4.4 Homework

GCSE Mathematics
Ratio and Similarity

Marks Available : 40

Question 1

Do not use a calculator

(i) $\left(\frac{3}{2}\right)^2 = 9$

(ii) $\left(\frac{8}{13}\right)^2 = \frac{\quad}{169}$

(iii) $\left(\frac{5}{6}\right)^2 = \frac{\quad}{\quad}$

(iv) $\left(\frac{2}{3}\right)^3 = 8$

(v) $\left(\frac{5}{7}\right)^3 = \frac{\quad}{343}$

(vi) $\left(\frac{7}{4}\right)^3 = \frac{\quad}{\quad}$

(vii) $\left(\frac{25}{4}\right)^{0.5} = 5$

(viii) $\left(\frac{49}{196}\right)^{0.5} = \frac{\quad}{14}$

(ix) $\left(\frac{36}{121}\right)^{0.5} = \frac{\quad}{\quad}$

(x) $\left(\frac{9}{64}\right)^{\frac{1}{2}} = \frac{\quad}{\quad}$

(xi) $\left(\frac{1}{144}\right)^{\frac{1}{2}} = \frac{\quad}{\quad}$

(xii) $\left(\frac{196}{169}\right)^{\frac{1}{2}} = \frac{\quad}{\quad}$

(xiii) $\left(\frac{8}{27}\right)^{\frac{1}{3}} = \frac{\quad}{\quad}$

(xiv) $\left(\frac{1}{1000}\right)^{\frac{1}{3}} = \frac{\quad}{\quad}$

(xv) $\left(\frac{64}{125}\right)^{\frac{1}{3}} = \frac{\quad}{\quad}$

(xvi) $\left(\frac{40}{9}\right)^2 = \frac{\quad}{\quad}$

(xvii) $\left(\frac{5}{4}\right)^3 = \frac{\quad}{\quad}$

(xviii) $\left(\frac{5}{6}\right)^0 = \frac{\quad}{\quad}$

[18 marks]

Question 2

To square root the following fractions, first cancel down by repeated division of the numerator and denominator by 2, 3, 5 or 10.

Example

$$\sqrt{\frac{484}{64}} = \sqrt{\frac{242}{32}} = \sqrt{\frac{121}{16}} = \frac{11}{4}$$

Do not use a calculator

(i)

$$\sqrt{\frac{27}{12}} = \sqrt{} = $$ *Hint* : *Divide by* 3

[2 marks]

(ii)

$$\sqrt{\frac{98}{50}} = \sqrt{} = $$

[2 marks]

(iii)

$$\sqrt{\frac{980}{720}} = \sqrt{} = \sqrt{} = $$ *Hint* : *First*, *divide by* 10

[2 marks]

(iv)

$$\sqrt{\frac{45}{80}} = \sqrt{} = $$

[2 marks]

(v)

$$\sqrt{\frac{3630}{750}} = \sqrt{} = \sqrt{} = $$

[2 marks]

(vi)

$$\sqrt{\frac{882}{162}} = \sqrt{} = \sqrt{} = \sqrt{} = $$

[2 marks]

Question 3

You may use a calculator

Here are two similar triangles.
AB corresponds to *PQ*.
BC corresponds to *QR*.

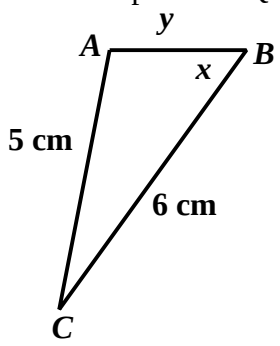
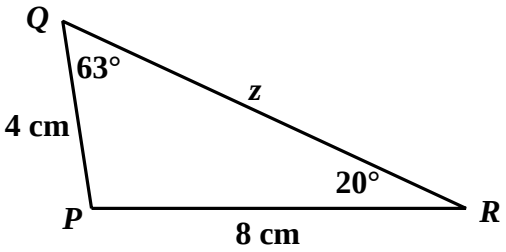


Diagram NOT accurately drawn



Find the value of

(a) *x*

(b) *y*

(c) *z*

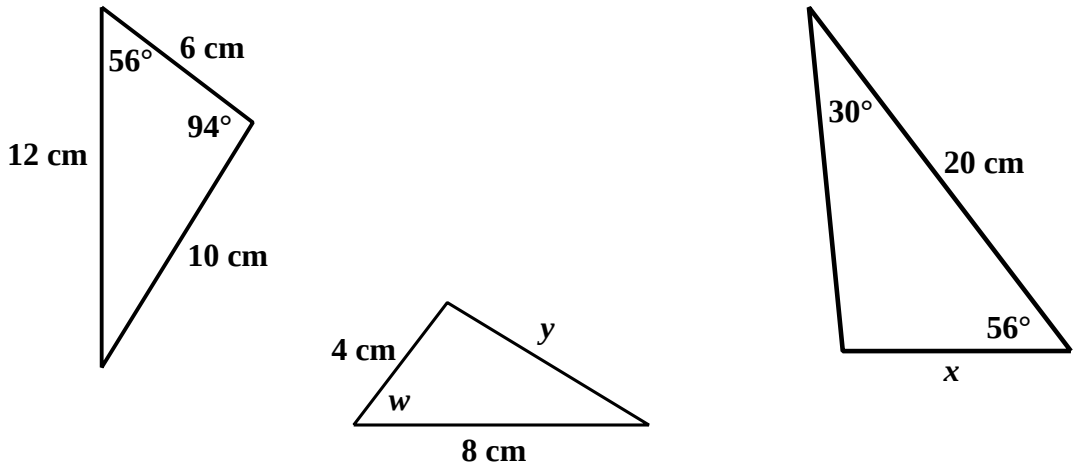
[5 marks]

Question 4

You may use a calculator

Here are three similar triangles.

Diagram NOT accurately drawn



Find the value of

(a) w

(b) x

(c) y

[5 marks]