Rotation of Two-Dimensional Solids

Module 14 Lesson 2

Review of Two-Dimensional and Three-Dimensional Figures

A Two-Dimensional (2D) shape is a shape that only has two dimensions: width and height.

Examples: Squares, Circles, Triangles, etc are two dimensional objects



A Three-Dimensional (3D) shape is a shape that has three dimensions: width, depth and height.

Examples: Cube, Cylinder, etc are three dimensional objects



2D _____ 3D

Three-Dimensional figures can be generated by rotating two-dimensional figures.



"Rotation" means turning around a center.

A three-dimensional object rotates always around an imaginary line called a *rotation axis*.



WHAT DID YOU GUESS?

If you guessed cone, you are correct! A cone is solid revolution of a right triangle around one of its legs.



WHAT 3D SHAPE IS PRODUCED IF WE ROTATE A SEMI-CIRCLE ?

A sphere is solid revolution of a semicircle around its diameter.



You try:

Given the shape below, determine the 3D solid formed by rotating the two-dimensional shape about the line given.



You try:

Given the shape below, determine the 3D solid formed by rotating the two-dimensional shape about the line given.



in a sphere.

in a right cylinder.

Another Way to Visualize the Rotation

If you do not want to cut out the shapes, and you still need help visualizing the rotation:

- 1. Draw your shape and shade the region to be rotated.
- 2. Next, draw a reflection (mirror image) of the region about the axis or line of rotation.

3. Connect the vertices of the original image and its reflection using curved lines







Word Problems

A square with area of 100 cm² is rotated to form a cylinder. What is the volume of the cylinder?



Word Problems

Given a cone with a radius of 6 ft and a height of 12 ft, find the area of the triangle formed by a perpendicular cross-section down through the cone's center.

