Daily Practice 17.8.2015

Q1. Find 60% of 89

10% ⇒ 89 ÷ 10 = 8.9

60% = 8.9 × 6 = 53.4

Q2. Multiply out and simplify 3(2y – 1) + 4(y – 8)

6y – 3 + 4y – 32

10y – 35

Q3. Share £350 in the ratio 2:5 2 + 5 = 7

50

7 | 350

£100 £250

Q4. 6.71 x 500

6.71 × 1000 = 6710

÷2 = 3355

Q5. $2\frac{1}{5} - 1\frac{2}{3}$

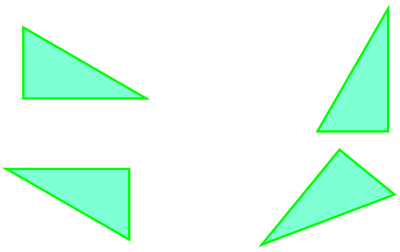
$\frac{11}{5} - \frac{5}{3} = \frac{33}{15} - \frac{25}{15} = \frac{8}{15}$

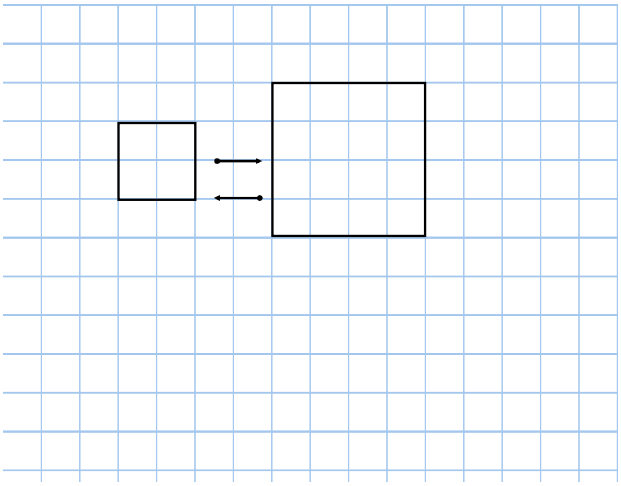
L.I: Today we will be learning about congruent & similar shapes

Congruent Shapes 17.8.15

Two shapes are congruent if they are exactly the same shape and size.

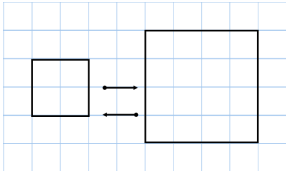
One may be a rotation or translation of the other.





Similar Shapes

Two shapes are similar if they are the same shape but one is an enlargement or reduction of the other.

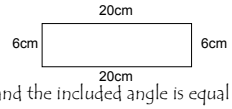


Similar shapes have equal corresponding angles and their corresponding sides are in the same ratio.

Similar Shapes

To prove that two shapes are similar, show any one of the following is true:

1. The sides are in the same proportion



2. Two sides are in the same proportion and the included angle is equal

(Trig. Ratios are based on similar shapes)

3. All the angles in the 1st shape are equal to the angles in the 2nd.

Similar Shapes

The scale factor is the multiplier for which the shape has been enlarged or reduced in size.

All sides will have been increased/reduced by the same scale factor for the shapes to be similar.

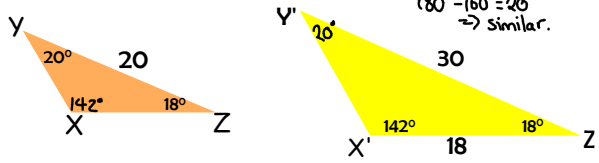
Scale factor can be calculated by dividing a dimension of a shape by the same dimension on the enlarged/reduced version of the shape.

Similar Shapes

Examples:

1. (i) Explain why the triangles below are similar

All angles equal in both shapes
$180° - 160° = 20°$
=> similar.



(ii) Calculate the length of XZ

$20 \div 30 = \frac{2}{3}$

$18 \times \frac{2}{3} = 12 = XZ$

Daily Practice **18.8.15**

Q1. Multiply out and simplify $7(2x - 1) + 4x - 3$

$14x - 7 + 4x - 3$

$18x - 10$

Q2. Find the value of p

$\cos 29° = \frac{12}{p}$

$p \cos 29° = 12$

$p = \frac{12}{\cos 29°}$

$p = 13.72\text{ cm}$

Q3. Write 67000 in scientific notation

6.7×10^4

Q4. Round 7152.88 to 3 significant figures

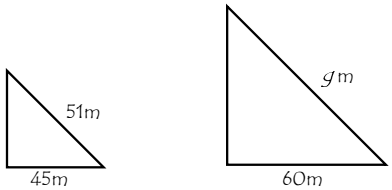
$\rightarrow 7150$

Q5. $1\frac{2}{5} - \frac{3}{8} = \frac{7}{5} - \frac{3}{8} = \frac{56}{40} - \frac{15}{40} = \frac{41}{40} = 1\frac{1}{40}$

L.I: Today we are going to continue working out missing sides in similar shapes.

Similar Shapes

2. Calculate the length of g



S.f. $= 60 \div 45 = 1\frac{1}{3}$

$g = 51 \times 1\frac{1}{3} = 68\text{m}$

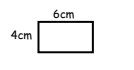
S.f. $= 45 \div 60 = 0.75$

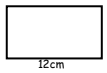
$g = 51 \div 0.75 = 68\text{m}$

Similar Shapes

For each pair of similar shapes, find the missing lengths

(a)





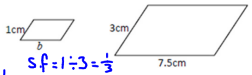
(b)

S.f $= 7.5 \div 3 = 2.5$

$4 \times 2.5 = 10 = c$

$d = 12.5 \div 2.5 = 5$

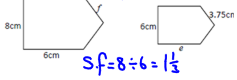
(c)



S.f $= 1 \div 3 = \frac{1}{3}$

$b = 7.5 \times \frac{1}{3} = 2.5$

(d)



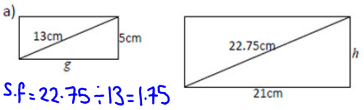
S.f $= 8 \div 6 = 1\frac{1}{3}$

$f = 3.75 \times 1\frac{1}{3} = 5$

$e = 6 \div 1\frac{1}{3} = 4.5$

2. Find the missing lengths in these similar shapes

a)



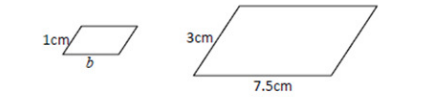
S.f $= 22.75 \div 13 = 1.75$

$g = 21 \div 1.75 = 12\text{cm}$

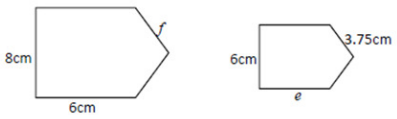
$h = 5 \times 1.75 = 8.75\text{cm}$

Similar Shapes

(c)



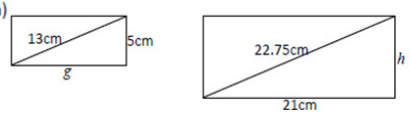
d)



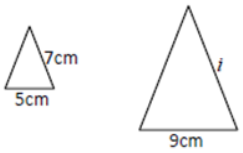
Similar Shapes

2. Find the missing lengths in these similar shapes

a)



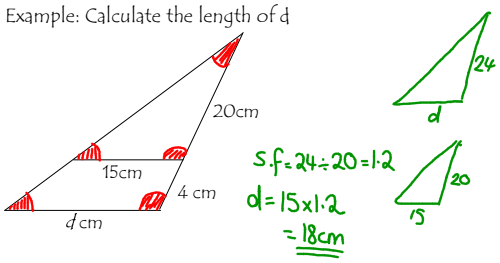
b)



Similar Shapes

Sometimes similar shapes can be within the same shape.

Example: Calculate the length of d



S.f = 24 ÷ 20 = 1·2

d = 15 x 1·2

= 18cm

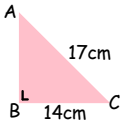
Today we will be continuing to learn about scale factor.

Daily Practice 19.8.15

Q1. Round 89.778 to (i) 1 decimal place (ii) to 2 s.f.

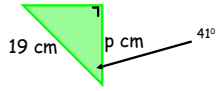
Q2. Solve the equation 3(x + 2) - 4(x - 5) = 15

Q3. Find the length of AB



Q4. $3\frac{4}{5} \div \frac{2}{3}$

Q5.Find the length of p



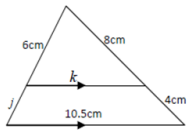
Similar Shapes

Enlargement S.F= A dimension of the larger shape ÷ the same dimension of the smaller shape.

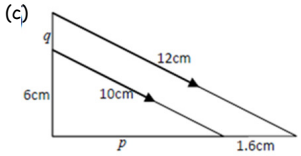
Reduction S.F = A dimension of the smaller shape ÷ the same dimension of the larger shape.

3. By drawing both triangles separately, work out the missing lengths in these diagrams.

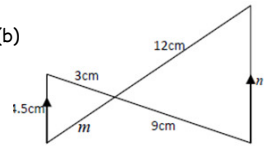
a)



(c)



(b)



Worksheet

L.I: Today we will be learning about area scale factor.

Daily Practice 21.8.15

Q1. Multiply out and simplify 7(2x - 3) + 2(x + 1) - 5x

14x - 21 + 2x + 2 - 5x
11x - 19

Q2. Solve the equation 0.5x + 3 = 24

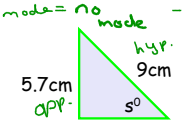
−3 −3
÷0.5 ÷0.5
x = 42

Q3. Calculate the mean, median & mode of 3, 2, -1, 5, 6

mean = 13/5 = 3 mode = no mode median = 3

-1, 2, 3, 5, 6

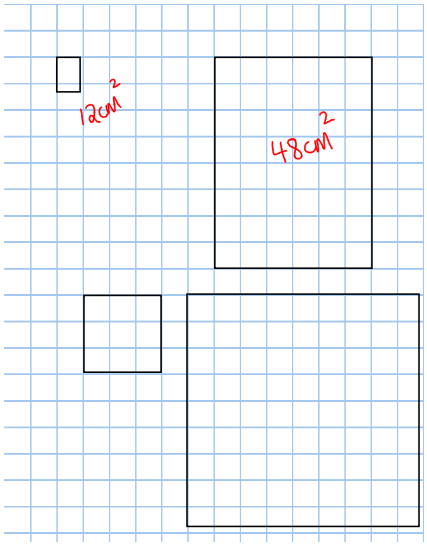
Q4. Find the value of s

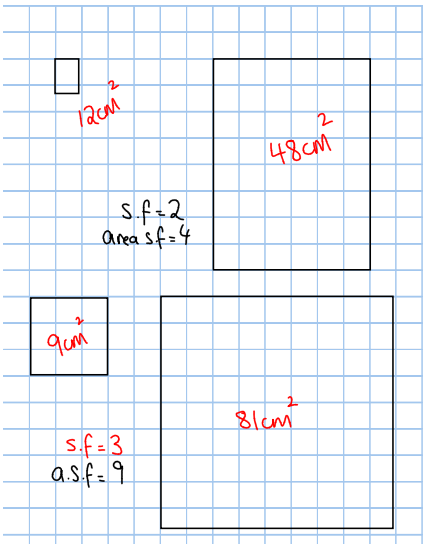


sin s° = o/h
sin s° = 5.7/9
sin⁻¹(5.7/9) = s
s = 39.3°

Q5. $2\frac{4}{7} - \frac{1}{2}$

$x^2\ \frac{18}{7} - \frac{1}{2}\ y^7 = \frac{36}{14} - \frac{7}{14} = \frac{29}{14} = 2\frac{1}{14}$





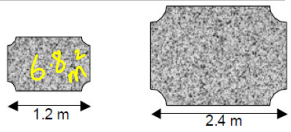
Area Scale Factor 21.8.15

Area scale Factor = (Length scale factor)²

Area Scale Factor

1. Two kitchen worktops are similar in shape.
The area of the smaller worktop is 6.8 m^2.

Calculate the area of the larger worktop.



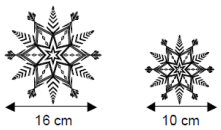
S.f = 2.4 ÷ 1.2 = 2

Area s.f = $2^2 = 4$

$6.8 \times 4 = 27.2 m^2$

2.
Two Christmas decorations are mathematically similar in shape.
The larger decoration has an area of 128 cm^2.

Calculate the area of the smaller decoration.



S.f = 16 ÷ 10 = 1.6

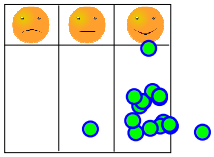
Area s.f. = $1.6^2 = 2.56$

$128 \div 2.56 = 50 cm^2$

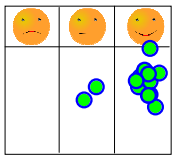
Page 54,55 Even numbers

Success?

I can find the scale factor and hence missing dimensions of similar shapes.



I can calculate the area scale factor and use it to find the area of the enlarged/reduced shape.



Daily Practice **24.8.15**

Q1. Write the formula hy + k = 2x in terms of y

$hy = 2x - k$ (−k, −k)

$y = \frac{2x - k}{h}$ (÷h, ÷h)

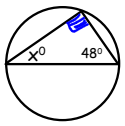
Q2. Solve the equation 3x - 4 = 2(x - 7)

$3x - 4 = 2x - 14$

$3x = 2x - 10$

$x = -10$

Q3. State the size of the angle x



$180° - (90° + 48°)$

$180° - 138° = 42°$

Q4. 567.22 x 400 = 56722 x 4 = 226888

Q5. $2\frac{1}{3} \div \frac{3}{4}$

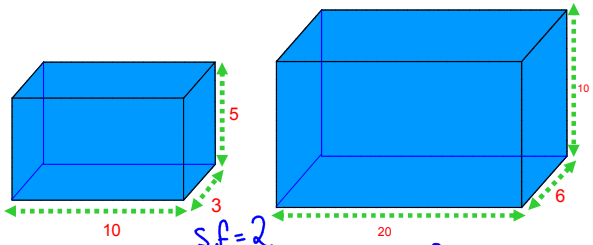
$\frac{7}{3} \div \frac{3}{4} = \frac{7}{3} \times \frac{4}{3} = \frac{28}{9} = 3\frac{1}{9}$

Today we will be learning how to calculate volume scale factor.

Homework Online - Due Monday 31.8.15

Volume Scale Factor

Volume scale Factor = (Length scale factor)^3



S.f = 2

$V = 150 cm^3$

$\times 8$

$V = 1200 cm^3$

S.f = 3

$V = 1000 cm^3$

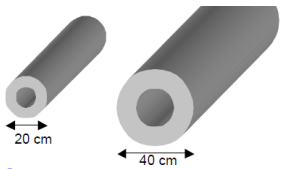
$\times 27$

$V = 27000 cm^3$

Volume Scale Factor

Two metal pipes are similar in shape.
The smaller pipe has a volume of 8000 cm^3.

Find the volume of the larger pipe.



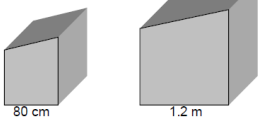
S.f. = 40 ÷ 20 = 2

V.s.f. = 2^3

$8000 \times 2^3 = 64000 cm^3$

Two storage bins are similar in shape.
The larger bin has a volume of 1.8 m^3.

Calculate the volume of the smaller bin.

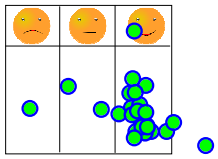


S.f. = 1.2 ÷ 0.8 = 1.5

V.s.f. = 1.5^3

$1.8 \div 1.5^3 = 0.5\dot{3} m^3$

I can find the volume scale factor
and use it to work out missing volume
in similar shapes.



Daily Practice 25.8.2015

20 Questions Mental Maths

Today we will be completing a check-up on similar shapes.

Homework Online - Due Monday 31.8.15

Topics to revise for test Unit 2 Level 4:

- Changing the subject of a formula.
- Right-Angled Trigonometry including bearings.
- Angles in triangles & Circles.
- Straight Line (Sketching, stating the equation).
- Similar Shapes.

Homework due 31.8.15