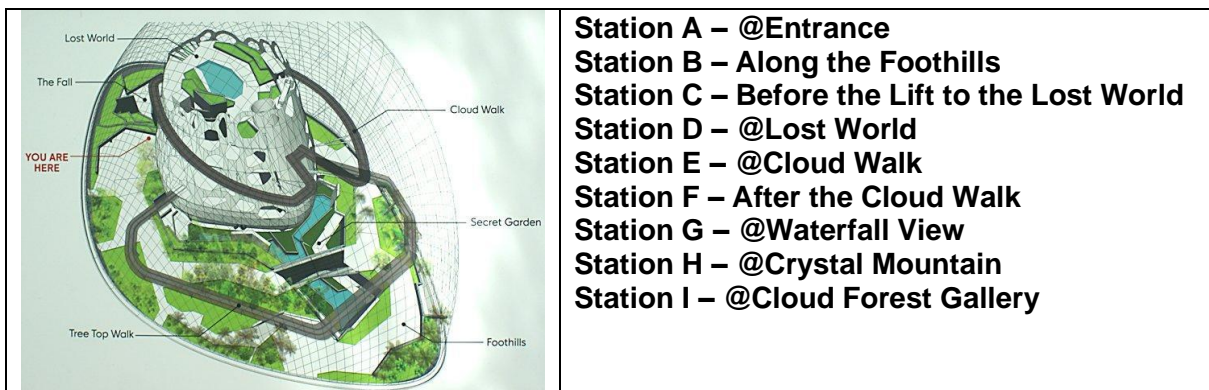


Flower Dome



Cloud Forest



Flower Dome Station A - The Baobabs

Question 1

Find the following signboards to answer Question 1.

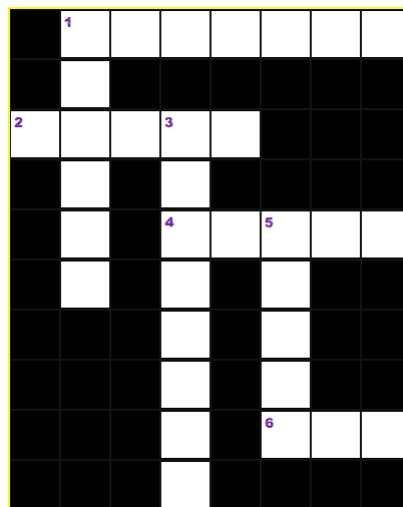


Question 1

For this question, you will need to find the answers at the end of The Baobabs to complete a Crossword Puzzle.

1. Click on the link below to access and complete the Crossword Puzzle.

<https://tinyurl.com/the-baobabs-qn-1>



Across

- 1 The Palo Borracho or Drunken Tree's seeds are surrounded by smooth, light fibres that are collected to make _____.
- 2 The Organ Pipe Cactus opens its flowers at _____ and attracts bats, which help with pollination and fruit production.
- 4 The round trunks of baobabs and bottle trees store this.
- 6 The aromatic _____ from the 'Ghost Tree' can be used to make medicine for coughs and cold.

Down

- 1 Many species of Desert Rose have poisonous sap, used by native people to _____ hunting arrows and fishes.
- 3 Which organism pollinates the flowers of the 'Drunken Tree'?
- 5 The species, *Moringa drouhardii*, is known as the 'Ghost Tree' because it is cultivated at traditional _____.

2. Take a screenshot of your completed Crossword Puzzle.

3. Click on the tab "UPLOAD CROSSWORD PUZZLE" at the bottom of the page to submit the image.

Question 2

Find the following wooden object to answer Question 2.



Question 2a

By making suitable measurements, estimate the diameter, in centimetres, of the top surface of the wooden object.

Question 2b

Find the radius, in centimetres, of the top surface of the wooden object.

Question 2c

Estimate the height, in centimetres, of the wooden object.

Question 2d

Find the volume, in cubic centimetres, of the wooden object.

Question 2e

The exposed area of the wooden object (excluding the legs and underside) is to be painted to make it more attractive. Find the area, in square centimetres, of the wooden object to be painted.

Question 2f

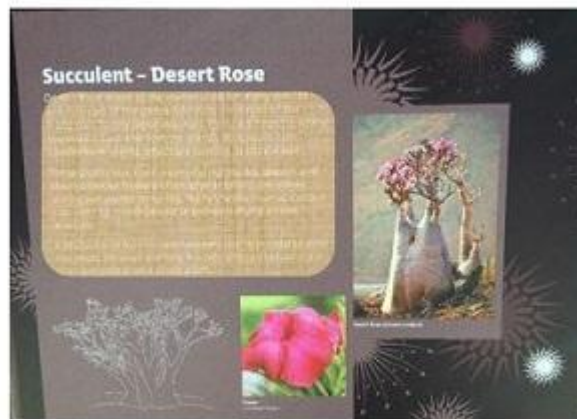
The cost of painting is \$0.01 per square centimetres. Find the cost, in dollars, of painting the exposed area.

Question 2g

State clearly the assumptions you have made in answering Question 2.

Question 3

Find the following signboards to answer Question 3.



Question 3

Name the 2 plant adaptations of the Desert Rose that help it to survive the harsh desert conditions.

Question 4

Find the following signboard to answer Question 4.



Question 4a

1. Find and take a photo of a Stone Plant.
2. Click on the tab "UPLOAD PHOTO OF STONE PLANT" at the bottom of the page to submit the image.

Question 4b

How do stone plants protect themselves against predators?

Question 5

Find the following signboard to answer Question 5.



Question 5a

State one practical use of the silky hairs of the 'Drunken Tree'.

Question 5b

State one medicinal use of the 'Drunken Tree'.

Question 6

Find the following signboard to answer Question 6.



Question 6

Describe how the snake plant adapted to protect itself against predators.

Flower Dome Station B - Succulent Garden

Question 1

Question 1

Use the information found on the following signboards to match the Plant Adaptations to the correct Explanations.



Question 1

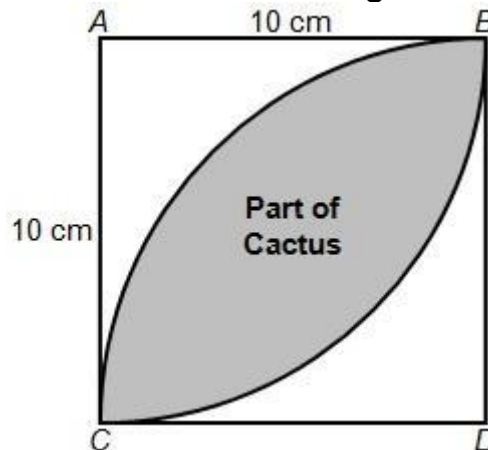
	Thick skin / waxy surface	Ribs	Hairs, bristles and spines	Produces spines instead of leaves
Helps to ensure that sunlight reaches different parts of the stem to help it cool down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protects the plants against animals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide shade. Reflect sunlight and reduce water loss.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protects underlying tissues from excessive sunlight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 2

The following cactus can be found at this station.



The cactus may be modelled after the shaded region as shown in the diagram below. ABCD is a square with sides measuring 10 cm.



Question 2a

Calculate the perimeter, in centimetres, of the shaded part. Leave your answer in terms of π . Show your working clearly.

Question 2b

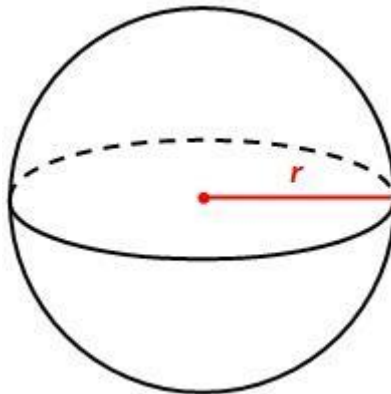
Calculate the area of the shaded part, in square centimetres. Show your working clearly.

Question 3

The following Golden Barrel Cactus can be found at this station.



In this question, the Golden Barrel Cactus (above) can be modelled as a sphere as shown below.



Question 3a

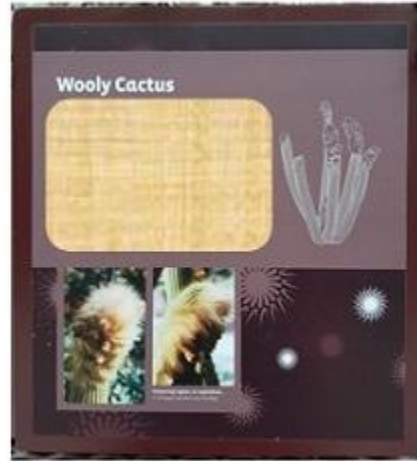
The diameter of the Golden Barrel Cactus is estimated to be 44 cm. Find the volume of the Golden Barrel Cactus in cubic centimetres. [Volume of sphere = $\frac{4}{3} \times \pi \times (\text{radius}) \times (\text{radius}) \times (\text{radius})$]

Question 3b

Given that 90% of the Golden Barrel Cactus is filled with water, find the volume of the water in the Golden Barrel Cactus, giving your answer in litres.

Question 4

Find the following signboard to answer Question 4.



Question 4a

Describe how the woolly cactus is adapted to the harsh desert condition.

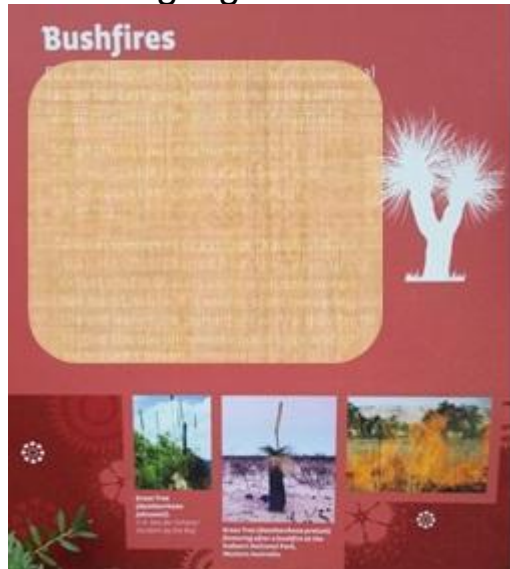
Question 4b

State one feature of the woolly cactus that attracts the bats.

Flower Dome Station C - Australian Garden

Question 1

Find the following signboards to answer Question 1.



Question 1

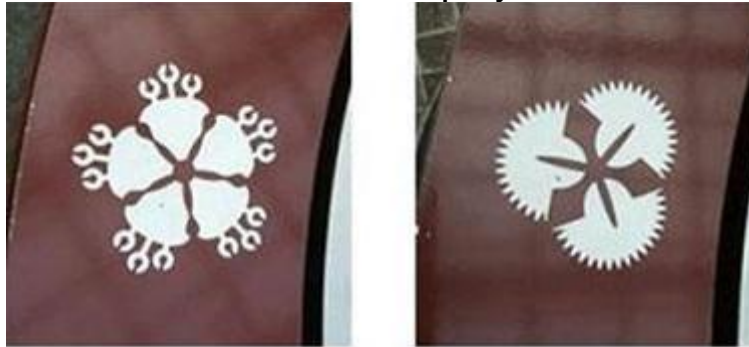
Due to the hot and dry climate during summer, some Australian plants adapt to survive bushfires. State one way in which Australian flora adapt to ensure their survival in conditions where there are frequent bushfires.

Question 2

Find the following display to answer Question 2.



The following patterns are found on the display.



Pattern A

Pattern B

Question 2a

State the number of lines of symmetry for Pattern A.

Question 2b

State the number of lines of symmetry for Pattern B.

Question 3

Refer to the diagram below to answer Question 3.



A contractor is tasked to replace the top circular surface of this display. The centre (see shaded yellow region) is to be replaced with a mirror and its border with mosaic tiles.

Question 3a

Measure the diameter of the smaller circle. Give your answer in metres.

Question 3b

Measure the diameter of the larger circle. Give your answer in metres.

Question 3c (i)

The mirror comes in the shape of a square. Find the area of the smallest mirror the contractor should buy. Give your answer in square metres.

Question 3c (ii)

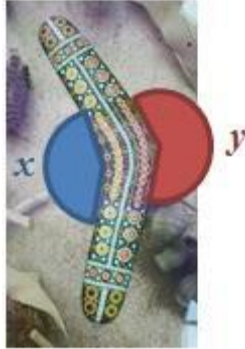
The contractor buys the square-shaped mirror at a cost of \$84 per square metre. How much does he need to pay for the mirror?

Question 3d

Find the area of the border that mosaic tiles are to be installed. Give your answer in square metres.

Question 4

Find the following boomerang display.



Question 4a

What type of angle is x ?

- Acute Angle
- Obtuse Angle
- Reflex Angle

Question 4b

What type of angle is y ?

- Acute Angle
- Obtuse Angle
- Reflex Angle

Flower Dome Station D - South American Garden

Question 1

Refer to the diagram below to answer Question 1.



Question 1a

Estimate the height, in metres, of the structure shown. (Hint: you can use the known height of one of your friends to help you find the answer.)

Question 1b

Explain how you arrive at your answer in part (a).

Question 2

Find the Chilean Wine Palm to answer Question 2.



Question 2a

Using a suitable circle on the floor next to the Chilean Wine Palm, estimate the circumference of the base of the trunk of the tree. Give your answer correct to the nearest centimetres.

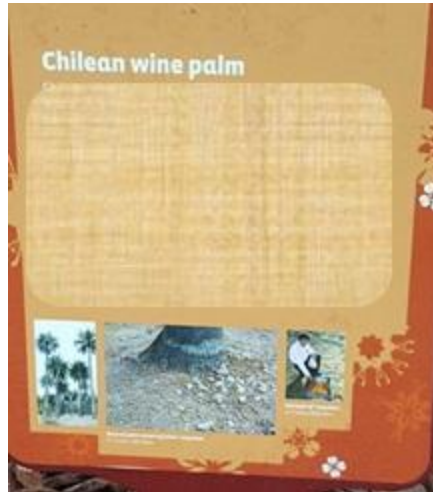


Question 2b

Suggest another method to estimate the circumference of the base of the trunk of the Chilean Wine Palm.

Question 3

Find the following signboard to answer Question 3.



Question 3a

List down three uses of the Chilean Wine Palm.

Question 3b

The sap of the Chilean Wine Palm can be made into wine. One wine bottle can contain 750 ml of wine. Find the minimum number of wine bottles needed to contain 300 litres of wine. Show your working clearly.

Flower Dome Station E - Olive Grove

Question 1

Find the following signboard to answer Question 1.



Question 1a

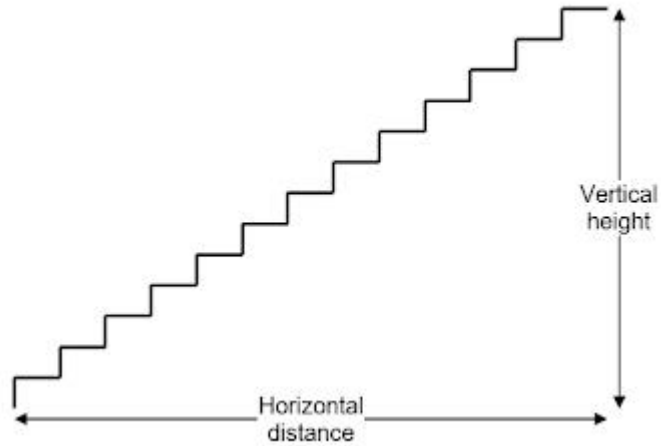
Why is olive oil good for the human body?

Question 1b

Other than food, what products can be made from olive oil?

Question 2

Refer to the diagrams below to answer Question 2.



Question 2a (i)

Estimate the vertical height, in metres, of the first 13 steps of the flight of stairs as shown.

Question 2a (ii)

Explain how you arrived at the answer in part (i).

Question 2b (i)

Estimate the horizontal distance, in metres, of the first 13 steps of the flight of stairs as shown.

Question 2b (ii)

Explain how you arrived at the answer in part (i).

Question 2c

Calculate the fraction of [vertical height / horizontal distance].

Question 2d

What does the fraction in part c represent?

Question 3

Find the following signboard to answer Question 3.



Question 3a

Why are olive trees considered to be ancient?

Question 3b

If you were to plant an olive tree in 2019, calculate the year when the tree is capable of full production of olives.

Cloud Forest Station A - @Entrance

Question 1

Find the following signboard to answer Question 1.



Question 1a

Which triangle is an isosceles triangle?

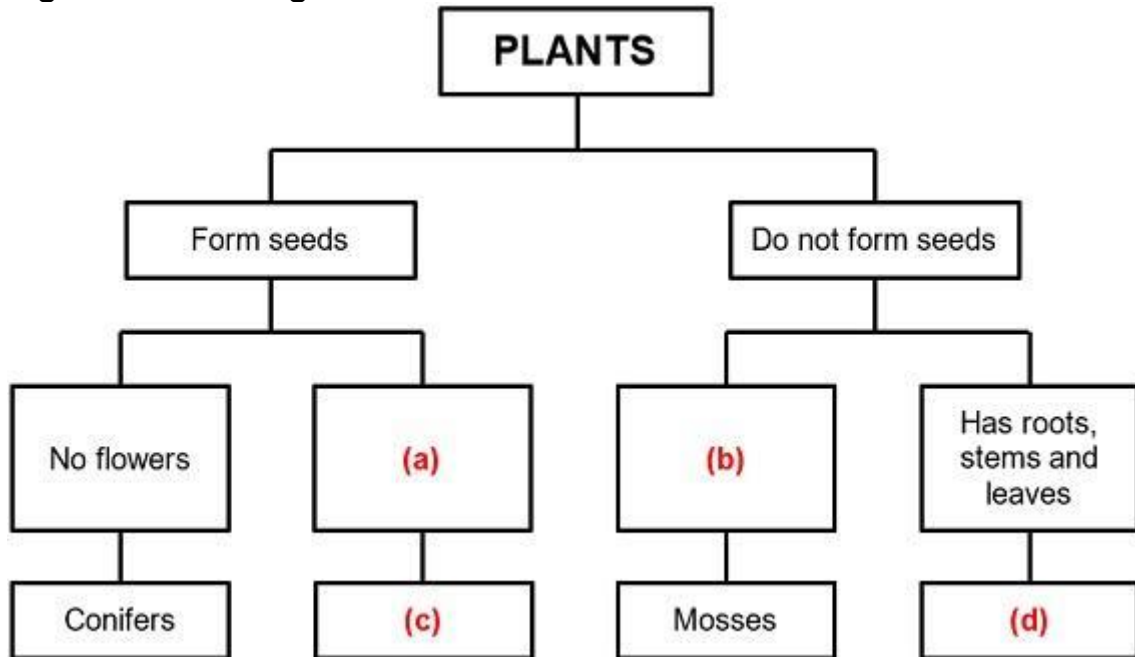
- Triangle A
- Triangle B
- Triangle C

Question 1b

Explain how you arrived at the answer in part (a).

Question 2

Complete the following dichotomous key using the helping words listed below. Use Google Search Engine to find the answer.



Question 2

	(a)	(b)	(c)	(d)
Has flowers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Algae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bromeliads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No true roots, stems and leaves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ferns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fungi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 3



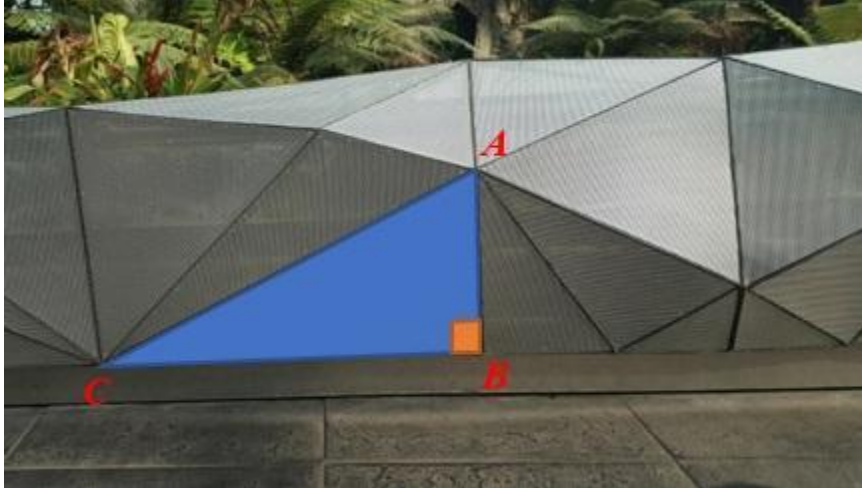
Question 3

1. Stand in front of the waterfall and take a group photo.
2. Click on the tab "UPLOAD GROUP PHOTO WITH WATERFALL" at the bottom of the page to submit the image.

Cloud Forest Station B - Along the Foothills

Question 1

Along the foothills, you will find the following.



Question 1a

Find the length of AB, giving your answer in centimetres.

Question 1b

Find the length of BC, giving your answer in centimetres.

Question 1c

Find the length of AC, giving your answer in centimetres.

*** After measuring the lengths of AB, BC and AC, please move to a space where you will not block the flow of human traffic to complete the rest of the questions. ***

Question 1d

Triangle ABC is a right-angled triangle. Find the area of triangle ABC, giving your answer in square centimetres.

Question 1e

Find the sum of the squares of AB and BC, giving your answer correct to 2 significant figures.

Question 1f

Find the square of AC, giving your answer correct to 2 significant figures.

Question 1g

What is the relationship between the answers found in part (e) and (f)?

Question 2

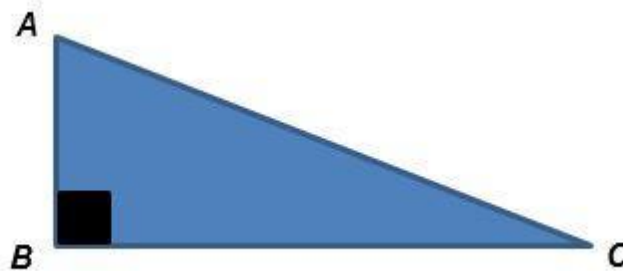
From Wikipedia:

In mathematics, the Pythagorean theorem, also known as Pythagoras' theorem, is a fundamental relation in Euclidean geometry among the three sides of a right triangle. It states that the square of the hypotenuse (the side opposite the right angle) is equal to the sum of the squares of the other two sides. The theorem can be written as an equation relating the lengths of the sides a , b and c , often called the "Pythagorean equation":

$$a^2 + b^2 = c^2$$

where c represents the length of the hypotenuse and a and b represent the lengths of the triangle's other two sides.

Given the following Pythagorean Triplet table.



AB	BC	AC	AB^2	BC^2	$AB^2 + BC^2$	AC^2
3	4	5	p	16	25	25
5	12	13	25	q	169	169
7	24	25	49	576	r	625
9	40	41	81	1600	1681	s

Question 2a

Find the value of p .

Question 2b

Find the value of q .

Question 2c

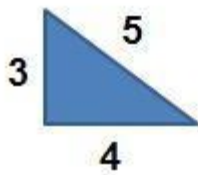
Find the value of r .

Question 2d

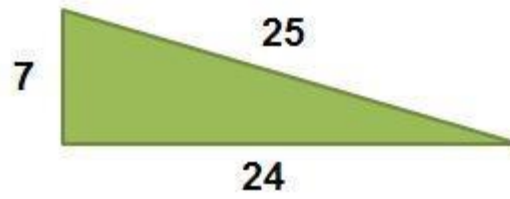
Find the value of s .

The above table actually shows the first few Pythagorean Triplets.

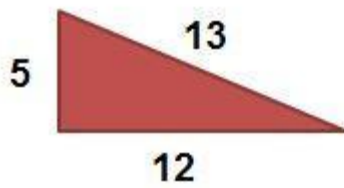
3, 4, 5



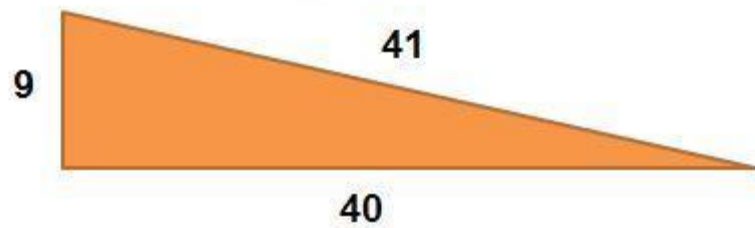
7, 24, 25



5, 12, 13



9, 40, 41



Cloud Forest Station C - Before the Lift to the Lost World

Question 1

Before the group take the lift up to the Lost World, locate the following signboard to answer Question 1.



Question 1

What are the three characteristics of trees found in the highlands?

If it is too crowded, the group may take the lift up to the Lost World and look for the following signboard near the lift to answer Question 1.



Question 2

After the group take the lift up to the Lost World, locate the following signboard to answer Question 2.



Question 2

Name the key plant families found at 1200 m above sea level on Cameron Highland.

Cloud Forest Station D - @Lost World

Question 1

Locate the following area to answer Question 1.



Definition:

Polygon is a closed figure with 3 or more sides.

Question 1a

1. Take one picture that includes any two different types of polygons you can see on the floor near this area.
2. Click on the tab "UPLOAD PHOTO OF POLYGONS" at the bottom of the page to submit the image.

You can also take the picture in a less crowded area.

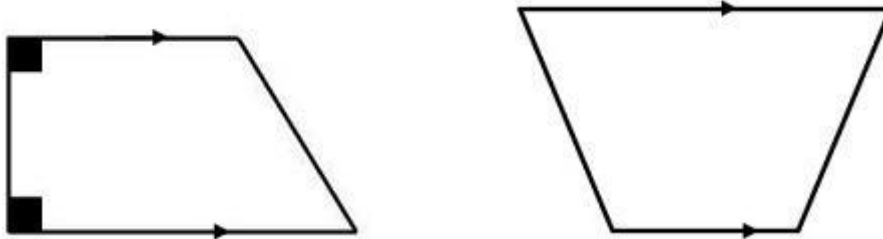
Question 1b

Select the names of the two types of polygons you have chosen.

- Triangle (3-sided)
- Quadrilateral (4-sided)
- Pentagon (5-sided)
- Hexagon (6-sided)
- Heptagon (7-sided)
- Octagon (8-sided)

Question 2

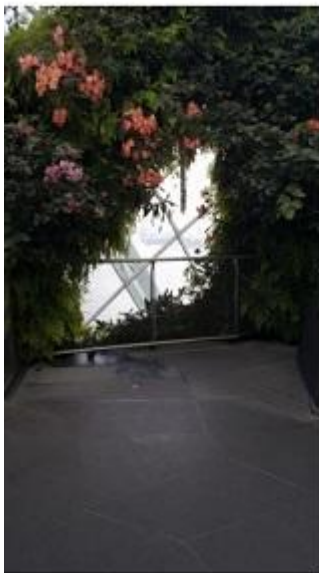
A trapezium is a four-sided closed figure with one pair of parallel sides.
Possible shapes are:



Question 2a

1. Look on the floor in the Lost World to take a picture of a trapezium.
2. Click on the tab "UPLOAD PHOTO OF TRAPEZIUM" at the bottom of the page to submit the image.

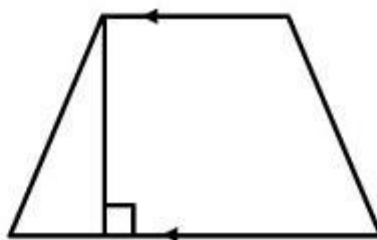
Possible places you can look at are as follows:



Question 2b

Estimate, by making suitable measurements, the area of the trapezium you have chosen, giving your answer in square centimetres, correct to the nearest whole number. Show your working clearly.

$$[\text{Area of trapezium} = \frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height} = \frac{1}{2} \times (a + b) \times h]$$



Question 3

You can see the different types of carnivorous plants at the display below.



Find the following signboard to answer Question 3.



Question 3a

Where are carnivorous plants found?

Question 3b

Why are these plants "carnivorous"?

Question 3c

Carnivorous plants have traps that are either active or passive.

Question 3c (i)

Name the 3 types of active traps.

Question 3c (ii)

Name the 3 types of passive traps.

Cloud Forest Station E - @Cloud Walk

Question 1

Question 1a

Observe the shape of the dome and suggest why the dome is built with that particular shape. (Click the link for hint: tinyurl.com/station-e-hint)



Question 1b

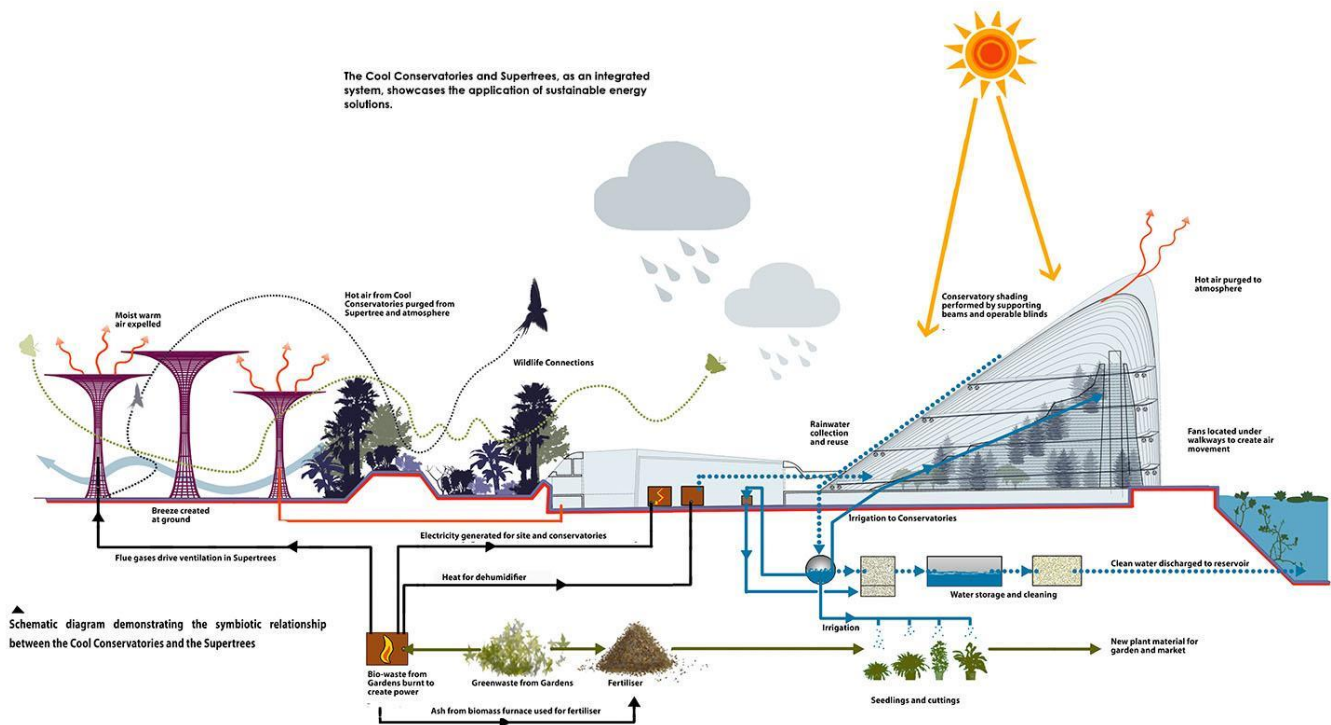
Observe the material that the dome is made from and suggest why the dome is made with this material. (Click the link for hint: tinyurl.com/station-e-hint)



Question 2

Question 2

List two uses for the rainwater that is collected by Gardens by the Bay? (Click the link for hint: tinyurl.com/station-e-hint)



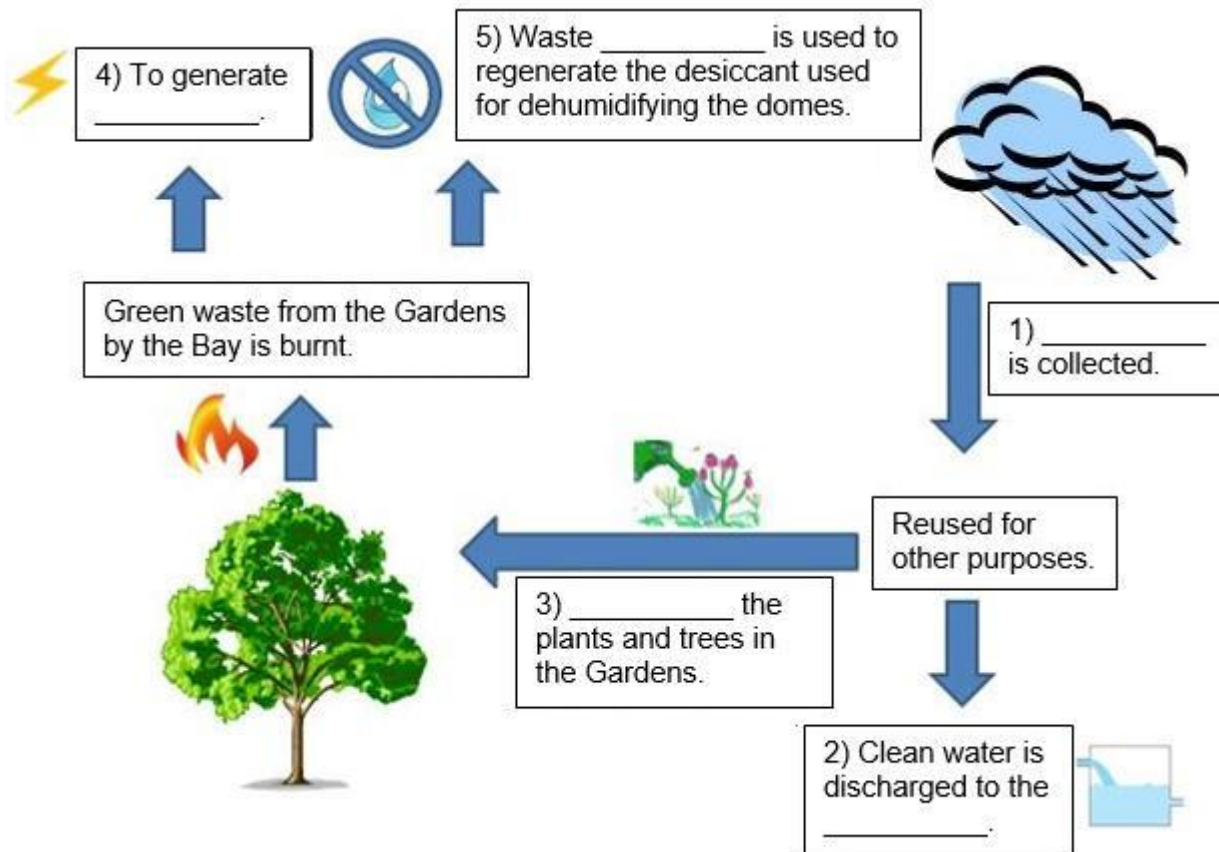
Source

<http://www.gardensbythebay.com.sg/content/dam/gbb/the-gardens/about-us/DP01-1-2-grand-associate-program-1500x800-v2.jpg>

Cloud Forest Station F - After the Cloud Walk

Question 1

Refer to the concept map below to answer Question 1.

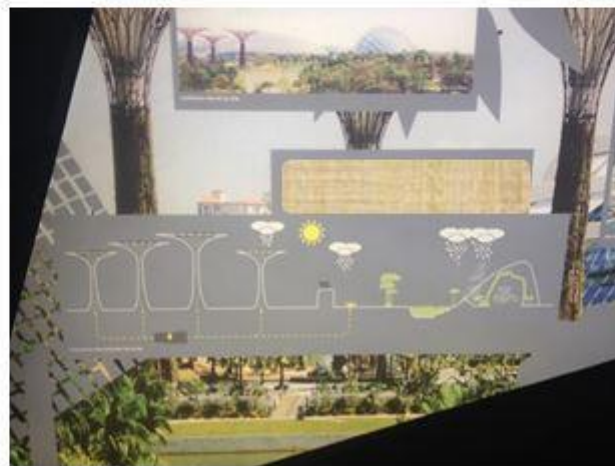
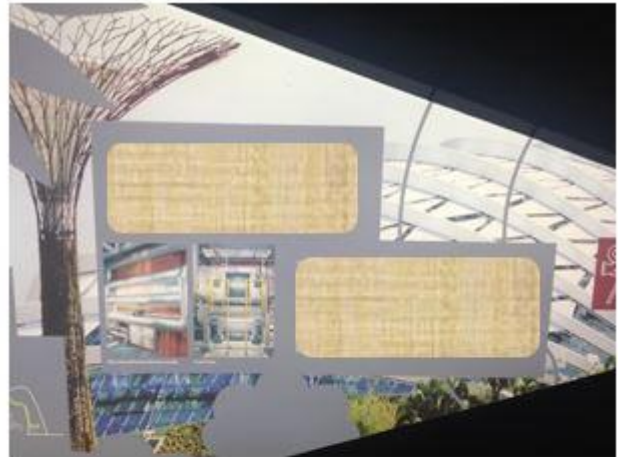


Question 1

	Rainwater	Electricity	Heat	Reservoir	Irrigate
1) _____ is collected.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Clean water is discharged to the _____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) _____ the plants and trees in the Gardens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) To generate _____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Waste _____ is used to regenerate the desiccant used for dehumidifying the domes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 2

Find the following signboards to answer Question 2.



Question 2

Select features of a sustainable and carbon-neutral system at Gardens by the Bay.

- Burning old plant matter to generate electricity
- Use sunlight to generate electricity
- Use hydro power to generate electricity
- Plants and trees absorb global warming gases
- Burn more fossil fuels
- Increase dependence on the Singapore Power Grid for electricity

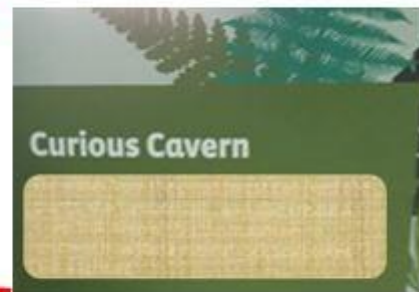
Cloud Forest Station G - @Waterfall View

Question 1

Question 1a

What is a cloud forest? Use Google Search Engine to find the answer.

Find the following signboard to answer Question 1b.

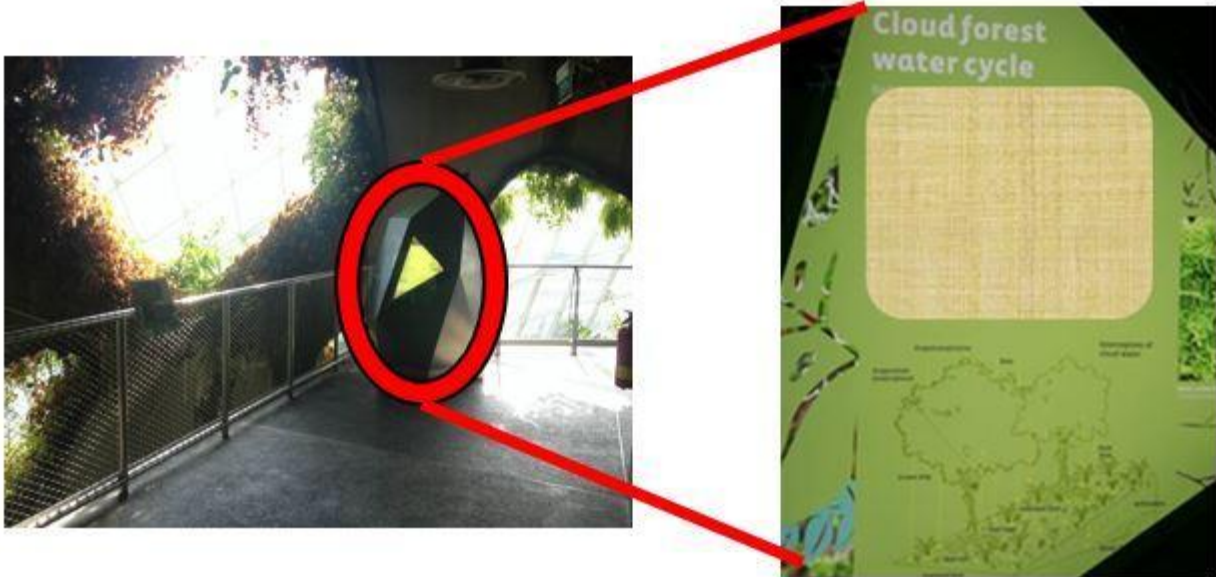


Question 1b

What can the water from a cloud forest do?

Question 2

Find the following signboard to answer Question 2.



State the four ways in which water from a cloud forest reaches the forest floor.

Question 2 - One

Question 2 - Two

Question 2 - Three

Question 2 - Four

Question 3

Find the following signboard to answer Question 3.



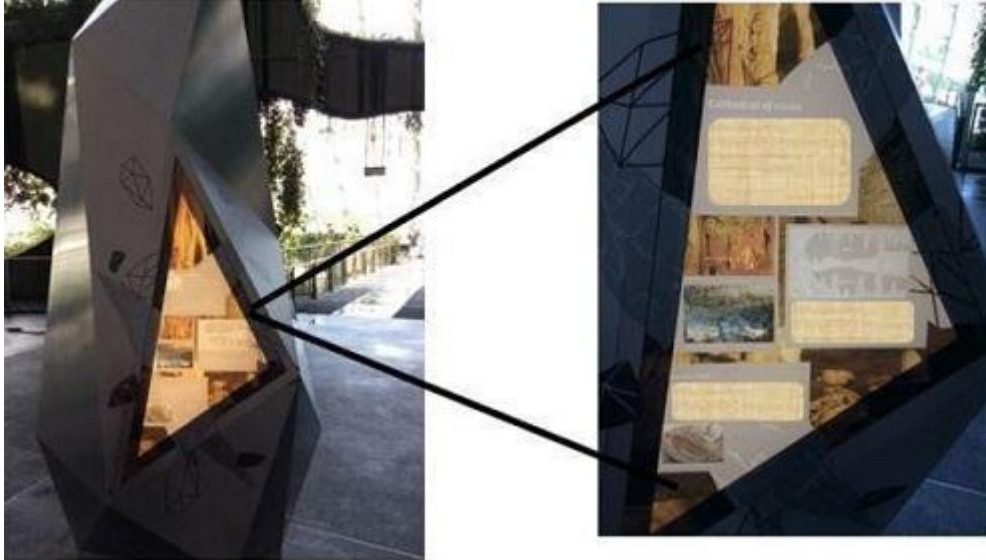
Question 3

State the percentage of freshwater provided by a cloud forest that is fit for drinking.

Cloud Forest Station H - @Crystal Mountain

Question 1

Find the following signboards to answer Question 1



Question 1a

What is the chemical name for limestone?

Question 1b

If acid rain that contains sulphuric acid drips onto limestone, what gas will be given out?

Question 1c

Describe a test for the gas that is given out.

Question 1d

What is the difference between stalagmites and stalactites?

Question 1e

In caves, stalagmites grow rather slowly at a rate of 0.007 to 0.929 mm per year. Taking the average rate of growth as 0.468 mm per year, how long does it take a stalagmite to grow 100 cm? Give your answer in years, correct to the nearest whole number.

Question 2

Find the following signboard to answer Question 2.



Question 2

Given that the dimensions of a tennis court are 10.97 metres by 23.77 metres, find the area of the largest known cavern, which is the Sarawak Chamber in Borneo. Give your answer in square metres. Show your working clearly.

Cloud Forest Station I - @Cloud Forest Gallery

GENERAL:

Question 1

Question 1a

Name two greenhouse gases that contributes towards global climate change. Use Google Search Engine to find the answer.

Question 1b

Name two consequences of global climate change. Use Google Search Engine to find the answer.

SIXTH EXTINCTION SCULPTURE:



Question 2

Find the following signboard to answer Question 2.



Question 2

How does lush tree canopy contribute to climate control?

AROUND THE GALLERY:



Question 3

Find the following signboards around the gallery to answer Question 3.



Question 3

What are two human activities which have contributed towards climate change?

BEFORE CLOUD FOREST THEATRE

Proceed down the escalator to answer Question 4.



Question 4

Read the signboards on the wall around the 3D display to answer Question 4.



Question 4

State two ways in which Gardens by the Bay contributes to energy sustainability.

AFTER CLOUD FOREST THEATRE

Proceed to exit Cloud Forest Theatre to answer Question 5.

Question 5

Read the signboards on the wall after Cloud Forest Theatre to answer Question 5.



Question 5

How can we adapt our behaviours to reduce our carbon footprint on the environment? List down two ways.