

What is found in an Engaging Mathematics TEKS-based activity?

TEKS have been phrased in student-friendly language so that students may gauge their learning.

Common classroom materials are used for ease of preparation. Materials are listed 1-per-student unless otherwise noted. Page titles for student handouts are bolded.

ELPS have been included in the form of a student-friendly language objective.

Dilations on a Coordinate Plane, Activity 1

8(3)(B)

Activity Objective

I can use the distance from the center of dilation to corresponding points on an image and its preimage to determine the scale factor of the dilation.

I can justify my reasoning about the relationship between the coordinates of corresponding vertices of an image and its preimage.

Materials

- **Measure This!**
- Metric ruler
- Highlighters

The emphasis on algebra readiness skills necessitates the implementation of graphing calculators, so it is assumed all student have access to graphing calculators.

Answer Key

Origin to Vertex	Ratio
$\frac{OC'}{OC} \approx 5.1 \text{ cm}$	$\frac{OC'}{OC} \approx \frac{3}{1}$
$\frac{OC}{OC} \approx 1.7 \text{ cm}$	

$C(-2, 3)$ $C'(-6, 9)$

The ratio of $\frac{OC'}{OC}$ is approximately $\frac{3}{1}$. This ratio describes the relationship between the corresponding coordinate values since the x-coordinate of the image is 3 times the x-coordinate of the preimage, and the y-coordinate of the image is 3 times the y-coordinate of the preimage.

*Note: Eighth grade focuses on dilations with the origin as the center of dilation. The terminology "about the origin" is included to avoid student overgeneralization.

An answer key is included for each activity.

Debriefing Questions

- Is the dilated figure an enlargement or a reduction?
- If (x, y) is a vertex or any point on triangle ABC , what algebraic representation could be used to represent the relationship between (x', y') and (x, y) ? Why?

Debriefing questions are included to assist the teacher with facilitating a post-activity student discussion.

Communicating about Mathematics

Students may respond by talking to a partner and recording a written response in the space provided.

Possible sentence frame:
I think the relationship between A and A' or B and B' _____.

Listen For . . .

- Connections between a dilation classified as an enlargement and a scale factor greater than 1.
- Connections among the scale factor used in a dilation, k , and ratios comparing the distance of corresponding vertices from the origin.

Listen/Look For . . .

Use of equivalent ratios to describe measurements of corresponding sides, corresponding coordinate values, corresponding distances from the origin, and the scale factor used in a dilation.

Each activity includes an opportunity for students to articulate and summarize their own learning. A sentence frame is provided for students who may need language support.

Key learning outcomes from the debriefing discussion are summarized here.

Key learning outcomes from the Communicating about Mathematics section are included here.