Year 9 Maths Program

Volume worksheet

Maths Activity 3

Rectangular prism

To find the volume of a rectangular prism, multiply its 3 dimensions: length x width x height. The volume is expressed in cubic units.

Formula -

V = l x w x h **l: length w: width h: height = Volume**

Rectangular building - Question 1

Calculate the volume of a rectangular prism power station.

The structure is 9 metres in height, 34 metres in width and 12 metres in depth.

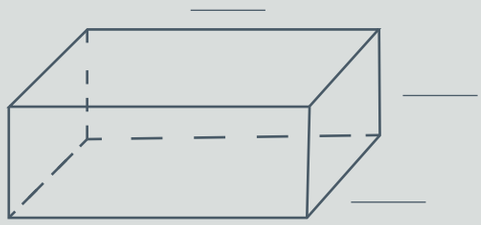
Step 1

Write the equation using the above numbers

_____

Step 2

Write the numbers in the correct space provided in the diagram



Step 3
Show your working here

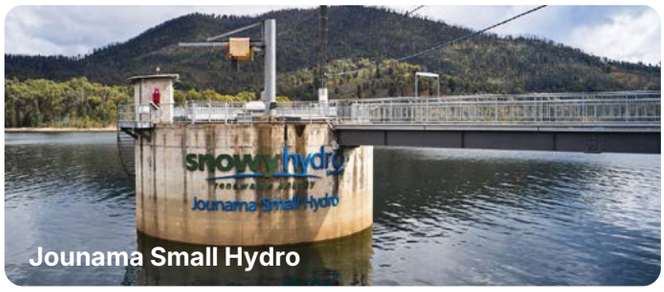
Write your answer here: Volume =

Cylinder

To find the volume of a cylinder multiply using the formula π x radius^2 x height.

Formula -

V = πr^{2}h **r:** radius of the circular base **h:** height



Jounama Small Hydro


Jounama Small Hydro

Cylindrical building - Question 2

How much concrete will it take to build the Jounama power station if it has a Diameter of 13.8m a Height of 31m and a wall thickness of 0.5m?

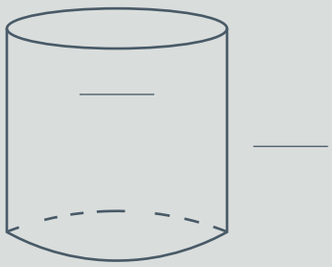
Step 1

Write the equation using the above numbers

_____

Step 2

Draw lines to show where the Height and Radius are on the diagram and fill in the numbers



Step 3
Show your working here

Write your answer here: Volume =

Pipes and tunnels - Question 3

What is the volume of a penstock (cylinder) that is 2km in length and 3m in diameter?

Show your working here

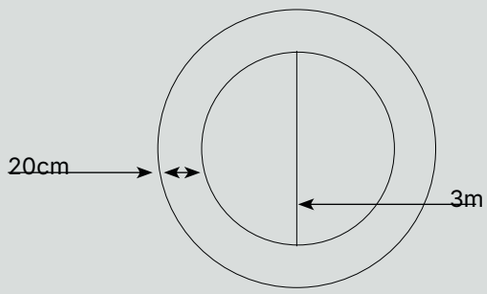
Tumut 3 Power Station

Question 4

If the diameter was including the thickness of the concrete walls at 20cm.

What will the volume be?

Show your working here



Pyramid

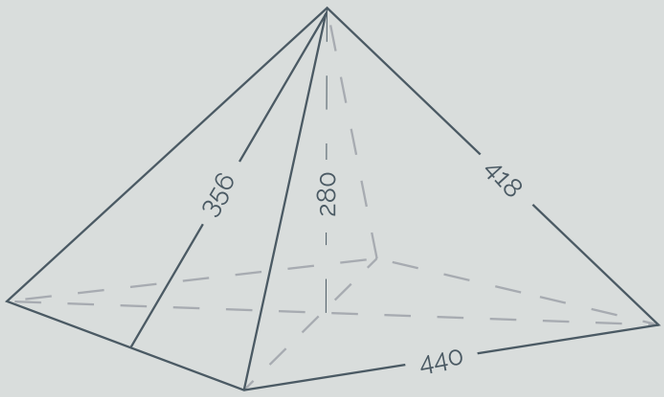
Formula - V =

(⅓) x b x h **b:** area of base **h:** height of the pyramid

Pyramids and Cones - Question 4

What is the volume of a Pyramid that is 280 royal cubits high with a base length of 440 cubits?

These are the dimensions of the Pyramid of Giza.



Show the guided working here

Write your answer here: Volume =

Cones

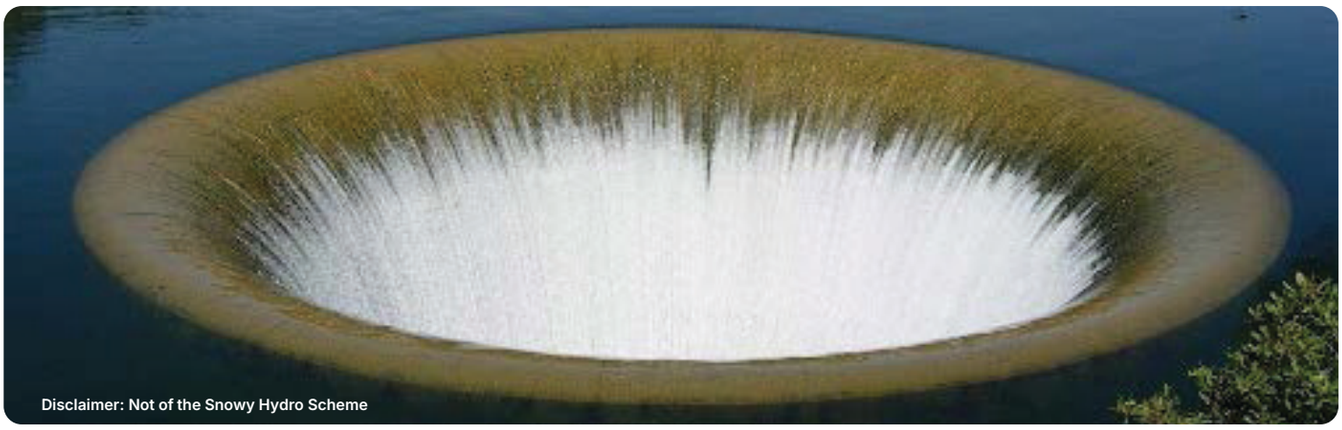
Formula -

$$V = \pi r^2 \frac{h}{3}$$

r: radius **h:** height

Cone funnel

A funnel is used to pull water into the intake structure of the dam as seen in this photo.



Disclaimer: Not of the Snowy Hydro Scheme

Question 6

Bonus challenge

It is 6m wide and extends 10m down. It is a cone shape, calculate its volume. The cone funnel does not meet at a point but has the end cut off. If 2 metres from the bottom it ends and the diameter of that outlet is 1.2m what is the volume of the funnel?

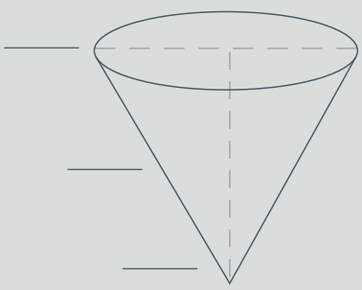
Step 1

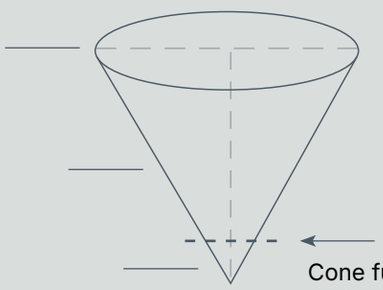
Write your equation using the numbers above

_____

Step 2

Write the numbers in the correct space provided in the diagram





Step 3
Show your working here

Write your answer here: Volume =

Volume Guessing - Hands-on experiment

Volume and measurement are extremely important in our world. Follow the method below to see how close you can guess the right volume. It's harder than you think!

Materials

1 x measuring instrument

1 x cup

Method

1. Estimate the volume based on some basic measurements supplied to you on the day
2. Measure out that volume in water with your measuring instrument.
   See how close you were

Observations

Write or draw your findings here