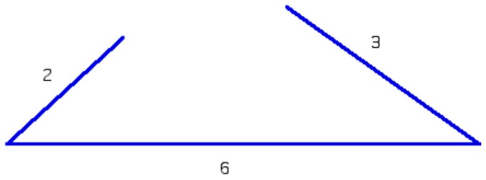
LAUNCH:

Can you form a triangle with any 3 lengths of sides?

Can a triangle be formed with sides 2in, 3in, and 6in?



1.0 Habits of Mind

Objectives:

- Warm up to the ideas behind the CME Project.
- Work experientially to begin developing mathematical habits of mind.

Pupil Name
Geometry
(Book #)
(Your Name)

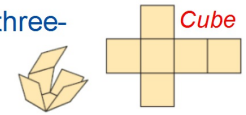
BASIC GEOMETRY VOCABULARY REVIEW:

regular polygon - a closed figure with sides all equal in length and angles all equal in measure.

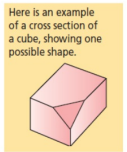
Can you name the different polygons based on the number of sides?

diagonal - a segment that joins two nonconsecutive vertices.

net - the figure that results from unfolding a three-dimensional solid.



cross section - the face that you get when you make one slice through a three-dimensional solid.



Page: 7 Materials: 3 number cubes, Tracking sheet, 18 rods

In-Class Experiment

Model the Problem

For this experiment, you need three number cubes and eighteen rods—three rods of each length, 1 unit through 6 units.

Roll the number cubes and pick three corresponding rods. For example, if you roll 5, 3, 5, pick two rods of size 5 and one of size 3. Try to make a triangle using the three rods as the sides of the triangle. Some sets of three rods will work, and others will not.

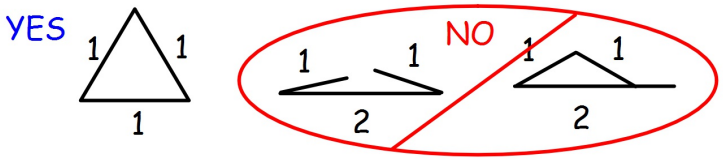
15. Repeat the experiment several times. Keep a table of your results. For the combinations that do not work, write an explanation of what went wrong when you tried to make a triangle.

16. **Write About It** Your experiments dealt only with side lengths from 1 to 6 and not with noninteger lengths, such as $4\frac{1}{2}$ or 3.14159. Write a rule that explains how you can tell if *any* three segments will actually fit together to make a triangle. Some sets of three lengths just do not work. Explain why they do not and how to predict which ones do not from the lengths involved.

17. Which of the following sets of three lengths will make a triangle? Explain.

a. 1 cm, 6 cm, 6 cm yes
b. 2 cm, 4 cm, 6 cm no
c. 1 cm, 1 cm, 1 cm yes
d. 2.1 cm, 4 cm, 6 cm yes
e. 0.99 cm, 0.99 cm, 2 cm no

15 minutes



Roll			Triangle?
1	1	1	yes
1	1	2	no

Exit Ticket:

Can I form a triangle with the following sides?:

1. 1cm, 3cm, and 7cm
2. 2in, 2in, and 4in
3. 0.2ft, 0.7ft, and 0.6ft