

**Description**

- Draw nets of cubes.
- Classify and draw front, side, and top views of familiar 3-D figures.

**Materials**

- polyhedrons
- cube-shaped box
- graph or dot paper
- BLM 18.1
- Platonic numeric solids

**Minds On ...**

**Whole Class → Guided**

**Curriculum Expectations/Question & Answer/Mental Note:** Assess students' use and understanding of mathematical language.

Show a variety of small polyhedrons. Ask:

- What is the name of this 3-D figure?
- What do we mean by congruent?
- How many congruent faces does this (polyhedron) have?
- How many edges does it have? ... vertices?
- What 2-D shape would you sketch as the front view of this 3-D figure? ... the top view?

Use a cube-shaped box that has been cut along its edges to create a net. Students compare the number of congruent squares on the net to the number of congruent square faces on the 3-D figure.

**Action!**

**Pairs → Investigation**

Students estimate the number of nets for a cube and then find all the possible different nets for a cube. Students sketch each different net on dot or graph paper. Ask: How can we confirm or refute our estimate?

Invite students who complete the task to sketch one of the 11 nets on the board or on a transparency. Students check their solutions against the board sketches.

Challenge students to arrange the numbers 1 through 6 on the faces of the net so that opposite faces have a sum of 7 (BLM 18.1).

Students cut out one of their nets from large-squared graph chart paper and form it into a cube. They write the numbers on the sides of the cube before re-opening the net.

**Consolidate Debrief**

**Whole Class → Student Presentation**

Some students explain their organized methods of determining all the possible arrangements for the numbers. How can we be sure that we have counted all of the possible arrangements?

**Individual → Independent**

Demonstrate the task on BLM 18.1, using the triangular prism packaging for some chocolate bars and talk about how it would look from different perspectives.

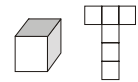
**Home Activity or Further Classroom Consolidation**

Complete worksheet 18.1.

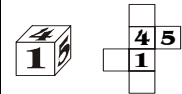
**Challenge:** Orient the numerals on the nets so that they fold up as on a regular number cube.

Determine the sum of the numbers on opposite faces of each of the Platonic solids. Provide some reasoning for your findings.

**Assessment Opportunities**



Translated and rotated nets are considered to be the same net.



Select a student to add vocabulary to the Word Wall.

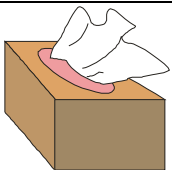
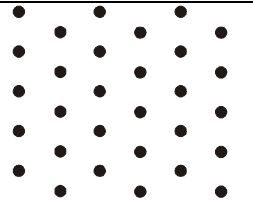
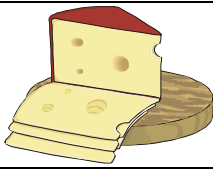
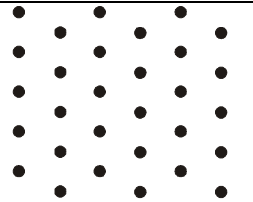

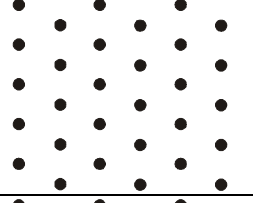

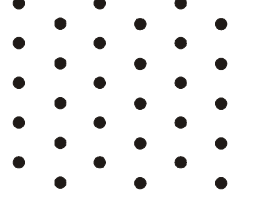

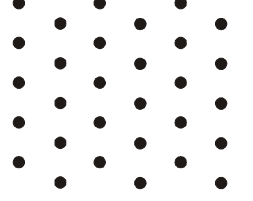

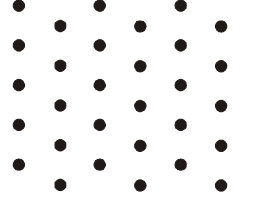
*Exploration Skill Drill*

# 18.1: Sketching 3-D Figures

Name:

Date:

Name each 3-dimensional figure illustrated below. Sketch its front, side and top views.

	3-D sketch	Front View	Side View	Top View
				
				
				
				
				
				

On the net of each cube, place the numbers 1, 2, 3, 4, 5, and 6 so that opposite faces have a sum of 7.

