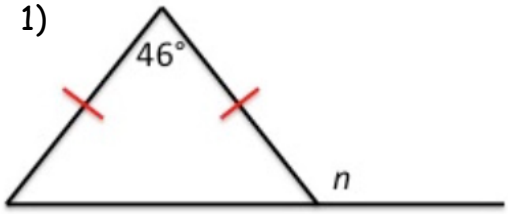
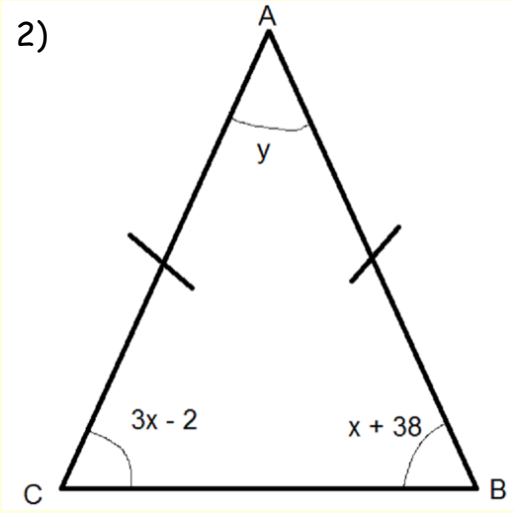
Starter

Draw the following diagrams and find the missing angles.

1)



2)



Properties of Circles

Today we are learning...

The three properties of circles.

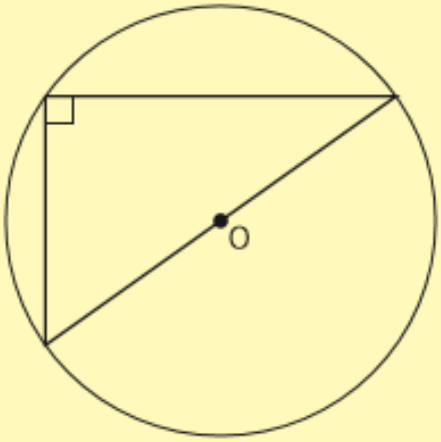
I will know if I have been successful if...

I can recognise and identify the three angle properties of circles.

I can solve problems by choosing the appropriate properties.

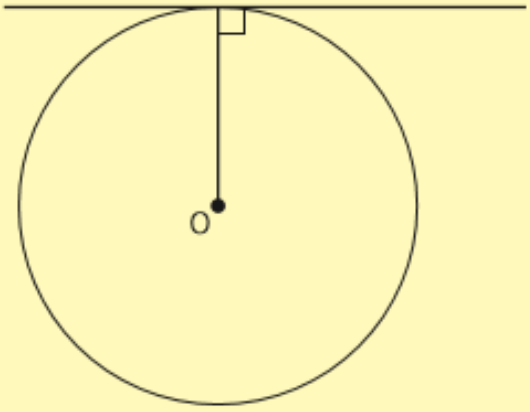
I can solve a range of past paper questions, showing all my working.

Property 1



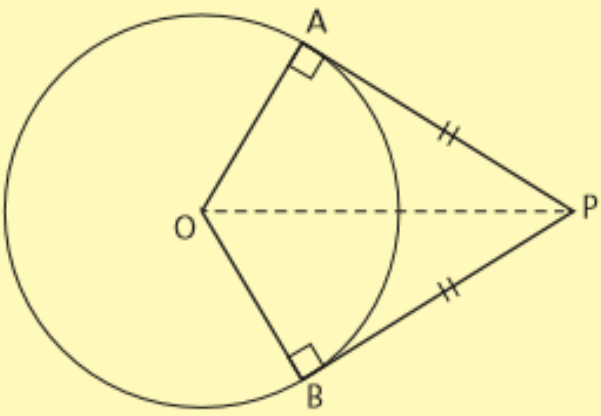
The angle in a semi-circle is a right angle.

Property 2



A tangent is perpendicular to the radius at the point of contact.

Property 3



Tangents drawn to a circle from the same point are equal in length. Quadrilateral OAPB is called a tangent kite.

Page 38 & 40

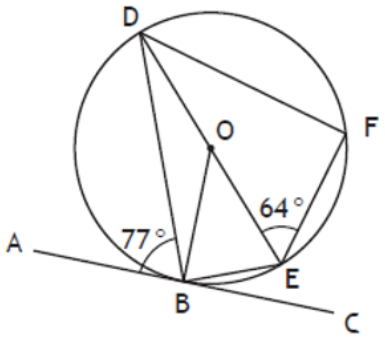
Don't do Page 39

Draw a small sketch of each diagram into your jotter.

Exam Question 1

2015 N5 Past Paper P1, Q3

1.



AC is a tangent to the circle, centre O, with point of contact B.

DE is a diameter of the circle and F is a point on the circumference.

Angle ABD is 77° and angle DEF is 64°.

Calculate the size of angle BDF. (3 marks)

Question 1 - Mark Scheme

Question	Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
3.	**Ans: 39°** •1 calculate the size of angle OBD •2 calculate the size of angle EDF •3 calculate the size of angle BDF	3	•1 angle OBD = 13° •2 angle EDF = 26° •3 angle BDF = 39°

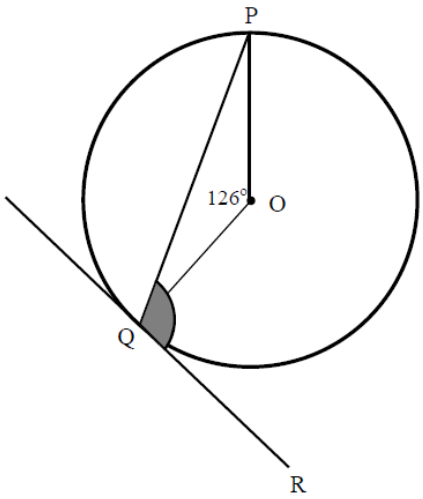
Notes:

1. The first two marks may be awarded for information marked on the diagram
2. An answer of 39° must be stated outwith the diagram for the third mark to be awarded
3. Third mark is only available where angle ODB = angle OBD
4. For an answer of 39° with no relevant working award 0/3

Exam Question 2

11. P and Q are points on the circumference of this circle with centre O.
PR is a tangent to the circle and angle AOB = 126°.

Calculate the size of angle PQR, the shaded area in the diagram. **2**



Question 2 - Mark Scheme

11	**ans : 117° 2 marks** •1 recognises isosceles triangle •2 recognises right angle	•1 ∠ ABO = 27° •2 ∠ABC = 90 + 27 = 117°

Similar Figures

Today we are learning...

What similar figures are and how to identify them.

I will know if I have been successful if...

I understand what a similar figure is.

I can find the scale factor of the enlargement or reduction.

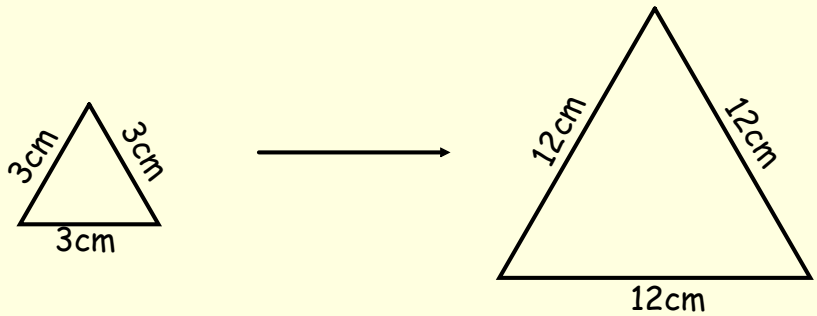
I know how to check if two figures are similar.

Similar Figures

Two shapes can be called similar if:

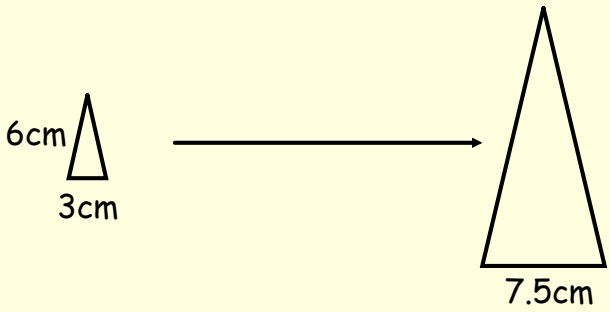
Their corresponding angles are equal.

Their corresponding sides are in the same ratio.



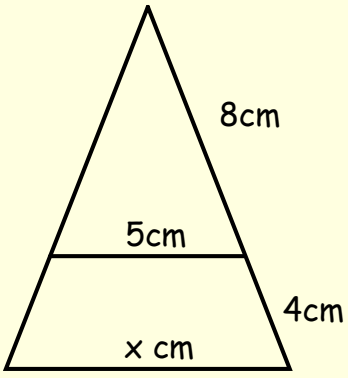
Scale Factor

$$\text{Scale Factor} = \frac{\text{new}}{\text{old}}$$



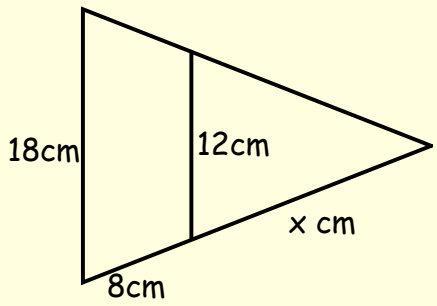
Example 1

The two triangles are similar. Find the missing length x.



Example 2

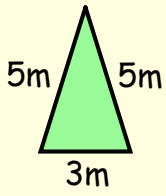
The two triangles are similar. Find the missing length x.

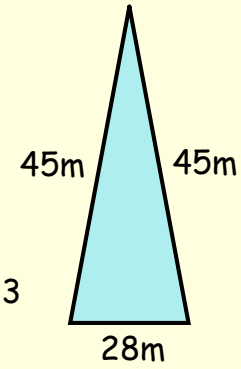


Relationships Booklet

Page 2 & 3

Starter





1) Are these triangles similar?

2) How many roots does the graph of $y = x^2 - 8x + 13$ have?

3) What is the distance between the points (2, 5) and (-8, 13)?

Surface Area and Volume Scale Factors

Today we are learning...

The relationship between area and volume scale factors.

I will know if I have been successful if...

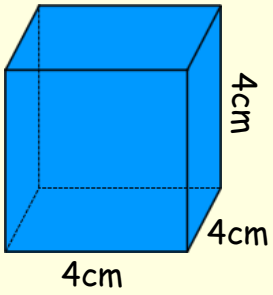
I have conducted an investigation on surface area scale factors.

I have conducted an investigation on volume scale factors.

I have shared my findings with others in the class.

Surface Area and Volume

To find the surface area of a cube or cuboid...

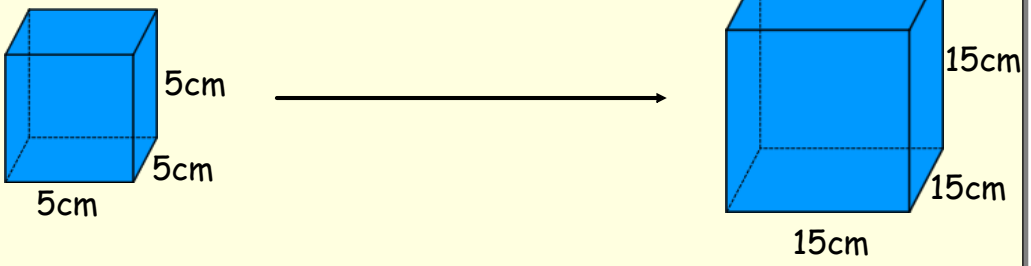


To find the volume of a cube or cuboid...

Investigation

When we enlarge a 3D object by a given scale factor, does the volume and the surface area also increase by the same scale factor?

Investigation

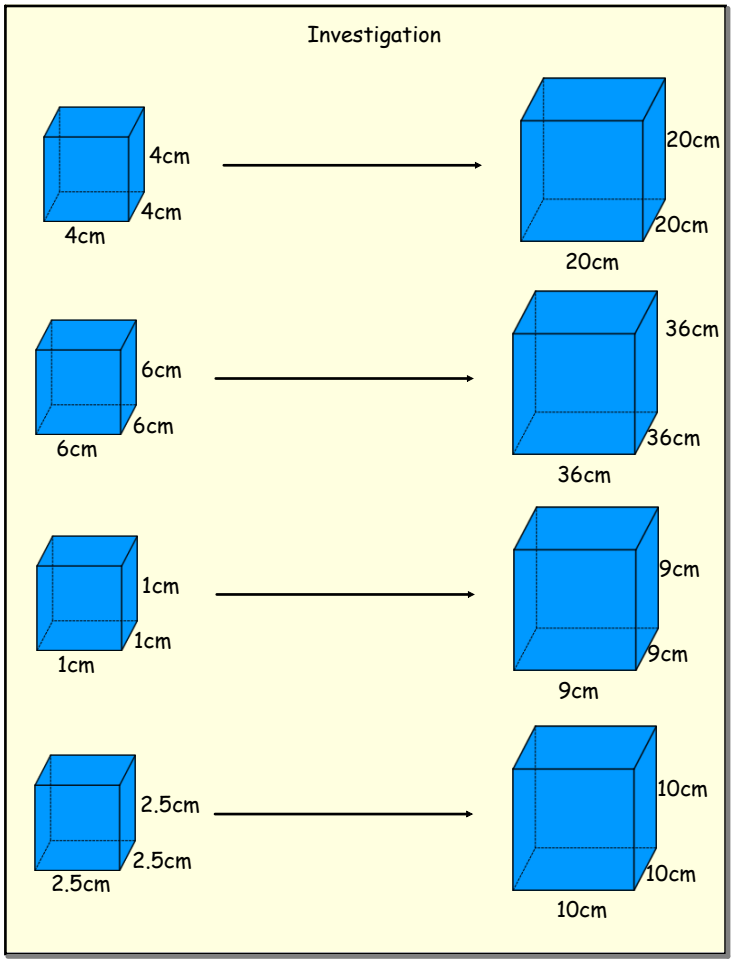


	Side Lengths	Surface Area	Volume
Small Cube			
Large Cube			
Scale Factor			

Investigation

When we enlarge a 3D object by a given scale factor, does the volume and the surface area also increase by the same scale factor?

No, but is there still a relationship?



Investigation - Conclusion

When the length scale factor = k

The area scale factor = __

The volume scale factor = __

Surface Area and Volume Scale Factors

Today we are learning...

The relationship between area and volume scale factors.

I will know if I have been successful if...

I have conducted an investigation on surface area scale factors.

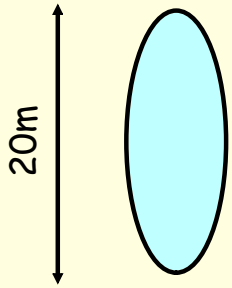
I have conducted an investigation on volume scale factors.

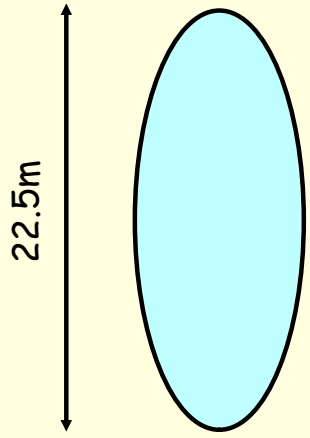
I have shared my findings with others in the class.

Surface Area and Volume Scale Factors

Example 1

A lake has a surface area of $200m^2$ it rains heavily and the dimensions of the lake increase. What is the new total surface area of the flooded lake?





Example 2

A manufacturer produces coffee. They have two sizes of jar.
How much should they charge for the second jar?

£2.49

Page 5 - Question 2 & 3

Page 7 - Question 2 & 3