

## Lesson 4

## GCSE Mathematics Ratio and Similarity

*Non Calculator*

*Time : 5 minutes*

### 4.1 Start Up

Cancel down these fractions as far as possible by repeated division of the numerator and denominator by 2, 3, 5 or 10.

( i )  $\frac{10}{4}$

( ii )  $\frac{55}{15}$

( iii )  $\frac{21}{12}$

( iv )  $\frac{50}{100}$

( v )  $\frac{300}{40}$

( vi )  $\frac{125}{20}$

( vii )  $\frac{180}{100}$

( viii )  $\frac{39}{24}$

( ix )  $\frac{27}{21}$

( x )  $\frac{35}{25}$

( xi )  $\frac{180}{100}$

( xii )  $\frac{72}{20}$

( xiii )  $\frac{600}{480}$

( xiv )  $\frac{640}{220}$

( xv )  $\frac{102}{84}$

( xvi )  $\frac{520}{360}$

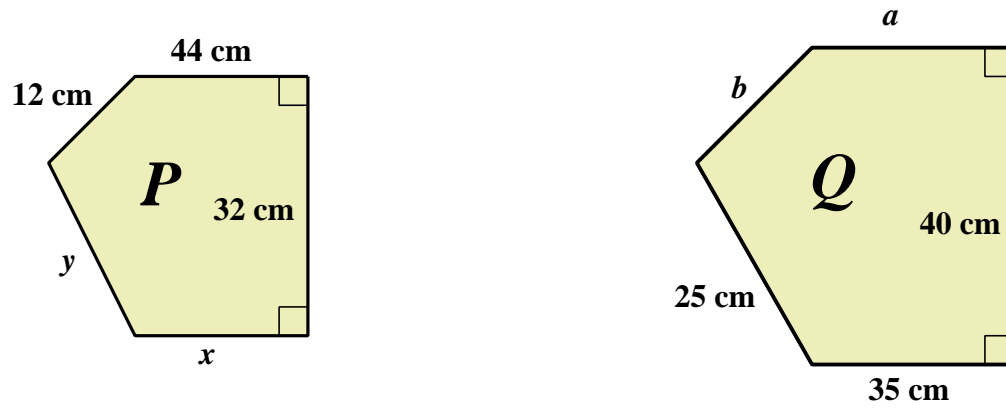
[ 16 marks ]

If you got all 16 correct, have a bonus mark !

[ 1 mark ]

#### 4.2 Exam Style Questions involving Length Scale Factor

Pentagon  $P$  is mathematically similar to pentagon  $Q$ .  
Calculate the lengths of the sides marked  $a$ ,  $b$ ,  $x$ , and  $y$ .



[ 4 marks ]

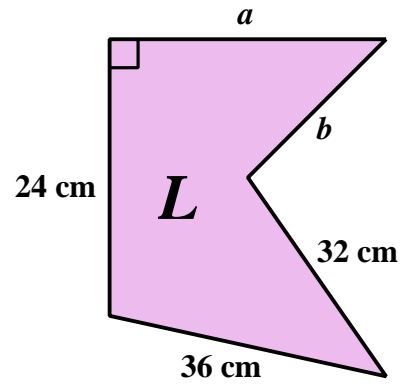
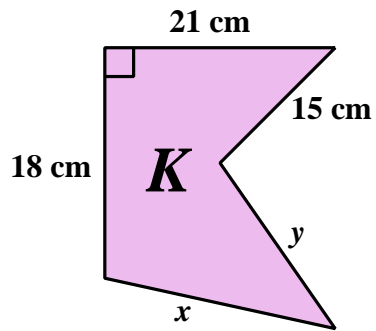
### 4.3 Exercise

Marks Available : 27

#### Question 1

Pentagon  $K$  is mathematically similar to pentagon  $L$ .

Calculate the lengths of the sides marked  $a$ ,  $b$ ,  $x$ , and  $y$ .

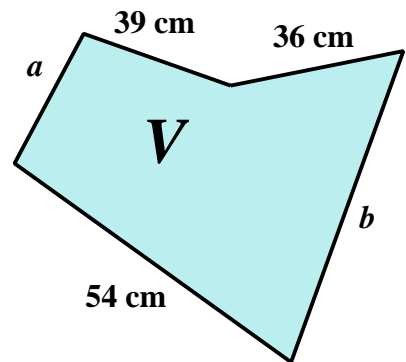
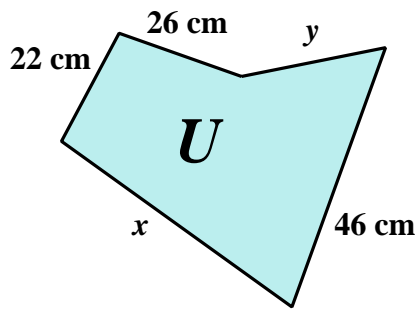


[ 4 marks ]

**Question 2**

Pentagon  $U$  is mathematically similar to pentagon  $V$ .

Calculate the lengths of the sides marked  $a$ ,  $b$ ,  $x$ , and  $y$ .

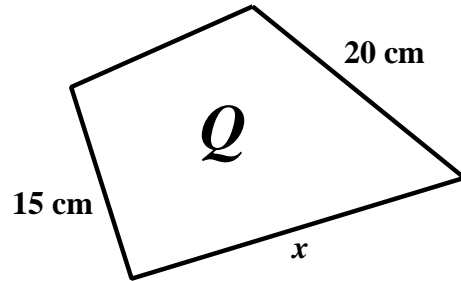
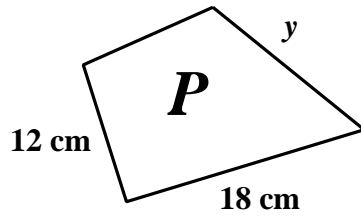


[ 4 marks ]

**Question 3**

*You may use a calculator*

**Diagram NOT accurately drawn**



Quadrilateral  $P$  is mathematically similar to quadrilateral  $Q$ .

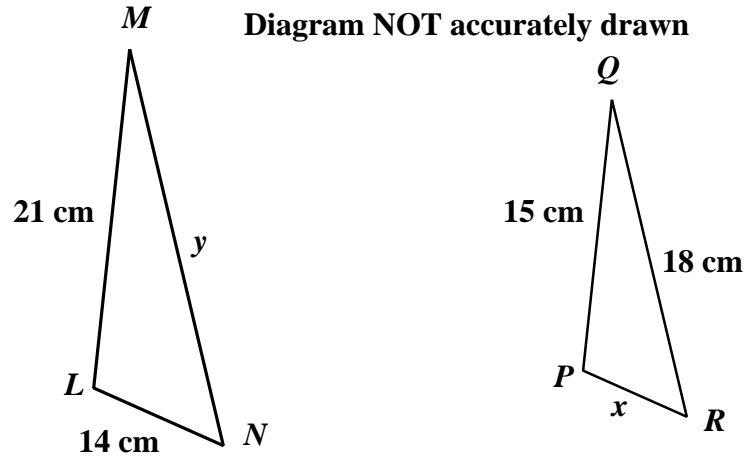
- (a) Calculate the value of  $x$ .
- (b) Calculate the value of  $y$ .

[ 4 marks ]

**Question 4**

*You may use a calculator*

Here are two similar triangles.



$LM$  corresponds to  $PQ$ .

$MN$  corresponds to  $QR$ .

- (a) Find the value of  $x$ .
- (b) Find the value of  $y$ .

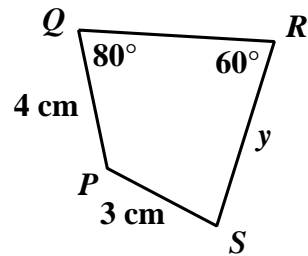
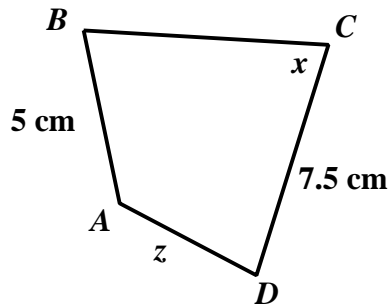
[ 4 marks ]

**Question 5**

*You may use a calculator*

$ABCD$  and  $PQRS$  are two similar quadrilaterals.

**Diagram NOT accurately drawn**



$AB$  corresponds to  $PQ$ .

$BC$  corresponds to  $QR$ .

$CD$  corresponds to  $RS$ .

Find the value of

- (a)  $x$ ,
- (b)  $y$ ,
- (c)  $z$ .

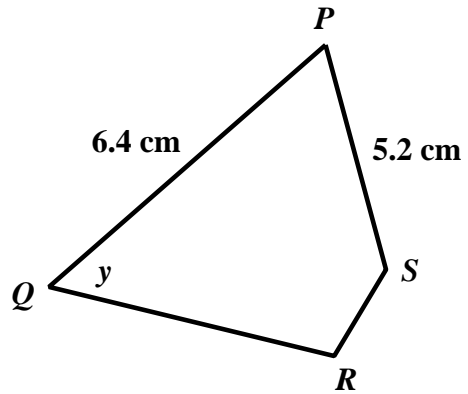
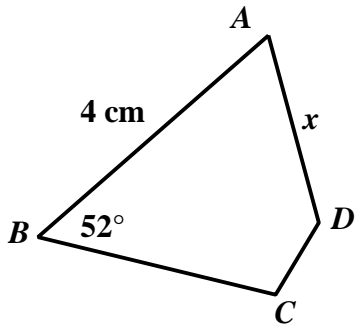
[ 5 marks ]

**Question 6**

*You may use a calculator*

Quadrilaterals  $ABCD$  and  $PQRS$  are similar.

**Diagram NOT accurately drawn**



$AB$  corresponds to  $PQ$ .

$BC$  corresponds to  $QR$ .

$CD$  corresponds to  $RS$ .

Find the value of

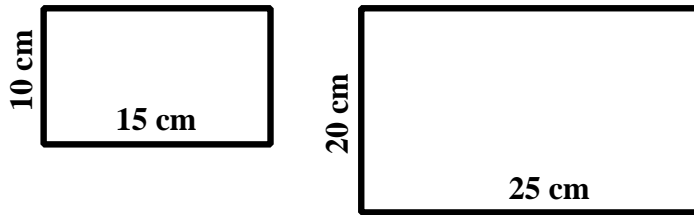
(a)  $x$ ,

(b)  $y$ ,

[ 3 marks ]



**Question 7**



Are the two rectangles mathematically similar ?

Tick (✓) the appropriate box.

You must show working to justify your answer.

Yes

No

**[ 3 marks ]**

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