Mr. Tu's Excellent Examples

Module 9
Origami Enthusiast

Applying Lesson 9.1

Use the grid on page 5 to work the Problems in 9.1.

1. Sketch a 10 inches x 10 inches square on the coordinate plane. Place the center of the square at the origin. Let each unit on the *x*-axis and *y*-axis represent 1 inch.

2. Label the four quadrants on the grid.

Applying Lesson 9.2

Use the grid on page 5 to work the Problems in 9.2.

1. Graph the following line segments:

   a. Endpoints at (-5, 0) and (0, 5)
   b. Endpoints at (0, 5) and (5, 0)
   c. Endpoints at (5, 0) and (0, -5)
   d. Endpoints at (0, -5) and (-5, 0)

2. If a fold is made along the line segment graphed in Quadrant I and folded to the back, the remaining portion of Quadrant I will form what type of polygon?

Right Isosceles Triangle

Applying Lesson 9.3

1. If you have a 10 inch x 10 inch sheet of paper, what is the figure with the largest dimension you could create on that sheet of paper. Give the answer rounded to the nearest tenth of an inch.

$$10^2 + 10^2 = c^2$$
$$200 = c^2$$
$$c = \sqrt{200}$$
$$c = 10\sqrt{2}$$
$$c \approx 14.1$$

2. What is the slope of each of the line segments graphed in Lesson 10.2 Question 1?

a. Slope = 1
b. Slope = -1
c. Slope = 1
d. Slope = -1

3. Based on the slope of the line segment with endpoints (-5, 0) and (0, 5) and the slope of the line segment with endpoints (5, 0) and (0, -5), these line segments are **parallel**.

4. Because the line segment with endpoints (-5, 0) and (0, 5) and the line segment with endpoints (0, -5) and (-5, 0) meet to form a 90° angle, these line segments are **perpendicular**.

Applying Lesson 9.4

To be able to answer Questions 1-3, students must complete Lesson 9.4 and view the Mr. Tu segment.

1. In the Mr. Tu segment, what type of polyhedron did Michael make by folding a single sheet of paper?

   Hexahedron

2. Was the object Michael folded convex or nonconvex?

   Convex

3. How many faces, edges, and vertices did Michael's object contain?

   Six faces
   Twelve edges
   Eight vertices

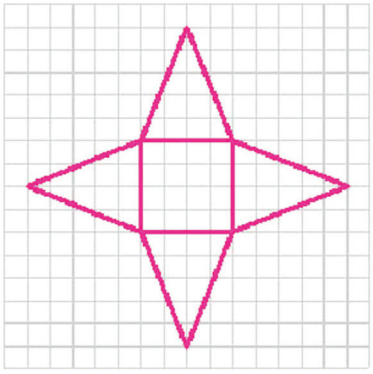
Applying Lesson 9.5

Drawing nets can help determine how to form a geometric solid from a flat surface. This is often used in designing cardboard packaging or even in creating geometric solids from sheet metal.

1. Draw a net for a rectangular prism.

   Possible Answer:

2. Draw a net of a square pyramid. Have you ever seen cardboard packaging that formed a square pyramid? If you unfold a square pyramid package and lay it flat, how might it look different from your net?



Possible Answer:

The flat surface might include holes or extensions for attaching the faces together.

Name _____

Use this grid with the questions in 9.1 and 9.2.