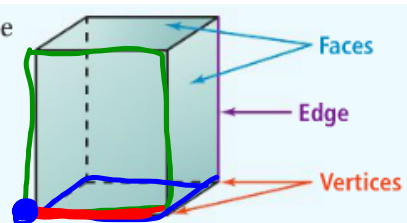


Geometry

Chapter 11

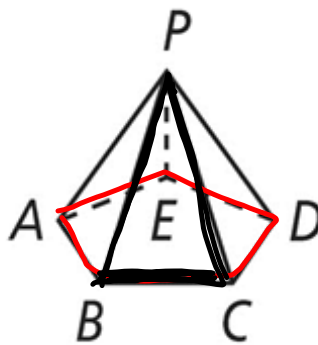
Section 11-1

A **polyhedron** is a space figure, or three-dimensional figure, whose surfaces are polygons. Each polygon is a **face** of the polyhedron. An **edge** is a segment that is formed by the intersection of two faces. A **vertex** is a point where three or more edges intersect.



Name the faces and edges of the polyhedron

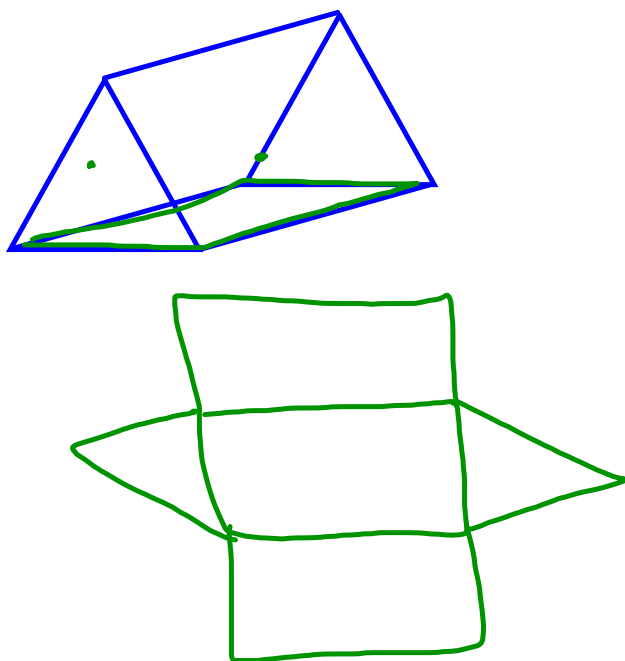
ABCDE
 $\triangle BCP$
 $\triangle ABP$
 $\triangle AEP$
 $\triangle DEP$
 $\triangle CDP$



6 vertices

\overline{PA}
 \overline{PB}
 \overline{PC}
 \overline{PD}
 \overline{PE}
 \overline{AB}
 \overline{BC}
 \overline{CD}
 \overline{DE}
 \overline{AE}

Review: Drawing a net



Take note

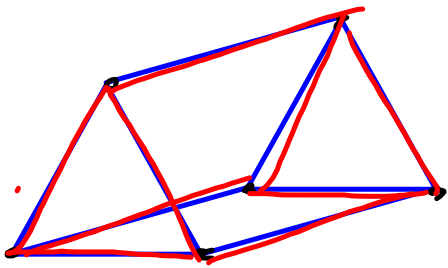
Key Concept Euler's Formula

The sum of the number of faces (F) and vertices (V) of a polyhedron is two more than the number of its edges (E).

$$F + V = E + 2$$

$$6 + 6 = 10 + 2$$

Find the number of faces, vertices and edges of the polyhedron. Verify your answer using Euler's Formula

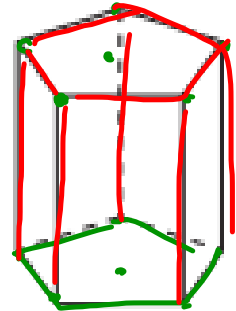


$$\begin{aligned} 5 &= F \\ 6 &= V \\ 9 &= E \end{aligned}$$

$$\begin{aligned} 5 + 6 &= 9 + 2 \\ 11 &= 11 \end{aligned}$$

$$F + V = E + 2$$

$$\begin{aligned} F &= 7 \\ V &= 10 \\ E &= 15 \end{aligned}$$



$$\begin{aligned} 7 + 10 &= 15 + 2 \\ 17 &= 17 \end{aligned}$$

Fill in the number of faces, vertices and edges of the polyhedron.

$$f = 7$$

$$v = 7$$

$$e = 12$$

$$7 + v = 12 + 2$$

$$\begin{array}{r} 7 + v = 14 \\ -7 \qquad -7 \end{array}$$

$$v = 7$$

$$f = 8$$

$$v = 7$$

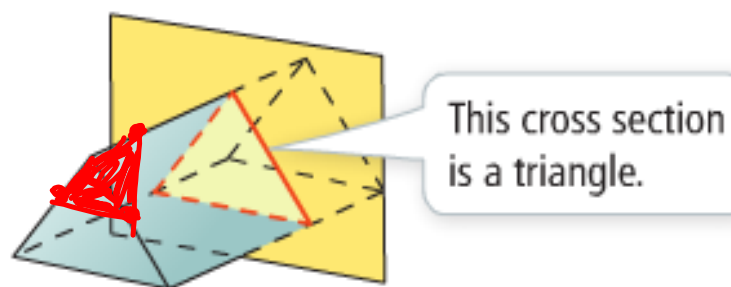
$$e =$$

$$8 + 7 = E + 2$$

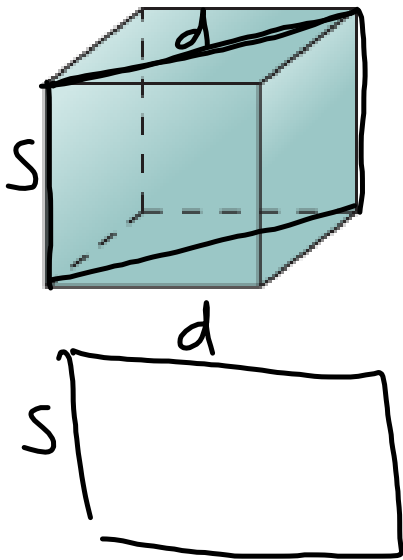
$$\begin{array}{r} 15 = E + 2 \\ -2 \qquad -2 \end{array}$$

$$E = 13$$

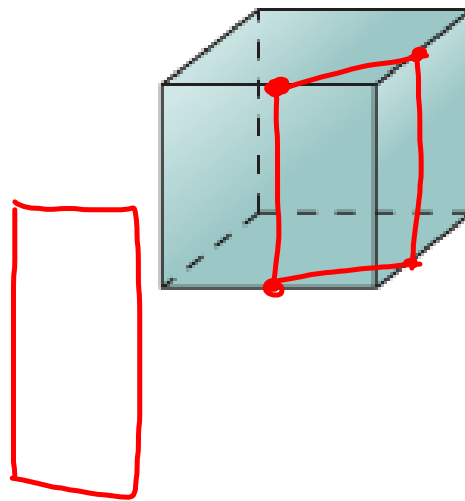
A **cross section** is the intersection of a solid and a plane. You can think of a cross section as a very thin slice of the solid.



Describe the cross section of a cube made by a plane intersecting the top face diagonally.



Describe the cross section of a cube made by a plane intersecting the cube on the front and right faces



Homework

Pages 692 - 694

6, 10, 12, 15-21 all, 26, 38