

(8.6) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense.

(8.6.a) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense. The student is expected to generate similar figures using dilations including enlargements and reductions.

Clarifying Activity with Assessment Connections

Working in small groups, students lay a 1-centimeter grid transparency onto simple pictures and use the relationship of the picture to the squares on the grid (the properties of dilation) to draw a similar picture onto a larger grid, making an enlargement of the picture. (Note: If transparencies are not available, pictures may be drawn or copied directly onto a grid.)

Each group can use a different size grid for its enlargement, compare their enlargements, and use measurements of corresponding parts to identify the scale factor for each enlargement.

Assessment Connections

Questioning . . .

Open with . . .

- How is your enlargement like your original and how is it different?

Probe further with . . .

- How do you determine corresponding parts of figures?
- How could you describe the relationship between the corresponding sides of the two figures?
- How could you describe the relationship between the corresponding angles of the two figures?
- How much did the measurements of the corresponding parts of your new figure increase when compared to the original figure?
- How does your previous knowledge of similarity relate to this activity?

Listen for . . .

- Can the student use geometric terms such as dilation, enlargement, scale factor, growth, or multiples to describe the change in size?
- Does the student verbalize strategies about drawing the enlargement?
- Does the student formulate questions to problem-solve during the activity?
- Can the student use geometric terms to describe the similarity between the original and its enlargement?
- Does the student formulate questions to analyze the changes in the figure?

- Does the student interact with group members to formulate relationships and establish patterns among the figures?

Look for . . .

- Can the student accurately copy the original figure to the transparency grid?
- Can the student recognize if the enlargement is an accurate duplicate of the original figure?
- Does the student self-check the enlargement for an accurate scale factor?
- Does the student demonstrate strategies to find the scale factor of the dilation?

TAKS Connections

Released TAKS items related to this activity can be found at the [Texas Education Agency website](#):

- Spring 2003, grade 8, item 31
- Spring 2004, grade 8, item 15
- Spring 2006, grade 8, item 36

(8.6.b) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense. The student is expected to graph dilations, reflections, and translations on a coordinate plane.

Clarifying Activity with Assessment Connections

Students dilate, reflect, or translate a polygon on a coordinate plane, compare the coordinates of the new shape to the corresponding coordinates of the original shape, and look for patterns in the pairs of coordinates that describe the transformation.

Example: Reflect the figure over the x -axis. Give the new coordinates. Reflect the original figure over the y -axis. Give the new coordinates.

Assessment Connections

Questioning . . .

Open with . . .

- What patterns do you notice in the ordered pairs from the original figure and the way they correspond to the ordered pairs of the transformation?

Probe further with . . .

- After the figure reflects over the x-axis, what do you notice about the values of the x-coordinates in the original figure compared to the values of the x-coordinates of the transformed figure?
- After the figure reflects over the y-axis, what do you notice about the values of the y-coordinates in the original figure compared to the values of the y-coordinates of the transformed figure?
- What do you notice about the y-coordinates of the two figures?

Listen for . . .

- Can the student verbalize patterns found in the corresponding coordinates?
- Can the student describe the differences between the processes for each type of transformation?
- Can the student use the appropriate vocabulary when identifying transformations?

Look for . . .

- Can the student plot the points correctly?
- Can the student create a coordinate plane with correct symbols?
- Can the student make the connection from transforming points visually one by one to making a generalization and applying the generalization to the set of coordinates?

TAKS Connections

Released TAKS items related to this activity can be found at the [Texas Education Agency website](#):

- Spring 2003, grade 8, items 10 and 43
- Spring 2004, grade 8, item 27
- Spring 2006, grade 8, item 7