THE GRAFHAM MATHS CHALLENGE

Click on the picture to enter
Grafham Water Centre
and start your maths challenge.

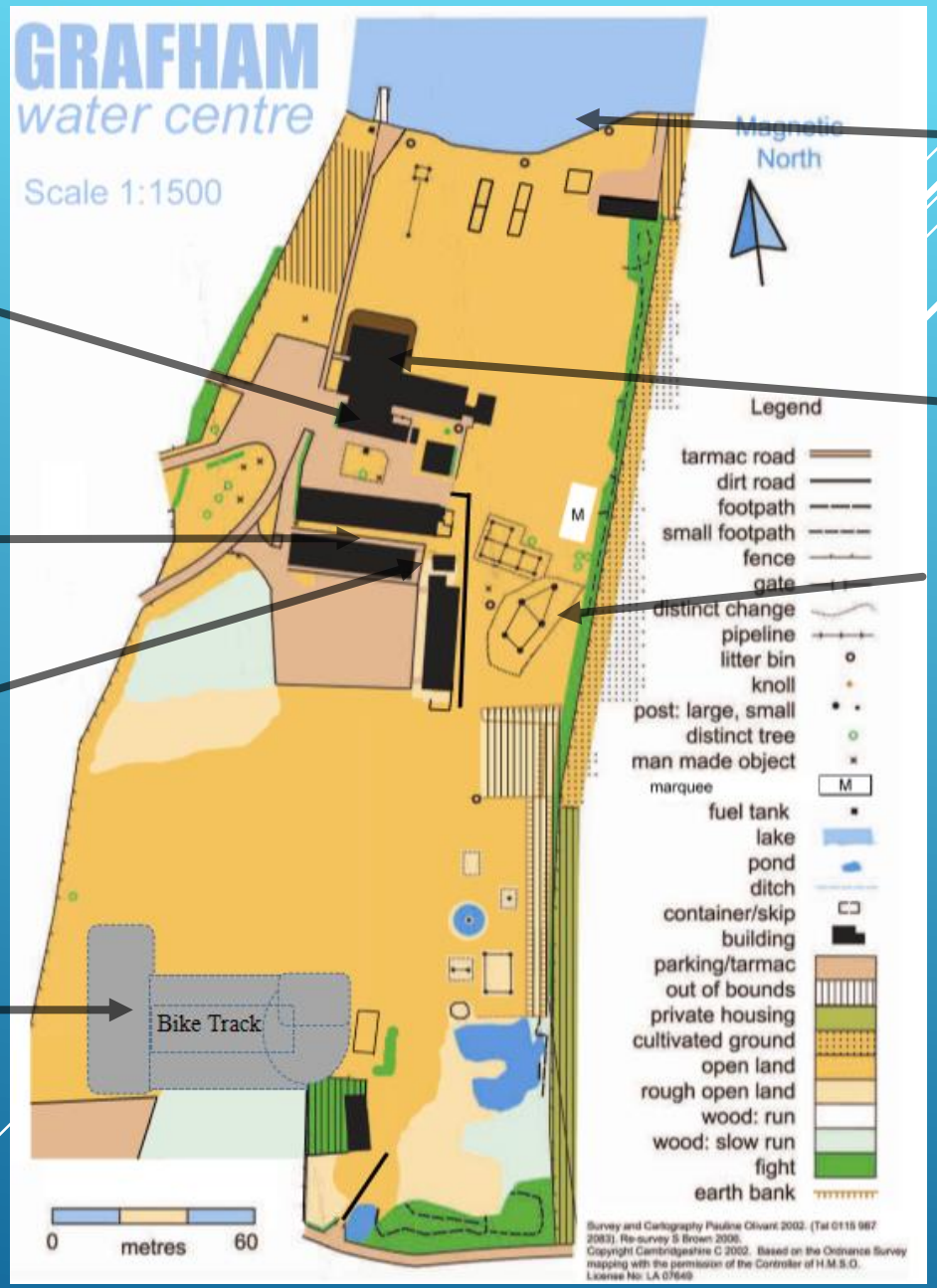
Introduction

Welcome to Grafham Water Centre!
You can move about the site by clicking on the labels around the map. As you move around you will find maths challenges to solve in each location that you visit. Record your answers to each problem as you go and once you have finished all the questions your answers can be checked by someone else who is at home with you.

Have fun and enjoy the challenges!

When you have finished all the challenges just click on the image below to leave.

Grafham WATER CENTRE



Dining Room

The Climbing Wall

Archery

Bike Track

Raft building

The Lounge

Jacob's Ladder

Goodbye

Grafham WATER CENTRE

Congratulations on answering all of the questions in the Grafham maths challenge.

If, when someone checks your answers, you got some of them wrong you are more than welcome to come back and try again. The doors are always open.

Click on the picture to re-enter the centre

If you would like further information about Grafham Water Centre please click on the link below

https://www.grafham-water-centre.co.uk/

The Lounge

Before going to bed each night the children get to drink hot chocolate. It is put into a number of $3\frac{1}{2}$ litre jugs from which 250ml cups are filled for each child. There are 40 children staying at Grafham…

a) How many ml of drinking chocolate will be needed if all the children have some?
b) How many jugs will be needed to hold all the hot chocolate?
c) If each hot chocolate has 8 mini-marshmallows in it, how many marshmallows are used each night?

Go back to the map and choose your next location.

Jacob's Ladder

Grafham WATER CENTRE

Using the information below can you work out the total height of Jacob's ladder from the ground to the top of the last rung?

- Each wooden rung on Jacob's ladder is 15cm thick.
- The first rung is 40cm from the ground.
- The gap between the 1st rung and the 2nd is 30cm.
- The gap between the 2nd rung and 3rd rung is 45cm.
- The gap between each rung continues to increase by 15cm each time.

Drawing a diagram may help you

Go back to the map and choose your next location.

Bike Track

Abi, Aleena, Robert, Edward and Zach are each timed around the BMX bike track. Using the clues below can you order the children from fastest to slowest and work out their individual times?

a) Robert was $\frac{1}{2}$ a minute slower than Abi.

b) Zach was the slowest around the track and it took him 181 seconds.

c) It took Abi 46 seconds less than Zach to go around the course.

d) Edward was 14 seconds slower than Abi.

e) Alena was $\frac{1}{4}$ of a minute quicker than Robert.

Go back to the map and choose your next location.

The Climbing Wall

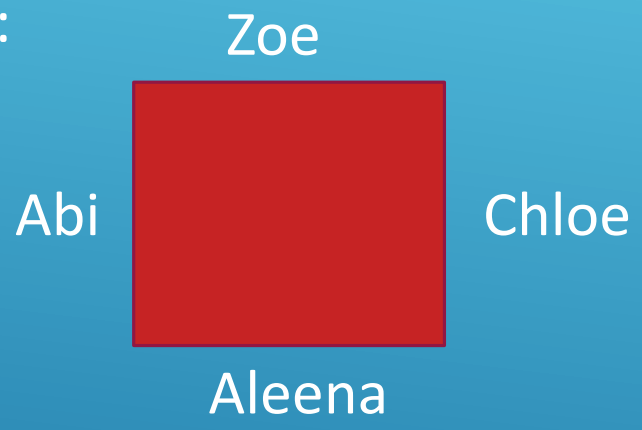
a) Aleena is on the 10m climbing wall. It takes her 45 seconds to climb 1m of the wall after which she rests for 25 seconds. If she maintains that rate how long will it take her to reach the top of the wall?

b) It takes Zach 8 minutes to reach the top of the climbing wall. He too climbs the wall a metre at a time with a rest in-between. (Each rest lasts for the same amount of time and each 1m climb lasts for the same amount of time.) The rests are 10 seconds shorter than each 1m climb. How many seconds is each rest and how many seconds is each metre climb?

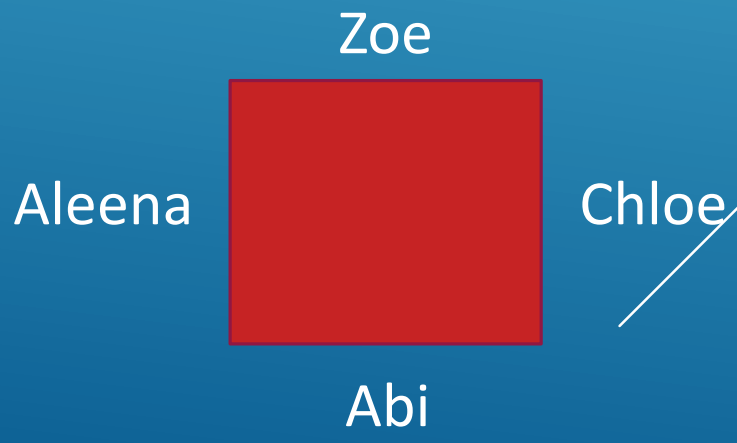
Go back to the map and choose your next location.

The Dining Room

Zoe and her 3 friends Chloe, Abi and Aleena sit together in the dining room for breakfast, lunch and dinner. During the first meal the girls sit around their table like this:



At their second meal they sit like this:



a) What would be all the seating arrangement if Zoe always stayed where she was and her three friends could move?

b) How many different seating arrangements are there in total if the girls can sit in any of the places around the table?

Go back to the map and choose your next location.

Archery

Each archer shoots 3 arrows at the target. Scoring is as follows:

Gold = 10 points Red = 9 points

Blue = 5 points Black = 3 points

White = 1 point

Which of the following totals would it be **impossible** to score with 3 arrows all hitting the target?

20

19

13

17

26

22

Go back to the map and choose your next location.

Raft Building

After making their raft out of barrels, rope and planks of wood Abi, Aleena, Robert, Edward and Zach follow the route marked out by the buoys on Grafham Water.

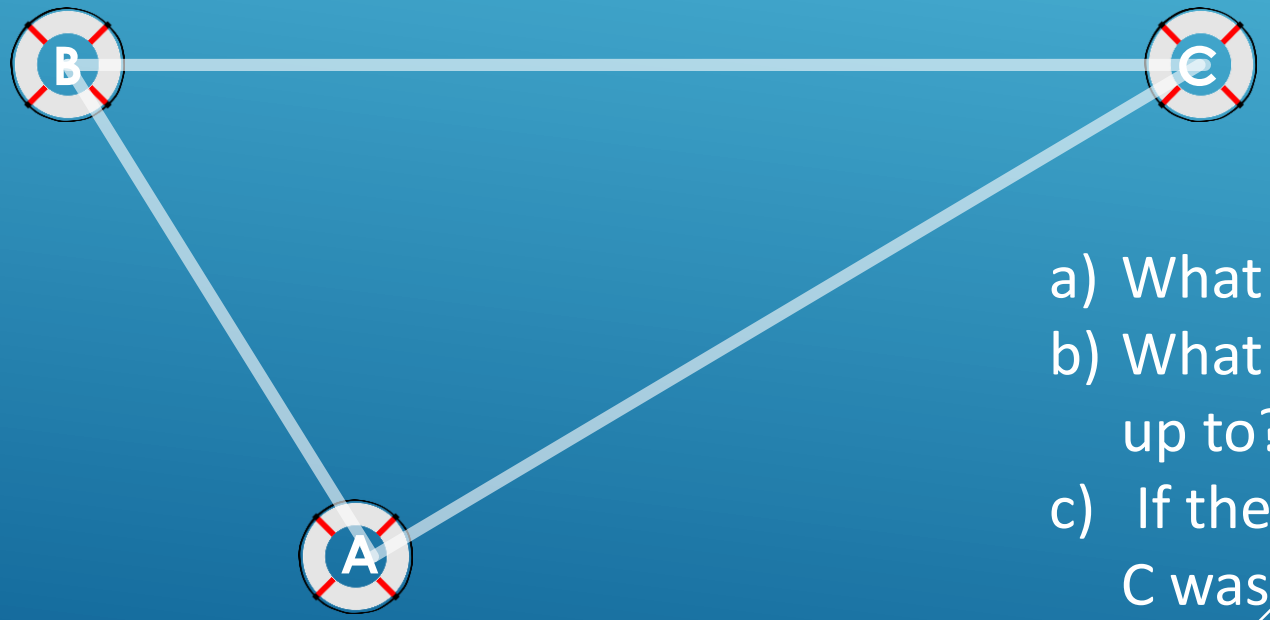


Diagram is not to scale

a) What type of triangle does their route make?
b) What do all the interior angles of a triangle add up to?
c) If the interior angle at A is 90° and the angle at C was 10° smaller than B, what are the sizes of angles C and B?

Go back to the map and choose your next location.