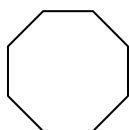


This is the **Metrounit** which will be used as the unit of measure throughout the trail. When you are asked for any length or area measurement we are asking for answers in **Metrounits**. This means that you count one diameter as length 1 and one square as area 1, using the size of **Metrounit** measure as found in the MetroCentre.

Look out for the **Metrounit** on the balustrade as you come into the Blue Mall.

Remaining on the Upper Mall, turn right and head towards Woolworths. You are moving along the Upper Blue Mall. Stop at the second octagonal balcony you come to (1)



1a. How many Octagons can you see? \_\_\_\_\_

1b. Estimate the length of one side of the smallest Octagon in the glass roof using **Metrounit** lengths \_\_\_\_\_

Carry on walking through the Upper Blue Mall towards Woolworths stopping on the balcony overlooking Exhibition Square, (2) on the map

2a. Using **Metrounits**, estimate the size of the largest rectangular glass panels on the side of the lift.

Length \_\_\_\_\_ and Width \_\_\_\_\_

2b. Using your answer in 2a calculate the area of one of the glass panels

2c. What is the total amount of glass required to cover the outside of the lift around the door?

\_\_\_\_\_

Staying in the Upper Central Mall, walk out of the Upper Blue Mall following signs to Town Square, point (3) on the map.

As you walk look out for the coloured MetroCentre logo

3. The coloured MetroCentre logo has a triangle in the bottom right hand corner. How many of these triangles would you be able to fit into the logo? \_\_\_\_\_

Staying in the Upper Mall, continue walking towards Town Square and House of Fraser.

Make your way to the balcony overlooking Town Square.


4a. Working in pairs, count the number of people coming up the escalator in 5 minutes. One can count the people while the other writes the information on the tally chart below.





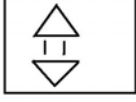
Men	
Women	
Girls	
Boys	

4b. Estimate the number of males that would use the escalator in an hour. \_\_\_\_\_

Remain in the Upper Mall and walk towards Debenhams in the Upper Red Mall

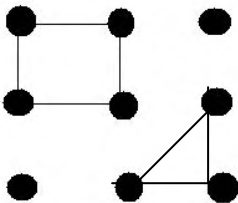


5. Find the information point  and start to fill in the table below. Do not worry if you are not able to complete the table at this point. There will be other opportunities to do this further along the trail.

	 Customer services	 Escalators	 Entrances	 Cash points	 Lifts
Number in Upper Mall					
Number in Lower Mall					
Subtract Upper from Lower					

In the Upper Red Mall, continue towards Debenhams.

On the right hand side, outside the entrance to Debenhams, , you will find three circular glass display units. Inside these display units you will see lots of dots on the back panel.



6. Assuming that four of these dots make a **Metrounit**, use these squares (and triangles) inside the glass window to estimate the area of the glass.

\_\_\_\_\_

Staying outside of Debenhams go through the doors on the right hand side to the picture on the wall, made of ceramic tiles.

7a. In the picture, find the clock in the tower. What time is it showing? \_\_\_\_\_

7b. How many fish can you find in the picture? \_\_\_\_\_

Go back to Debenhams entrance and go downstairs here or if you need to use the lift walk along to point (8)



8. Find the information point and continue to fill in the table started in question 5. Do not worry if you are not able to complete the table at this point as further along the trail there will be opportunities to do this.

Carry on walking along the Lower Red Mall until you get to Town Square and Houser of Fraser.

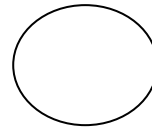
9a. Look around you. What shapes can you see?  
Draw a circle around each of the shapes below as you find them.



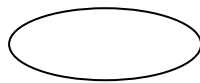
Square



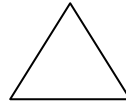
Rectangle



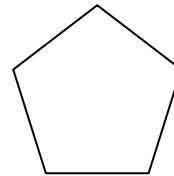
Circle



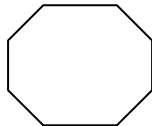
Oval



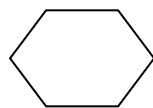
Triangle



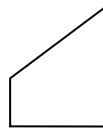
Pentagon



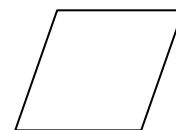
Octagon



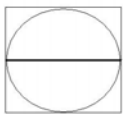
Hexagon



Trapezium



Parallelogram



Metrounit

From Town Square walk towards Marks & Spencer in the Lower Green Mall.

10. There are several bridges on the way to Marks & Spencer. Stop underneath one of the bridges, look up and you will see square lights in the roof. How many of the small squares around the light are needed to give the same area as the light fitting? \_\_\_\_\_

Stop in the square outside Marks & Spencer.


11a. Look at the pillars. What is this shape called? \_\_\_\_\_

On the base of each pillar you will find several small tiles.

11b. How many tiles make a **Metrounit** length? \_\_\_\_\_

11c. How many **Metrounit** lengths would it take to go around the base of the pillar? \_\_\_\_\_

Go up to the Upper Green Mall

12. Find the information point  and finish filling in the table started in question 5.

Walk along the Upper Green Mall heading towards The Village in the Upper Blue Mall.

13. On the way to the village you will see pink "stepping stone" tiles in the middle of the floor. Count these as you walk. How many squares did you count? \_\_\_\_\_

When you get to The Village follow the tram tracks.

14a. On a wall you will find an advert for Hudson's Coaches. What are the names of the two stopping points on the journey?  
\_\_\_\_\_ and \_\_\_\_\_

14b. Now find the milestone. How far you are from  
Gateshead \_\_\_\_\_ and Newcastle \_\_\_\_\_

14c. Find the post-box and very close by you will see some envelopes. Write down the value of each stamp.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

What is the total value of the stamps? \_\_\_\_\_

\*\*\*\*\*Well done you have completed the MetroCentre Maths Trail\*\*\*\*\*

Here are some puzzles for you to try.

- 1) Your teacher tells you that she is 25 years old, not counting Saturdays and Sundays. What is her real age?
- 2) Adam can build a wall in 3 hours, Bob in 4 hours and Charlie in 6 hours. If they build the wall together how long does it take?
- 3) Maths is all about patterns. What are the next two numbers in these patterns;
  - a) 2, 2, 4, 6, 10, 16, 26, \_\_, \_\_
  - b) O, T, T, F, F, S, S, \_\_, \_\_
  - c) 1, 3, 6, 10, 15, \_\_, \_\_



- 4) The great mathematician Archimedes of the 3<sup>rd</sup> century BC worked with the **Metrounit** in order to calculate an approximation for Pi as  $\frac{22}{7}$ . From this he was able to calculate the distance around a circle as approximately  $\frac{22}{7}$  diameters. If a circle has a diameter of 35 cm what is the distance around the circle?

*Evening*  
**Chronicle**

