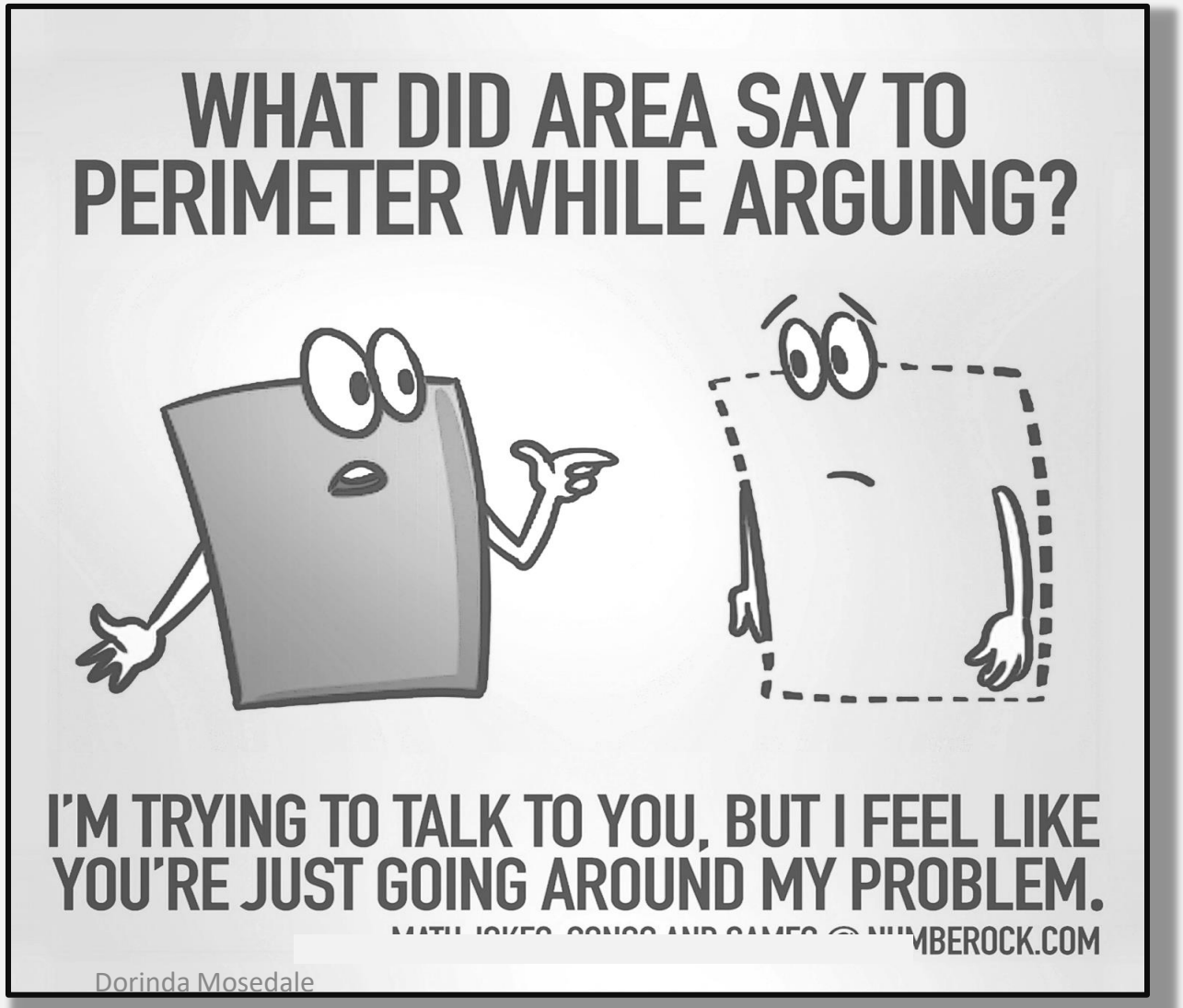
Areas & Perimeters

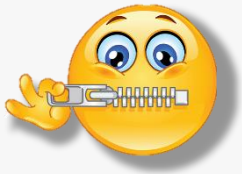


Dorinda Mosedale

Webinar Rules and Regs

Rules and Regs

1 Switch off mobile phones



2 Have patience - wait for others when carrying out exercises

3 Support others – by waiting to answer questions – not everyone is as quick or able to answers questions

4 If you need to leave let the tutor know – it is common courtesy

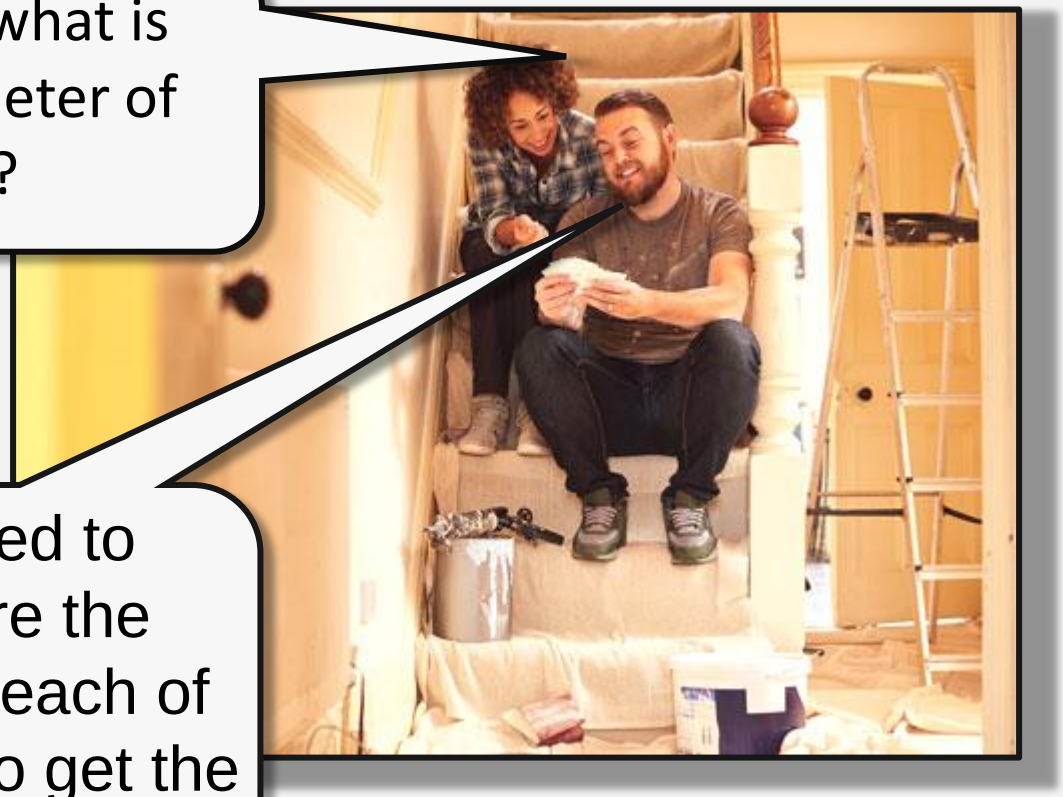
Session Objectives

By the end of this session, you will be able to:

1. Explain what perimeters are.
2. Explain how to find the perimeter.
3. Explain what areas are.
4. Explain how to find the area.
5. Explain what area and circumferences of a circle are.
6. Explain how to find the area and circumference of circle
7. Exam challenge – practice exam questions

What are Perimeters?

Jack and Sue need to measure the **perimeter** of the room. They take a tape-measure and measure the **length of each** wall. They then add them together to get the perimeter



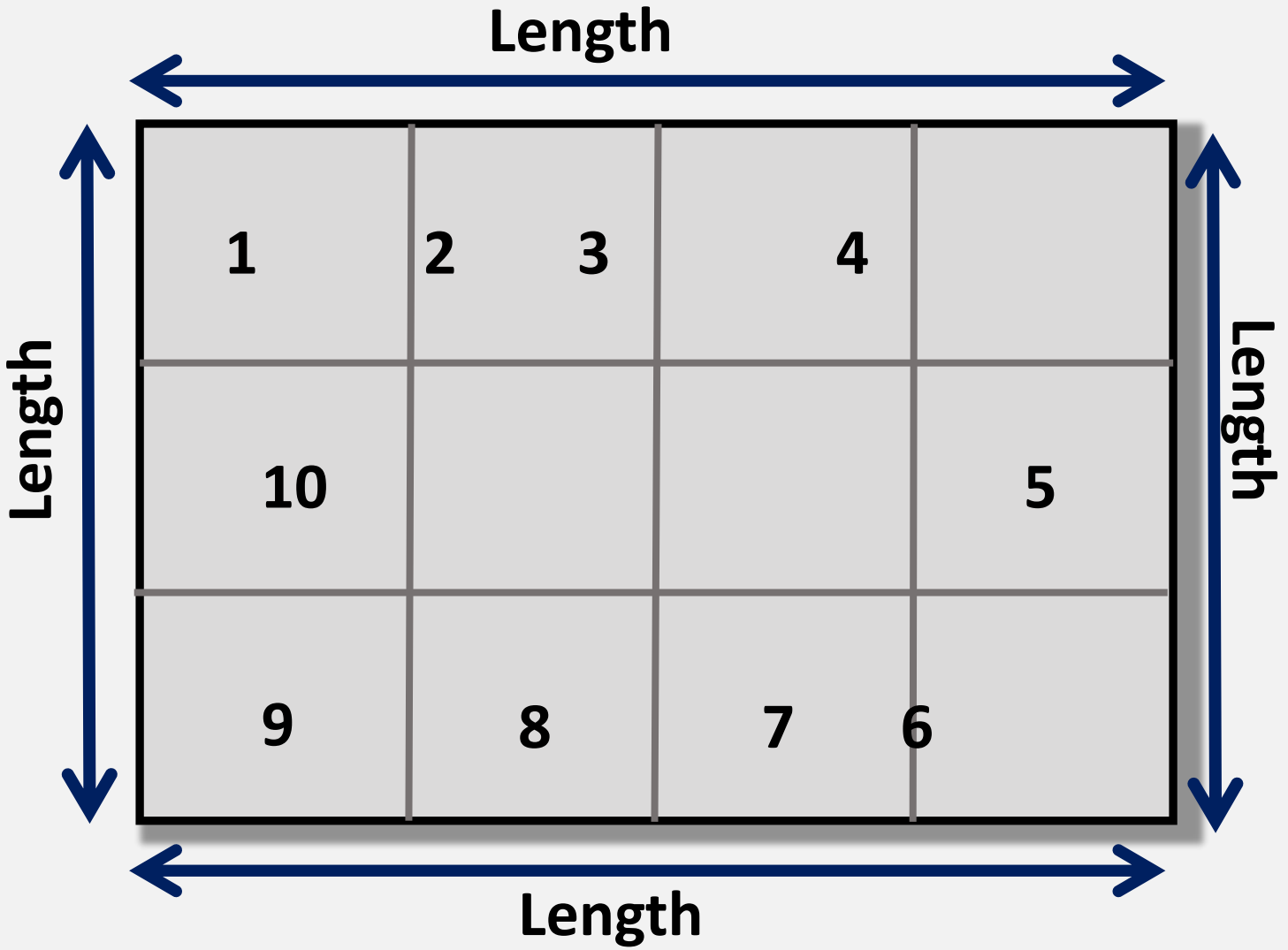
Finding the Perimeter

(Explain 1)
Look at the diagram and have a quick guess as to how you might find the perimeter

What is the Perimeter?

The perimeter is the outside edge of a shape. That is the length of each side of a shape added together.

Perimeter = 10



Finding the Perimeter

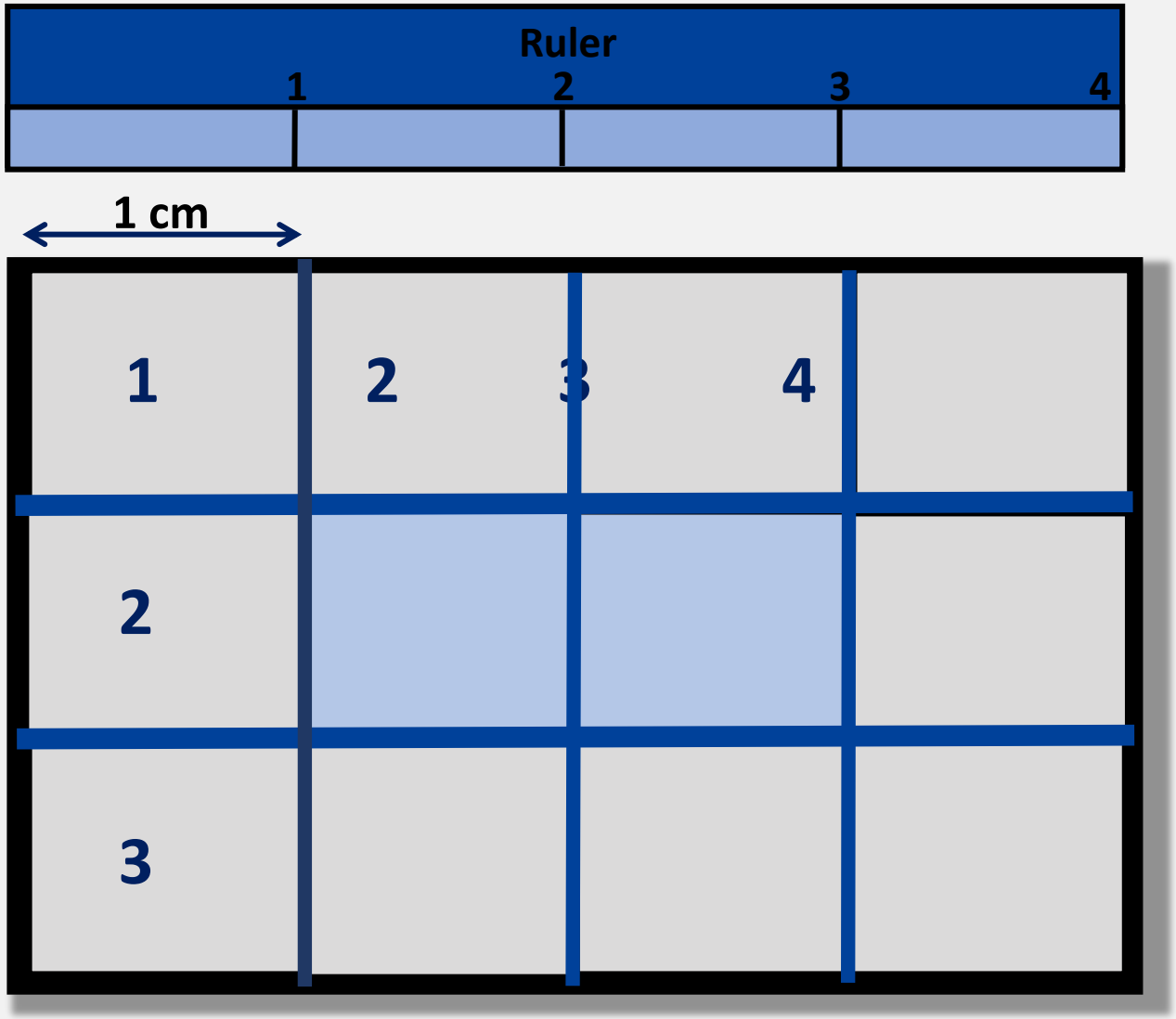
(Explain 2)
Notice how by adding the length of each side together helps you find the perimeter Can you see that from the diagram?

What is the Perimeter?

1 **Measure** each side of your shape.
2 **Add** those lengths together to form a total.

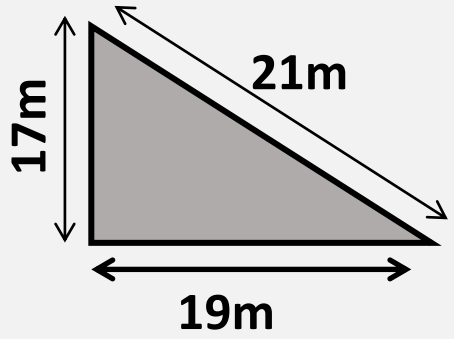
Perimeter is:

4 +4 + 3+ 3 = 12



Finding the Perimeter

Practice



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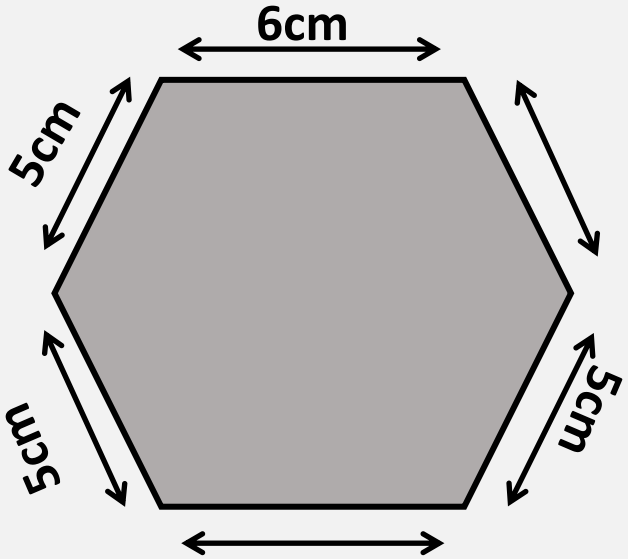

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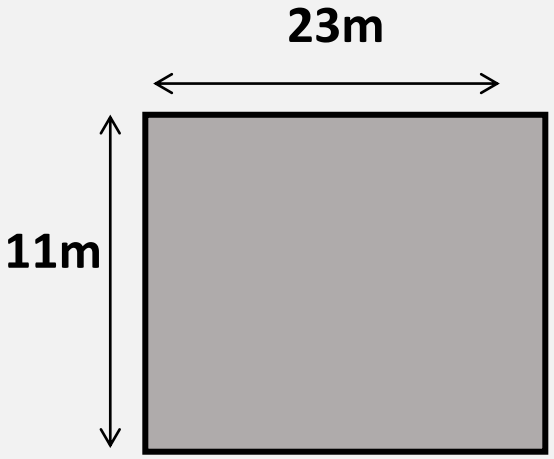

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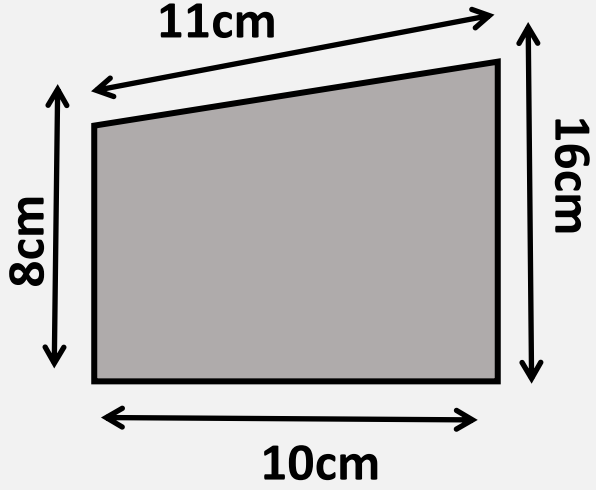

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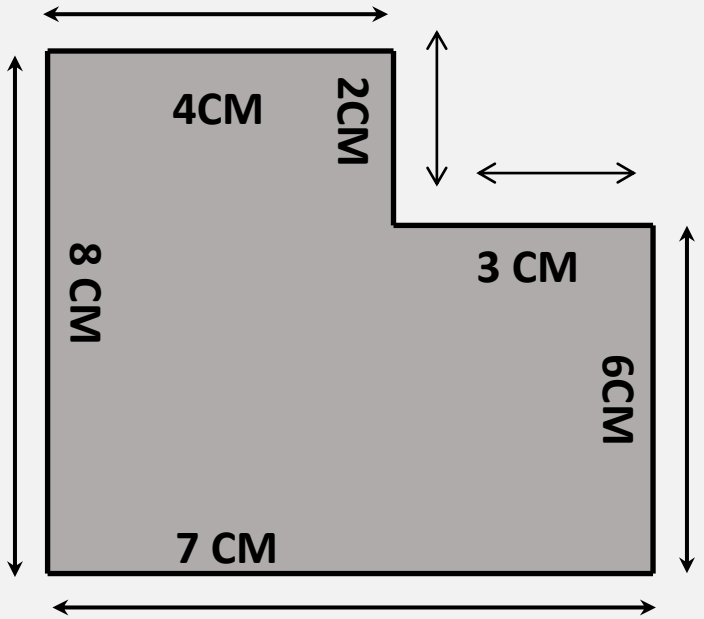
(Explain 2)
Now the difficult bit. Have a go at these perimeters. Some are a little harder than others.

Finding the Perimeter

(Explain 2)
What you see here is an L-shape or "composite shape" again simply add together all of the sides to get the perimeter..

Perimeters of L-Shapes

Simply **add up the length** of each side together



Perimeter is

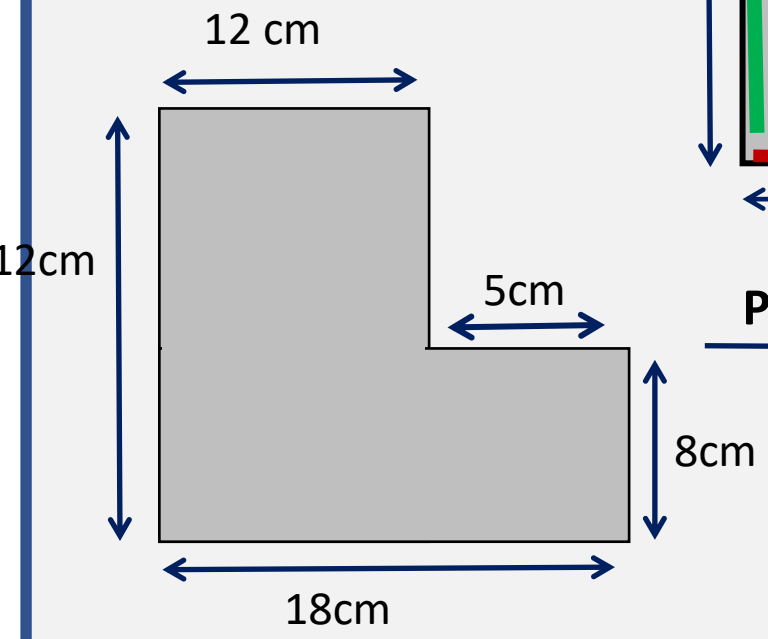
4 + 2 + 3 + 6 + 7+ 8 = 30

Finding the Perimeter

L-shaped shapes Practice

(Explain 2)
Here are some more composite shapes. Notice how they get harder to do because they have some measurements missing – how will you find those missing measurements?

Easy



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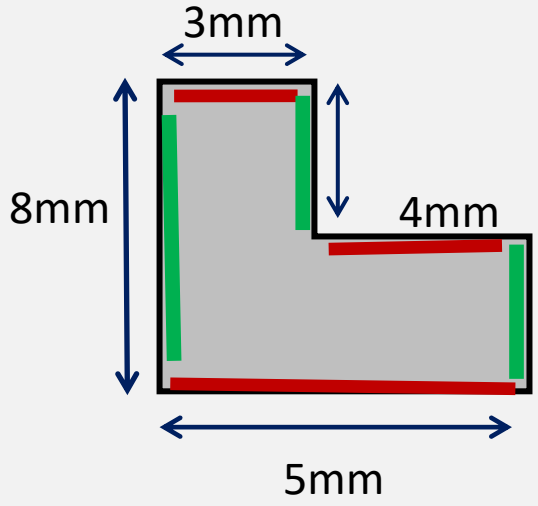
Medium



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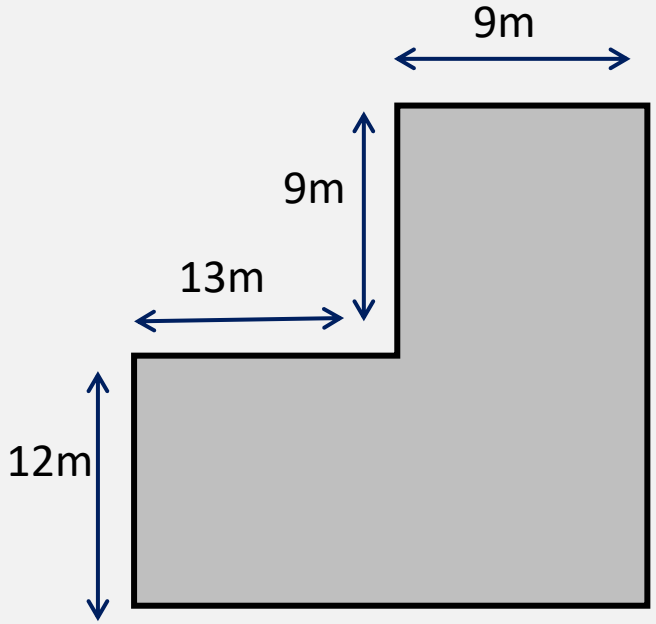
Hard



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Pause for Thought

So – Let's Stop and think for a moment.

On the thumbs up scale – do you:

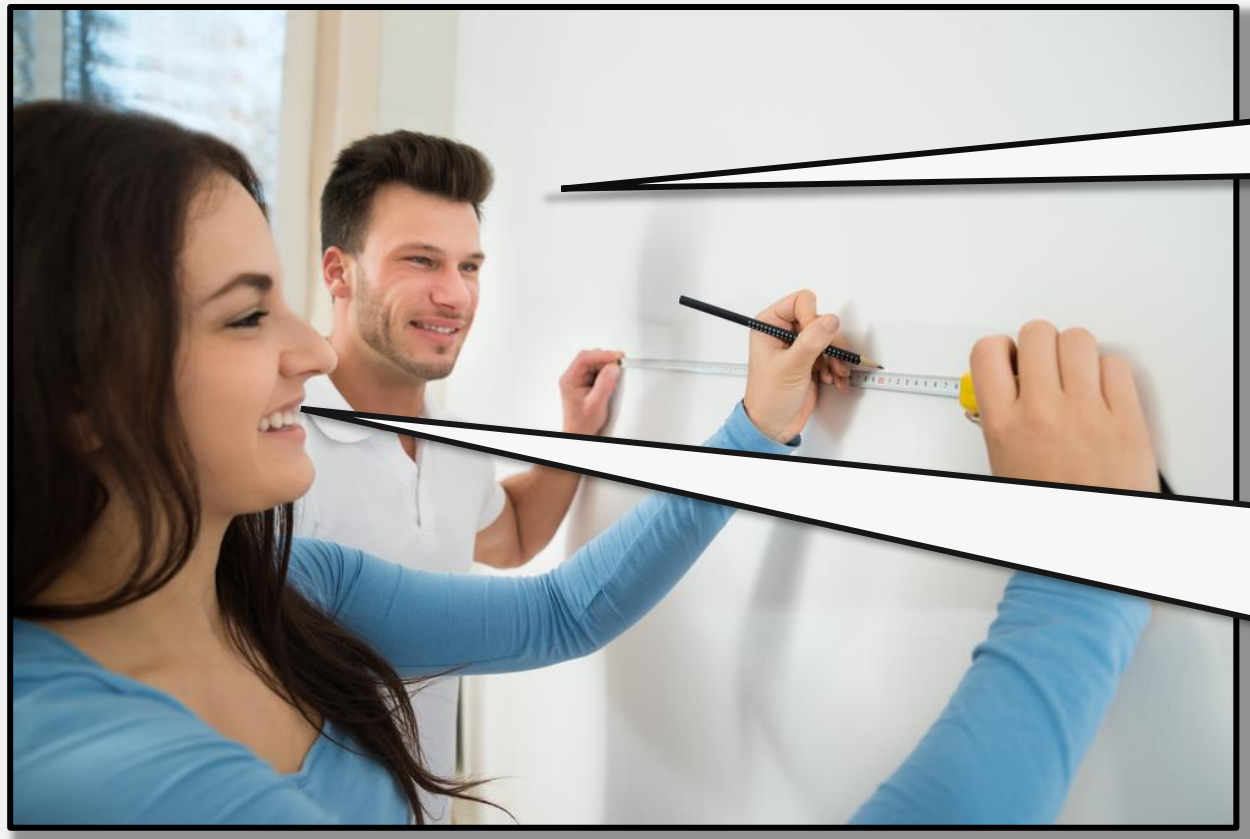
- Explain how to find the length of a side?
- Explain how by adding up the side lengths of a shape allows you to find the perimeter of a shape.
- You can obtain the measurements of missing side lengths.

OK!

Great!

Brilliant!

Finding the Area



Are you sure you know what you are doing?

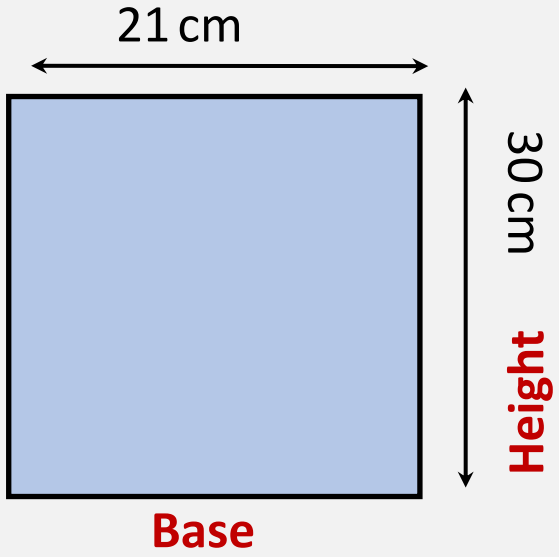
Yes. We need to find the area. To do that we need to measure the length of the wall and then measure the height. We then need to multiply the length by the height to get the area.

Finding the Area

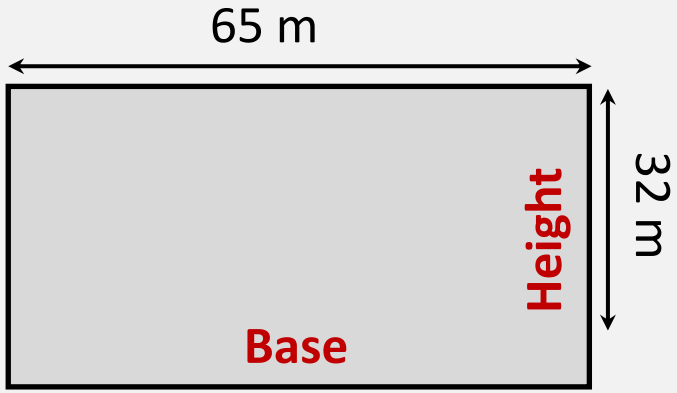
Area of Quadrilateral shapes

Area of quadrilateral shapes

Base x Height (B x H)



Area = 30cm × 21cm
= 630cm²



Area = 65m × 32m
= 2080 m²

(Explain 3)

By multiplying the side length of the base by the side length of the height you can obtain the area. Formula = **(Base x Height) (B x H)**

Finding the Area

Four-sided Shapes - Practice

Easy

A=

Harder

A=

Easy

A=

Harder

A=

(Explain 4)

So imagine you are an interior decorator and have a go at finding the areas of these shapes

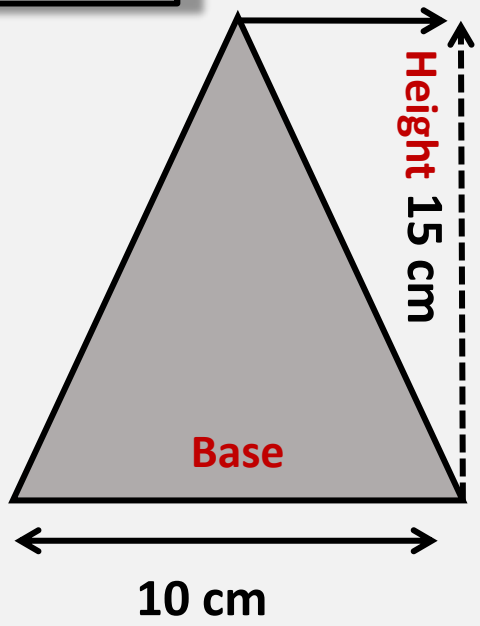
Finding the Area

Area of a Triangular Shape

The area of a triangle is: Base x Height divided by 2 as a triangle is half a four-sided shape.

Area of a triangle:

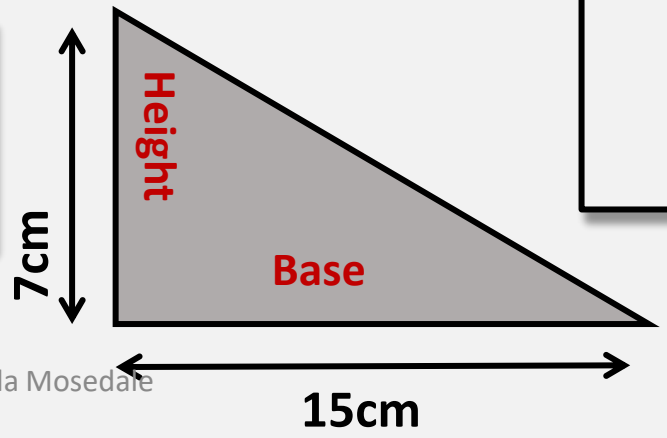
$$\frac{\text{Base x Height}}{2} \quad \frac{(BXH)}{2}$$



Area = 10cm x 15cm

$= \frac{150cm^2}{2}$

$= 75cm^2$



Area = 15cm x 7cm

$= \frac{105cm^2}{2}$

$= 52.5cm^2$

(Explain 4)

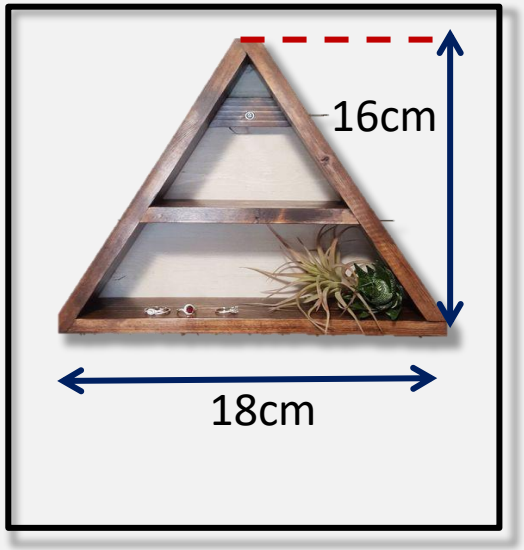
A triangle is half a quadrilateral. Therefore the formular for finding the area of a triangle is

(Base x Height)/2

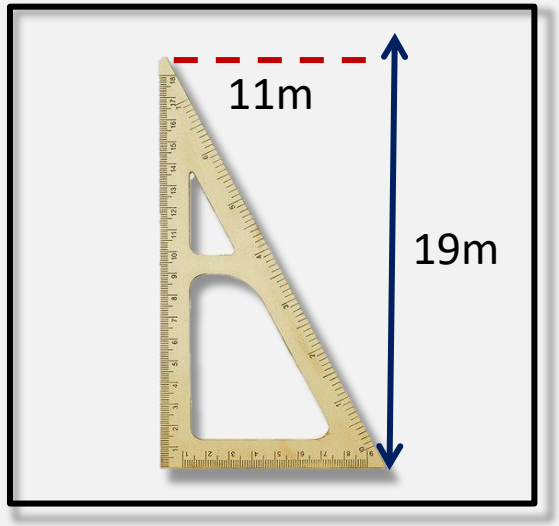
Or $\frac{(B \times H)}{2}$

Finding the Area

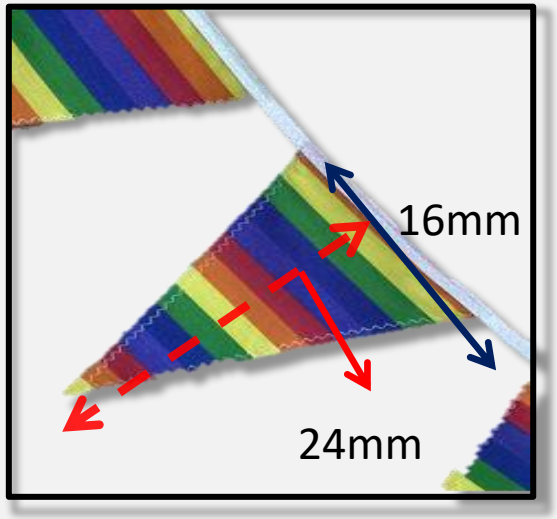
Triangular shapes - Practice



A= _____



A= _____



A= _____

(Explain 4)

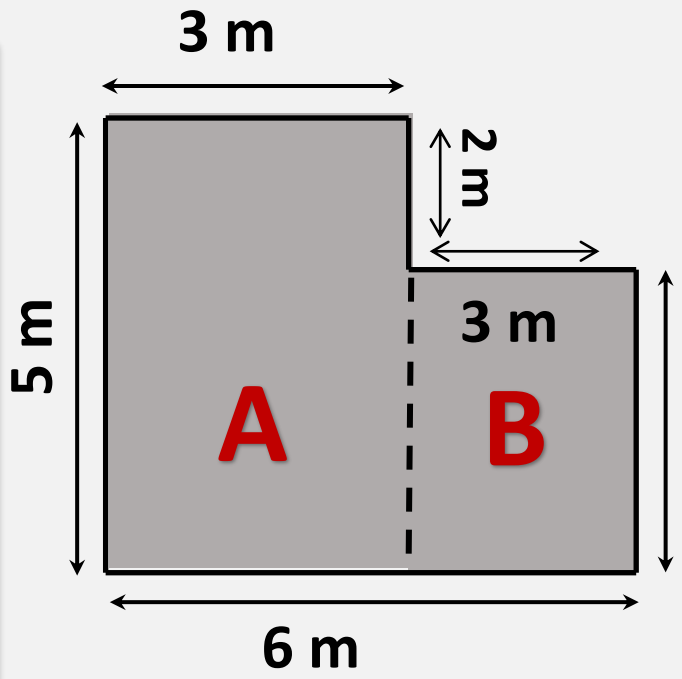
Harder finding of triangular shapes when viewed as real-life objects. Can you name the objects

Finding the Area

L-Shaped (composite) shapes

Finding the area of a L-Shape is as follows:

1 - Separate the shape into 2 rectangles.
2 - Mark them as **A** and **B.**
3 - Work out the area of **A**.
4 - Work out the area of **B.**
5 - Now **add** to the **two totals together**



Area of **A** = 5m × 3m
= 15 m^2

Area of **B** = 3m × 3m
= 9 m^2

Area = A + B
= $15m^2 + 9m^2$

= $24m^2$

Area of L-Shapes is:
Area of (A) + Area of (B)

(Explain 2)
As you can see from the diagram – it is better to separate your L-shape (composite)) into 2 rectangles Having found the area of your 2 rectangles – you then add them together. Where might you need to use this technique.

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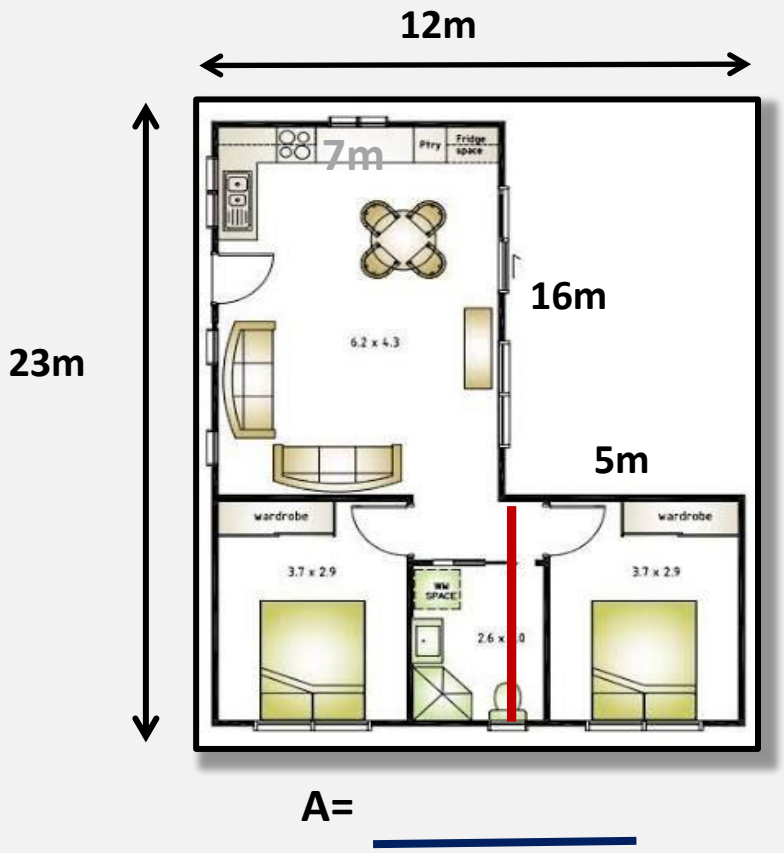
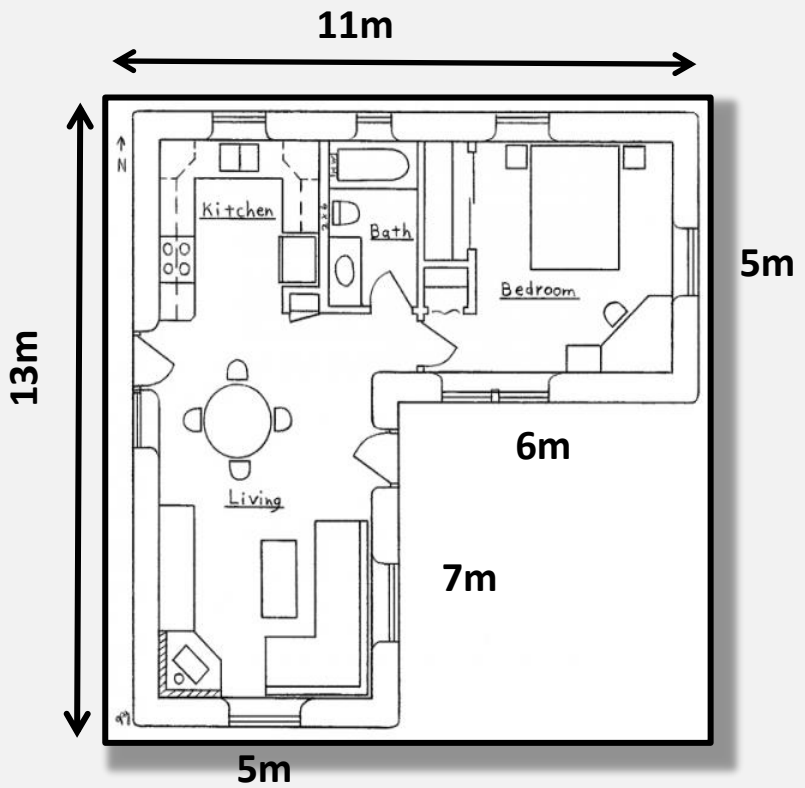
Finding the Area

L-Shaped shapes



A= _____



A= _____

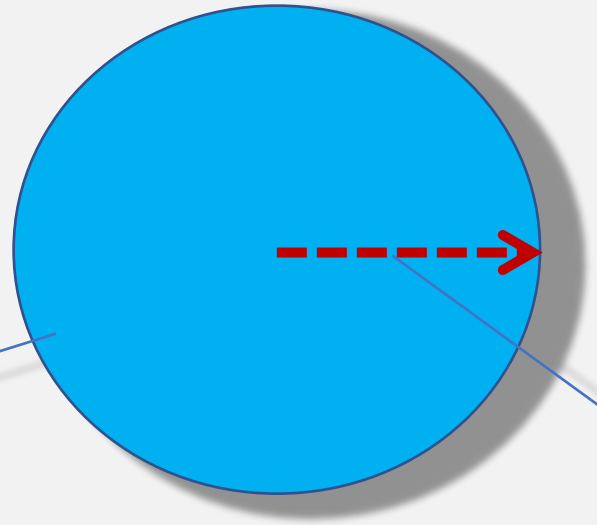
(Explain 4)

Now have a go at trying to find the area of these two composite shape. Remember to separate the composite shape into two rectangles

Finding the Area + Circumference

π = 3.14

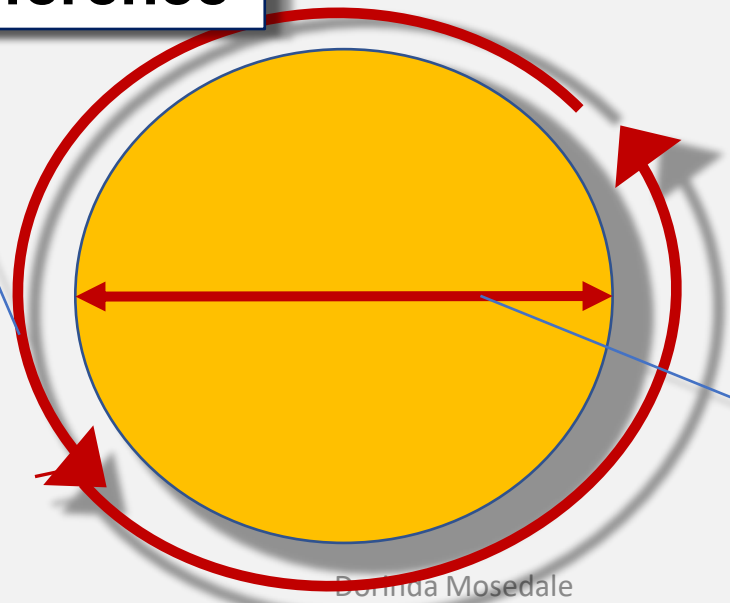
The basics of Circles



Area

Radius

Circumference



Diameter

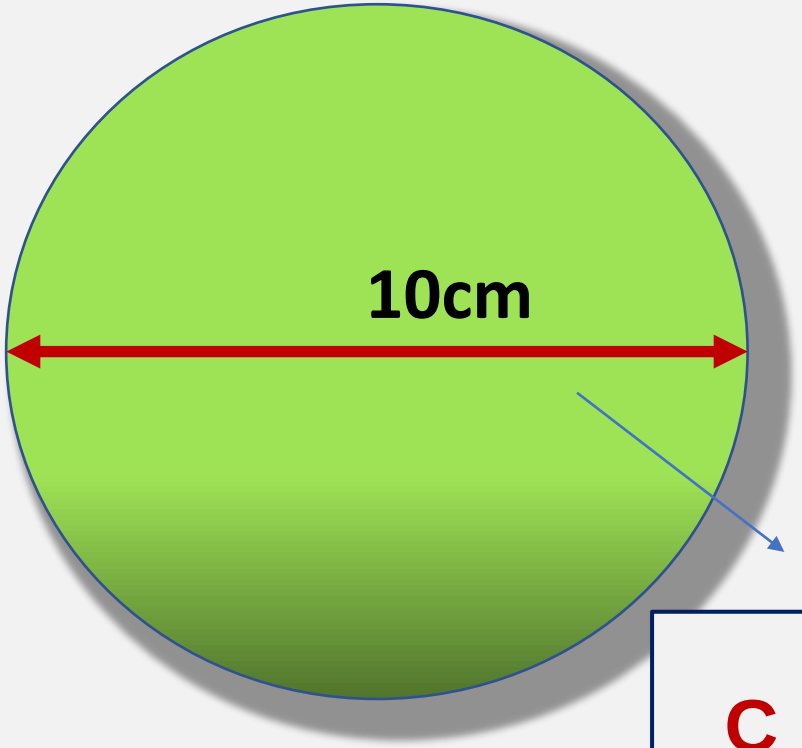
(Explain 5)

The circumference of a circle is the size of the outside edge.
The area of a circle is the size of the centre.
The line across the centre is called the **Diameter** and half the diameter is called the **Radius**

Finding the Circumference

Circumference of Circles

Pi = 3.14

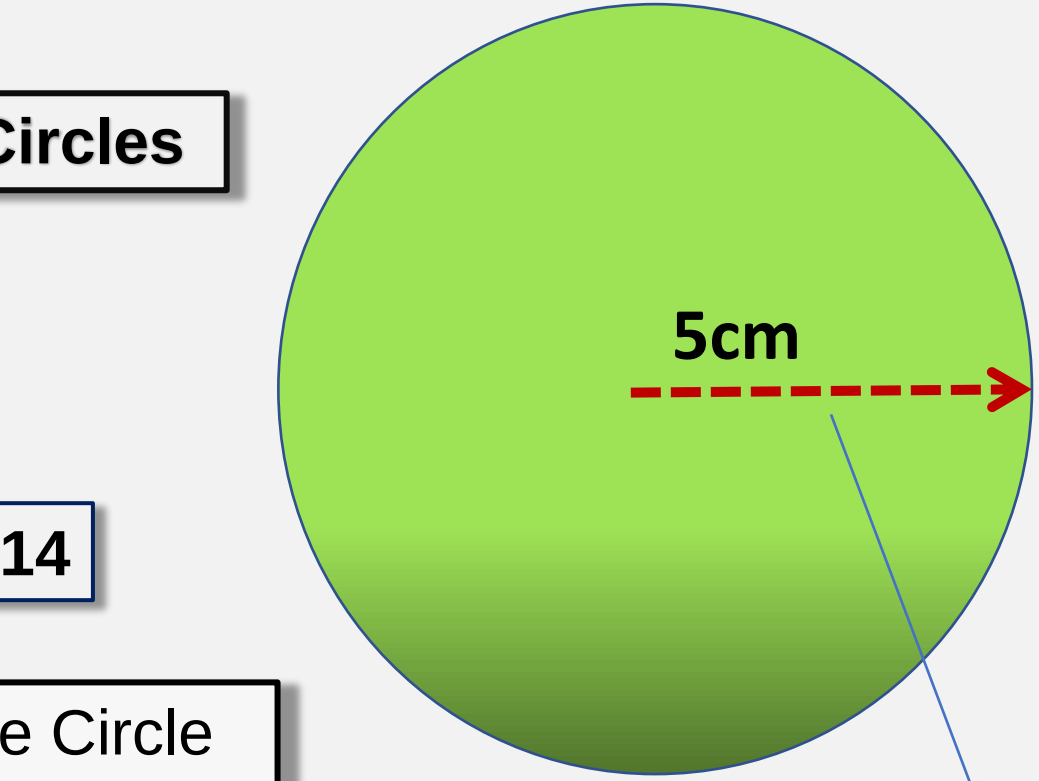


(Explain 5)
To find the length of the circumference you need to multiply Pi (TT) x Diameter
Can you think why finding the circumference might be important?.

C = π 3.14 x 10cm
= 3.14 x 10
= 31.4cm²

Finding the Area

Area of Circles



(Explain 5)

To find the area of a circle you need to multiply Pi (π) x Radius^2. Finding the area of a circle becomes important when finding the volumes of a cylinder or cone.

π **Pi = 3.14**

The area of the Circle is πr^2

Or 3.14 x radius^2

Area = π 3.14 x5cm^2

= 3.14 x 25

= **78.5cm^2**

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Finding the Area + Circumference

Practice

π = 3.14

C _____

A _____

C _____

A _____

C _____

A _____

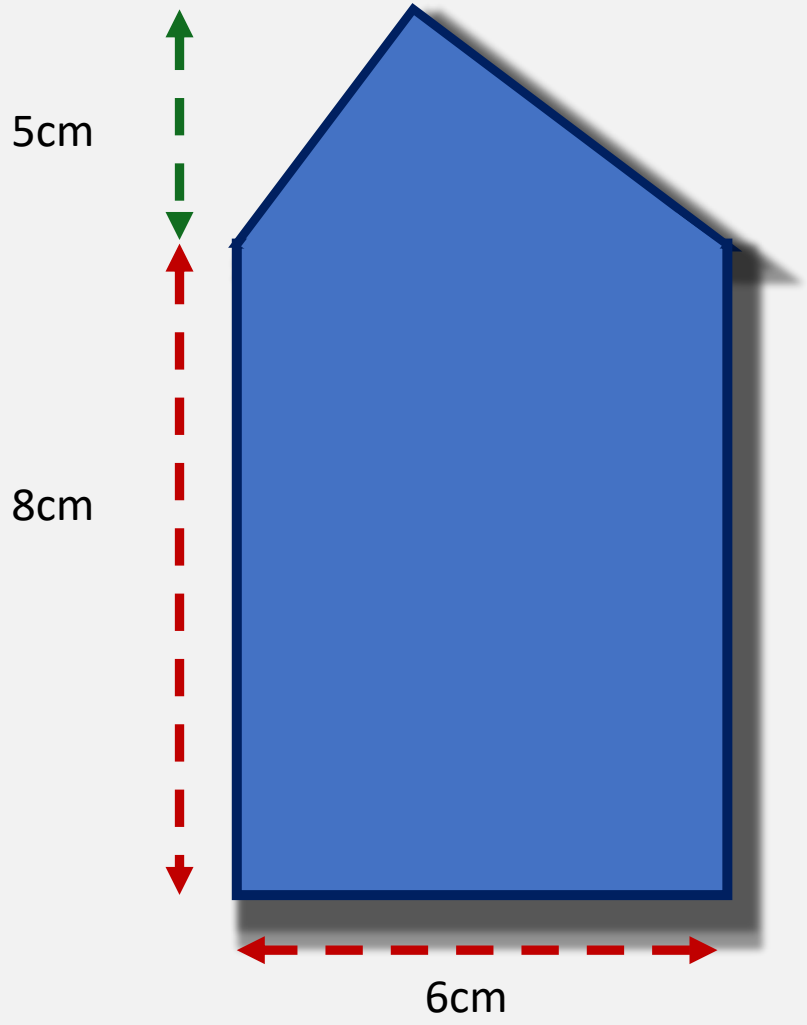
(Explain 6)

Now – find the area and perimeter of these real-life images. Ever thought you would be finding the area of a dart board?

Exam Questions - Challenge

Exam Question 1

Calculate the area of this composite shape



4 marks

Exam Challenge

So you have done the work out ..now for the challenge – can you rock this exam question

Exam Questions - Challenge

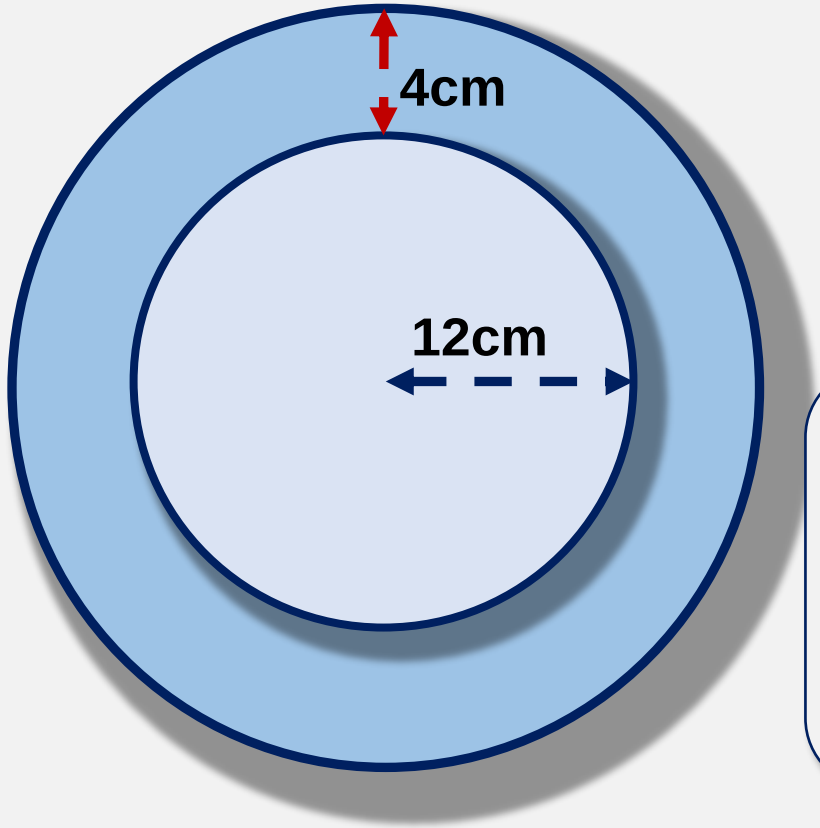
π = 3.14

Exam Question 2

Opposite is a circular photo surrounded with a circular frame

The photo has a radius of 12cm
The frame has a width of 4cm

Work out the area of the frame
This is the area shade in blue.



Exam Challenge
Ready for this bruiser**?**

4 marks

Finally – “Memory Challenge!”

Challenge 1

Are you ready?

Write down the rule for finding the perimeter

……

……

……

Challenge 2

Can you write down the formula for finding the **area** of:

Quadrilateral

Triangle and L-shape

1 ……

2 ……

3 ……

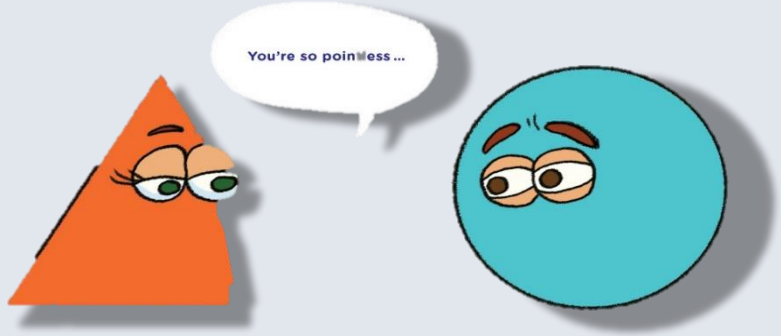
Challenge 3

Can you remember how to find the **area** and **circumference** of a circle

……

……

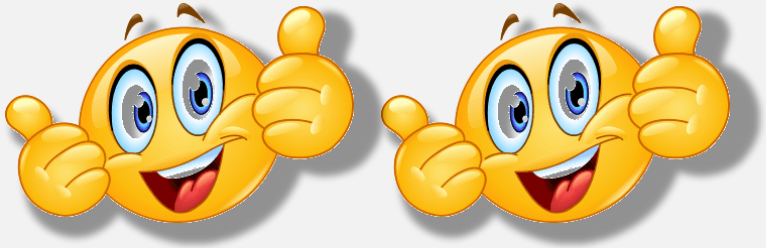
……



Feedback Form

So have we smashed Perimeters and Areas?

Not Bad



Good

Very Good