**Cross Sections Interactive Text Version**

A cross section is a two-dimensional shape resulting from the intersection of a plane and a three-dimensional figure. Cross sections can vary in shape and size depending on the placement and orientation of the plane.

A cube, a cylinder, and a cone are shown.

**cube:**Aplane intersects a cube. A triangle, square, rectangle, trapezoid, pentagon, and hexagon are shown in the menu along the bottom of the screen. Text reads: Generate a cross section of each shape: triangle, square, rectangle, trapezoid, pentagon, hexagon.

* **triangle:** The plane intersects the cube. The plane is not parallel to any of the faces of the cube. The plane passes through the front face, the left face, and the back face of the cube. The cross section is a triangle.
* **square:** The plane intersects the cube. The plane is parallel to the top and bottom faces of the cube. The cross section is a square.
* **rectangle:** The plane intersects the cube. The plane is not parallel to any of the faces of the cube. The plane passes through the front face, the left face, the back face, and the right face of the cube. The cross section is a rectangle.
* **trapezoid:** The plane intersects the cube. The plane is not parallel to any of the faces of the cube. The plane passes through four faces of the cube creating a cross section with four edges. One pair of edges of the cross section are parallel and are of different lengths. The other two edges are not parallel to each other. The cross section is a trapezoid.
* **pentagon:** The plane intersects the cube. The plane is not parallel to any faces of the cube. The plane passes through five faces of the cube creating a cross section with five edges. The cross section is a pentagon.
* **hexagon:** The plane intersects the cube. The plane is not parallel to any faces of the cube. The plane passes through six faces of the cube creating a cross section with six edges. The cross section is a hexagon.

**cylinder:** A plane intersects a right cylinder. A rectangle, circle, ellipse, and elliptical shape are shown in the menu along the bottom of the screen. Text reads: Generate a cross section of each shape: rectangle, circle, ellipse, elliptical shape.

* **rectangle:** The plane intersects the right cylinder. The plane is perpendicular to the bases of the cylinder. The cross section is a rectangle.
* **circle:** The plane intersects the right cylinder. The plane is parallel to the bases of the cylinder. The cross section is a circle.
* **ellipse:** The plane intersects the right cylinder. The plane does not pass through either base of the cylinder and is not parallel to the bases of the cylinder. The cross section is an ellipse.
* **elliptical shape:** The plane intersects the right cylinder. The plane passes through the lower base of the cylinder. The plane is not parallel to the bases of the cylinder. One edge of the shape coincides with a chord of the base. The other edge has the shape of a symmetric portion of an ellipse with axis of symmetry perpendicular to the first edge. The cross section is an elliptical shape.

**cone:** A plane intersects a right cone. A triangle, circle, ellipse, elliptical shape, and parabolic shape are shown in the menu along the bottom of the screen. Text reads: Generate a cross section of each shape: triangle, circle, ellipse, elliptical shape, parabolic shape.

* **triangle:** The plane intersects the right cone. The plane is perpendicular to the base of the cone and passes through the cone’s vertex. The cross section is a triangle.
* **circle:** The plane intersects the right cone. The plane is parallel to the base of the cone. The cross section is a circle.
* **ellipse:** The plane intersects the right cone. The plane is not parallel to the base of the cone and does not pass through the base of the cone. The cross section is an ellipse.
* **elliptical shape:** The plane intersects the right cone. The plane intersects the base of the cone. One edge of the shape coincides with a chord of the base. The other edge has the shape of a symmetric portion of an ellipse with axis of symmetry perpendicular to the first edge.  The cross section is an elliptical shape.

**parabolic shape:** The plane intersects the right cone. The plane is perpendicular to the base of the cone. The plane does not pass through the cone’s vertex. One edge of the shape coincides with a chord of the base. The other edge has the shape of a symmetric portion of an parabola with axis of symmetry perpendicular to the first edge. The cross section is a parabolic shape.