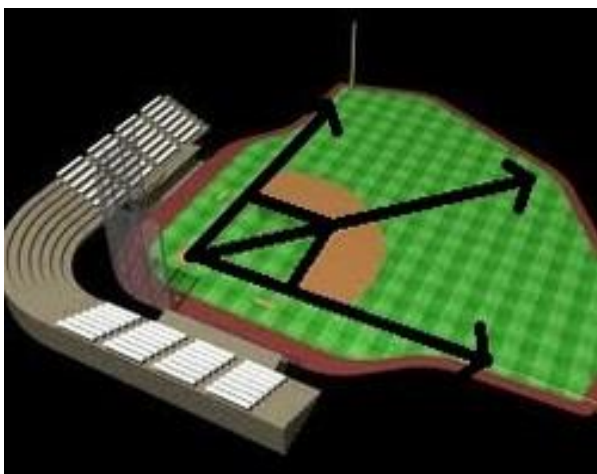
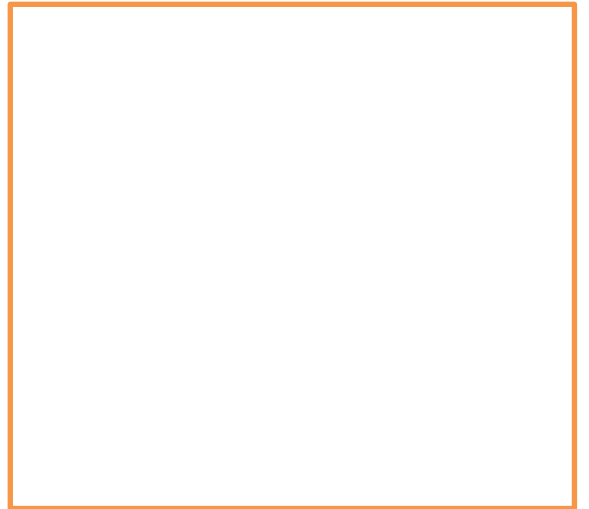


Task 1- Shape and Space: Learning the Language

With the person beside you (i) Detail any shapes that you see in each picture and (ii) Is there anything else you can detail about the pictures (e.g. Can you see parallel lines?). Write as much as you can on each image.

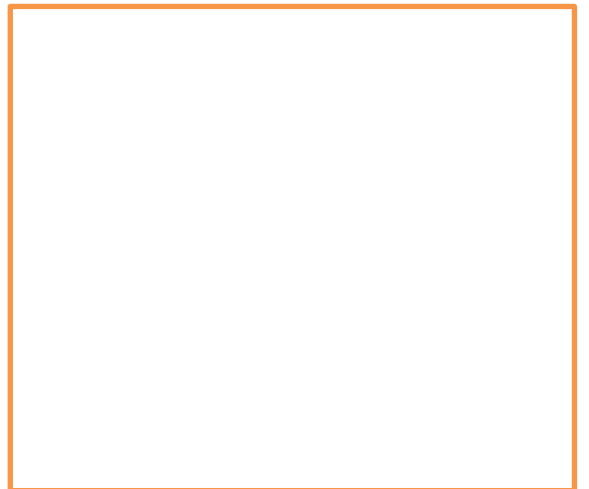




Magnesium
92 g

Aluminum
142 g

Tungsten
1015 g



Task 2 – Area of a Square/Rectangle

Task: Determine how many of the yellow squares will fit into each of the follow shapes?

1.

2.

3.

4.

Follow up questions:

Q1. What size is the yellow square? _____

Q2. What do you think this might mean in terms of the area of the shapes above?

Q3. What unit is used to measure area? Why? _____

Q4. Can you think of a way to write the formula for the area of a square/rectangle? _____

Q5. Is there a quicker way to determine the area rather than using the yellow square? _____

Task 3 – Area of a Triangle

1. Can you find the area of the below shape? What shape is it?



2. Can you imagine cutting the below shape up and rearranging it to make it look more like the shape in number 1 above? Now can you work out the area of the shape in number 2?



3. Can you use your ruler to divide up the shape in number 3 to make it look like 2 other identical shapes? What shapes are these? How might you work out the area of these individual shapes?



Q. Can you now detail what the formula for the area of a triangle is? _____

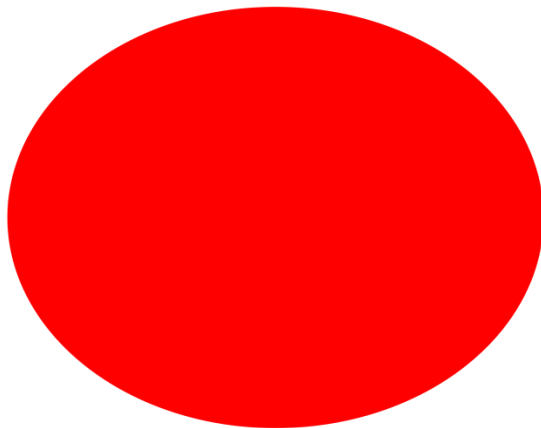
Task 4- Circumference of a Circle

1. What did we need to know in order to determine the area of the square, rectangle and triangle?

2. What do you think we might need to know about a circle to find its area? Use terms we have come across earlier in the module.

3. Use the string to determine the circumference of the blue circle and the length of the diameter.
 - a. How do the 2 lengths compare to each other?
 - b. Which length is longer? By how much?

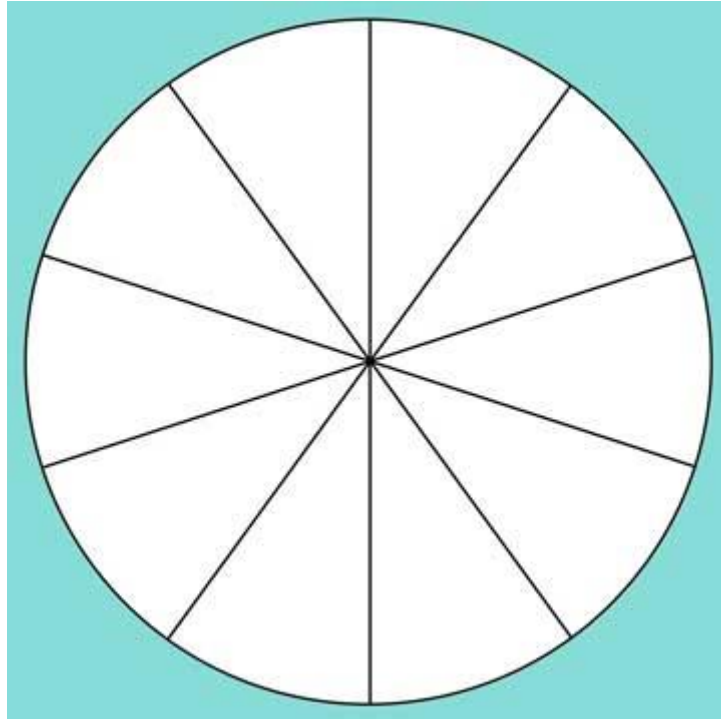
Measure the length of the circumference and the diameter of the red circle. Does the relationship between the circumference length and diameter length remain the same as it was for the blue circle?



Q. What do you think is the relationship between the diameter and circumference of a circle?

Task 5 – Area of a Circle

Cut the circle below up into the segments outlined and see can you arrange the segments into a different shape that you are more familiar with in terms of working out the area.



What do you think the length and width of this shape might be if we rearranged the circle into the shape that we are familiar with working out the area of?

Length:

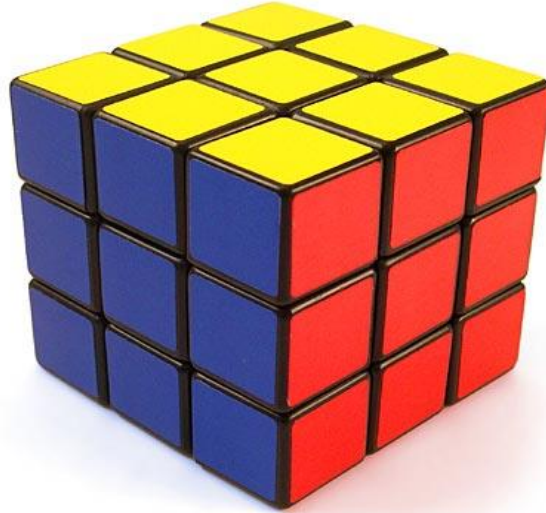
Width:

Formula for the area of a circle =

Task 6 – Introduction to Volume Formulae and Volume of a Cone

Q. How many cubes are in the rubix cube below? _____

Q. How could we work out this volume without counting up all of the cubes? _____



Therefore Volume formula =

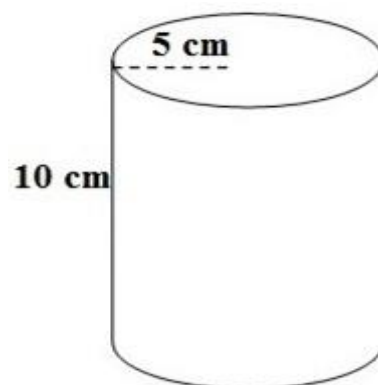
Therefore Volume formula = Area x _____

Task:

Using this information can you determine:

1. What the formula would be for a cylinder such as the one below:

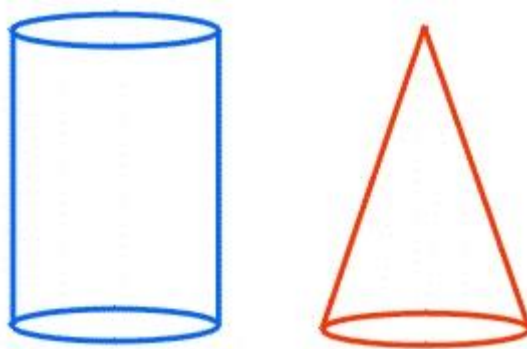
2. The actual volume of the cylinder:



Task 7 – Volume of a Cone

Q. If a cone and a cylinder have the same size base and height (like the images below) :

- What do you think they will have in common? _____
- What do you think will be different about them? _____
- Which do you think will have a larger volume? _____



Thinking task:

Can you think of any way that we could compare the volume of a cone and a cylinder with the same height and radius?



Any Ideas??

Note: *Volume of Cylinder = $\pi r^2 h$ and Volume of Cone Formula = $1/3(\pi r^2 h)$*

Task 8 - Scaled Drawings

Task: Find a picture of interest to you and sketch it using the graph paper using a 1:10 scale.

