Name: _____

Mathematics at the Gardens!

Secondary School Programme

INSTRUCTIONS

Participants are to bring along a pen, calculator, measuring tape and stopwatch for this trail.

AT THE SUPERTREE GROVE

1. Signpost

a. By measuring the length, breadth and height of the 2 cuboids:

(i) Calculate the volume of the smaller cuboid, in cubic centimetres.

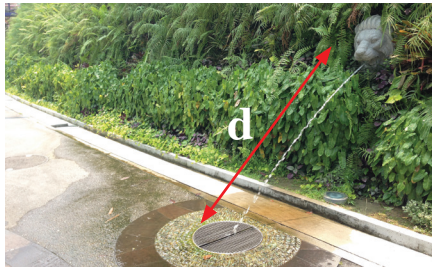
(ii) Calculate the volume of the bigger cuboid, in cubic centimetres.

b. Hence or otherwise, find the volume of the whole solid, in cubic metres.

This activity sheet was developed in collaboration with Temasek Secondary School.

2. Lion's Head

a. By using a measuring tape, find the distance from the lion's mouth to the drain, in centimetres.



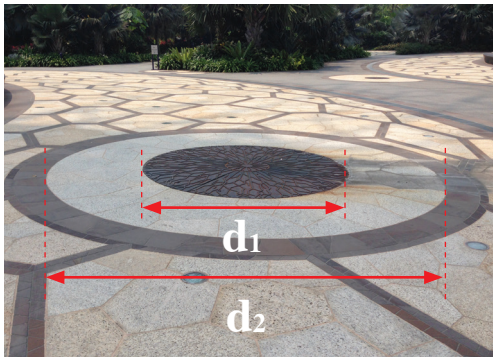
b. Is the distance you have obtained in part (a) more or less than the actual distance travelled by the water? Explain your answer.

c. If 350 cm^3 of water flows from the lion's mouth in 1.2 seconds, find the rate of water flow in cubic centimetres per second. Correct your answer to the nearest whole number.

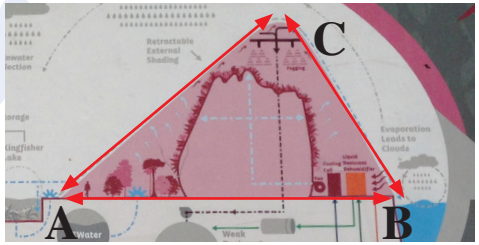
3. Tallest Supertree (with bistro at the top)

Locate the tallest Supertree at the Supertree Grove. It has a bistro at the top.

Look for the following design (as shown in the photo on the right) around this Supertree.



b. Assuming figure ABC is a triangle, measure the length of the straight edges AB, BC and CA. Hence, find the estimated perimeter of the figure ABC.



c. Find the difference between the actual and estimated perimeter of figure ABC. Hence, compute the percentage error in perimeter measurement. Correct your answer to 2 decimal places.

a. Measure the diameter of the inner circle in metres and find the area of the circle, in square metres. (Take π=3.142)

b. Measure the diameter of the outer circle in metres and find the area of the circle, in square metres. (Take π=3.142)

c. Find the area of the annulus in square metres. Correct your answer to 1 decimal place. (Take π=3.142) (An annulus is the region between 2 concentric circles)

4. OCBC Skyway Lift

a. Using a stopwatch, find the time taken for the lift to travel from the ground level to the top. Give your answer to 2 decimal places.

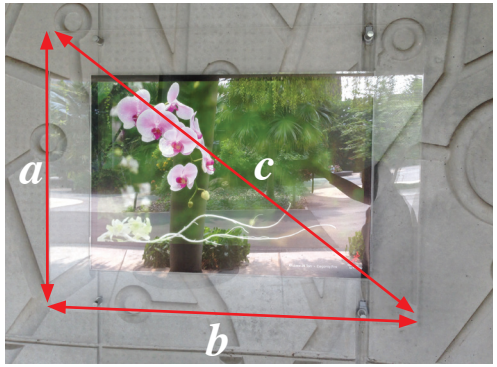
(Hint: Stand in front of the lift at the ground floor. Start the stopwatch when the door closes and stop it when the display on top of the lift indicates the downward-pointing arrow sign.)

b. If the distance from the ground level to the top is 26 m, find the speed of the lift in metres per second. Correct your answer to 2 decimal places.

c. If the height between the ground level to the top level is about 7 storeys high, find the height of 1 storey. Correct your answer to 2 decimal places.

5. Photo Gallery along the Collonade

a. Measure the length of *a*, *b* and *c* in centimetres.



a=

b=

c=

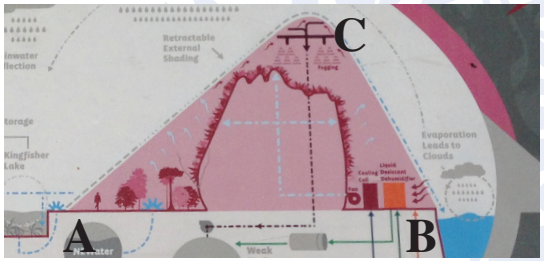
b. Find the value of $a^2 + b^2$.

c. Find the value of c^2.

d. What do you notice about the values of $a^2 + b^2$ and c^2. What conclusion can you draw?

6. Inspired By Nature

Locate the information panel "Plant Power", found under the Supertree that houses the lift leading up to the OCBC Skyway.



a. By using a measuring tape to follow the outline of the figure *ABC*, find the actual perimeter of the figure *ABC*, in centimetres.