
| | (b) | 7.5 cm | [1 mark] |
| | (c) | 2.5 cm | [1 mark] |
| | (d) | $\frac{25}{16}$ | [1 mark] |
| | (e) | 375 cm^2 | [2 marks] |

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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com