Surfaces and Solids of Revolution

A surface of revolution is like a hollow shell created by revolving a set of 2-D curves about a coordinate axis or about another line in 3-D space.

2-D Shape and Surface of Revolution

A solid of revolution is a 3-D object of a finite volume. It is generated by revolving a closed 2-D shape about a coordinate axis of another line in 3-D space.

Closed 2-D Shape and Solid of Revolution
Circle the letter corresponding to the object or objects that were formed by revolving the shape shown on the left about an axis. There may be more than one answer per problem.

1.

A

B

C

D

2.

A

B

C

D

3.

A

B

C

D

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Indicate the axis and the number of degrees (90, 180, 270, or 360) about which the 2-D shape was revolved to obtain the given solid.

1. Revolved______ About ______

2. Revolved______ About ______

3. Revolved______ About ______

4. Revolved______ About ______
Isometric Drawings & Coded Plans

Isometric views are useful for showing a 3-D object on a 2-D sheet of paper. An isometric view is defined as if you were looking down a diagonal of a cube on the object.

![3-D Object](image1)

Isometric View of Object

Isometric Dot Paper is used as an aid in making isometric sketches. It consists of a grid of dots that are arranged equidistant from one another. The lines connecting the dots meet at an angle of 120 degrees with respect to one another. Isometric Grid Paper is similar to Isometric Dot Paper except that the dots are connected to form a grid on the page.

![Isometric Dot Paper](image2)

![Isometric Grid Paper](image3)
Circle the letter beneath the isometric sketch of the object that corresponds to the coded plan shown on the left.

1. 

2. 

3. 

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Sketch the indicated corner view in the space provided.

1.  
   3
   2 1 1
   1 1
   x

2.  
   2
   3
   1 1
   x

3.  
   2 3
   1 1
   1
   x

4.  
   x
   1 1
   1 2
   3

5.  
   2 1
   1 1 1
   3 2 1
   x

6.  
   2 3
   1 1 1
   1 2
   x
Flat Patterns

Many 3-D objects can be formed by folding up a 2-D flat pattern:

2-D Patterns

3-D Objects

Solid lines on a flat pattern represent fold lines. When constructing a 3-D object from a pattern, fold the pattern along the fold lines.

Fold Lines

Flat Pattern

Fold 1

Fold 2

Fold 3
The patterns shown below fold up to form a cube with the word "CUBE" spelled around its four sides. Complete each pattern by placing the "B" on it in the correct orientation.

1.

2.

3.

4.

5.

6.
For the objects shown in isometric below, select the pattern from the choices given that could be folded up to obtain the object.

1. A

2. A