Lesson Maker Pro

Compare Flat and Solid Figures

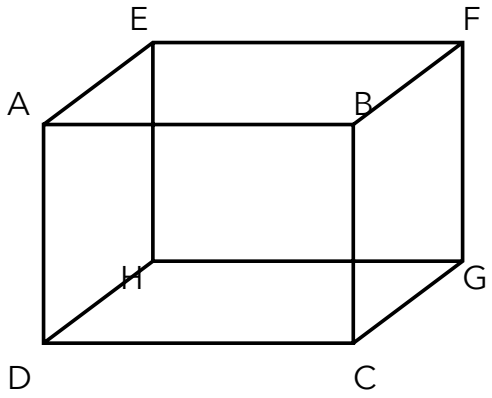
Use real models, drawings and an attribute record.

4.MG.6 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces), with and without models. Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder). Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces). Compare and contrast plane and solid figures (limited to circles, squares, triangles, rectangles, spheres, cubes, square pyramids, and rectangular prisms) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).

NAME _____ **DATE** _____

Examine the solids

Use a cube, nonsquare rectangular prism, square pyramid and sphere. A face here means a flat polygonal surface; a curved surface is not counted as a face. Examine each model from all sides and complete the table.



Solid	Flat faces: number/shapes	Edges	Vertices
Cube	_____	____	____
Rectangular prism	_____	____	____
Square pyramid	_____	____	____
Sphere	_____	____	____

Compare the pictured prism with your cube. Which counts match? What differs about their face shapes? Explain why a perspective drawing may hide some edges.

_____

Compare a face with the whole solid

Trace one face of the cube, prism and pyramid. Name each plane figure. Describe its sides, angles and vertices. For the pyramid, trace both the base and one side face.

Compare a square with a cube, a rectangle with a rectangular prism, and a triangle with a square pyramid. Explain why one flat figure cannot show all the solid's faces.

Use a ball, cone and cylinder. Which have curved surfaces? Identify any flat circular surfaces. How is a drawn circle different from the whole ball?

Teacher Key

Cube:6 square faces,12 edges,8 vertices. Rectangular prism:6 rectangular faces,12 edges,8 vertices; a cube is a special rectangular prism. Square pyramid:1 square base+4 triangular faces=5 faces,8 edges,5 vertices. Sphere:0 flat faces,0 edges,0 vertices under the stated convention.

Traces: square 4 sides/4 right angles/4 vertices; rectangle 4/4/4; pyramid base square and side triangle 3 sides/3 angles/3 vertices. Each trace is one plane figure, while the solid has several faces extending in three dimensions. A sphere has a curved surface; cone and cylinder have curved surfaces plus one/two flat circular bases respectively. A circle is flat; a ball is three-dimensional. Perspective drawings obscure back edges and distort angles; use the actual model's properties.