Teaching Notes for Homework #18
Pre-Algebra

This worksheet is about 2d and 3d shapes.

Identifying regular and irregular polygons

Regular means that all the sides are the same length. Polygon is used to describe any closed figure with many sides but some of the polygons have special names. The following are the ones the students need to know:

3 sides – triangle

4 sides – quadrilateral (there are lots of different ones with other special names)

5 sides – pentagon

6 sides – hexagon

7 sides – heptagon

5 sides – octagon

9 sides – nonagon

10 sides - decagon

Classifying polygons

In addition to knowing the names of all the polygons, we will further study all the different kinds of quadrilaterals.

	Sides / Angles	Sides	Angles
Q. Quadrilateral	4 / 4	Sides can be any length.	Angles can be any degree.
K. Kite	4 / 4	Has two pairs of adjacent sides. Each pairs sides are equal length.	One pair of opposite angles that are equal in degree.
T. Trapezoid	4 / 4	Sides can be any length. Has only 1 pair of parallel sides.	Angles can be any degree.
P. Parallelogram	4 / 4	Opposite sides are equal length. Opposite sides are parallel.	Opposite angles are the same.
H. Rhombus	4 / 4	All sides are equal length. Opposite sides are parallel.	Opposite angles are the same.
R. Rectangle	4 / 4	Opposite sides are equal length. Opposite sides are parallel.	All angles are 90°.
S. Square	4 / 4	All sides are equal length. Opposite sides are parallel.	All angles are 90°.

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Types of Triangles

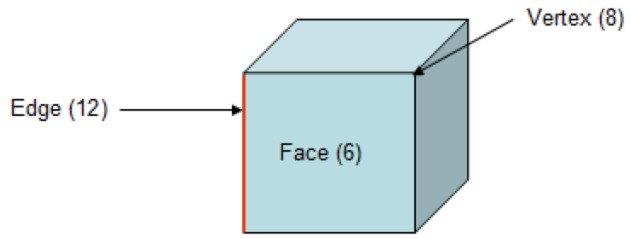
Acute Triangle:	**Equilateral Triangle:**
All angles are less than 90°.	3 equal sides. 3 equal angles.
Obtuse Triangle:	**Isosceles Triangle:**
One angle is greater than 90°.	2 equal sides. 2 equal angles.
Right Triangle:	**Scalene Triangle:**
One angle is 90°.	No equal sides. No equal angles.

Faces, vertices, and edges

These are just as straightforward as it seems. Faces are the flat "sides" of a 3d object. Vertices are the points. Edges are the straight lines where the sides meet.

Lead students through finding a pattern to the number of faces, vertices, and edges. For example, to find the number of faces all polygonal prims take the number of sides and add two.

In any geometric solid that is composed of flat surfaces, each flat surface is called a face. The line where two faces meet is called an edge.



For example, the cube above has six faces, each of which is a square. Where two squares meet, a line segment is formed, which is called an edge. In the case of a cube, it has 12 such edges.

NOTE: spheres have no faces, no vertices, and no edges. Some textbooks teach that sphere as a face. As per the definition of a face, it must be a FLAT surface and a sphere is clearly curved.