

## SYMMETRY AND SIMILARITY

### Performance Standard 9B.C

Draw three figures that have lines of symmetry and identify similar shapes accordingly:

- *Mathematical knowledge*: identify figures that show lines of symmetry, the lines themselves, and the shapes built to show similarity,
- *Strategic knowledge*: use appropriate strategies to draw lines of symmetry and similar shapes, and
- *Explanation*: explain and justify completely and clearly what was done to complete the task and why it was done.

### Procedures

1. ***In order to identify, describe, classify, and compare relationships using points, lines, planes, and solids (9B)***, students should experience sufficient learning opportunities to develop the following:
  - Describe the difference between congruence and similarity.
  - Describe a motion or a series of motions that will show that two shapes are congruent.
2. Provide each student a copy of the “Symmetry and Similarity” recording sheet, the rubric, straws and twist ties. Have students review and discuss the task to be completed and how the rubric will be used to evaluate their work.
3. Ask students to complete parts A and B on the recording sheet:
  - Part A: Ask students to draw shapes or letters showing multiple lines of symmetry. Each line of symmetry should be identified with a dotted line.
  - Part B: Ask students to build three-dimensional shapes with the straws and twist ties that are similar to the ones shown on the recording sheet.
4. Evaluate each student’s work using the rubric as follows and use the guide on the rubric to determine the performance level.
  - 4 = all lines of symmetry and similar shapes were drawn/built correctly; all strategies were appropriate; all explanations were complete and accurate.
  - 3 = most lines of symmetry and similar shapes were drawn/built correctly, but some may include minor errors; most strategies were appropriate; most explanations were clear and accurate.
  - 2 = most lines of symmetry and similar shapes had minor errors; some explanations were adequate.
  - 1 = lines of symmetry and similar shapes had minor errors had major errors; explanations were totally unrelated to the task.
  - 0 = task not attempted.

Examples of Student Work follow

### Time Requirements

- One class period

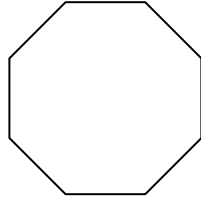
### Resources

- Copies of the “Symmetry and Similarity” recording sheet
- Enough straws to build the shapes described on the recording sheet
- Enough twist ties to connect the straws
- Mathematics Rubric

NAME \_\_\_\_\_ DATE \_\_\_\_\_

### SYMMETRY AND SIMILARITY

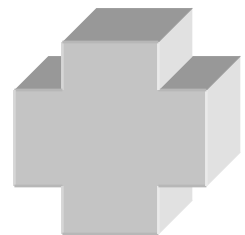
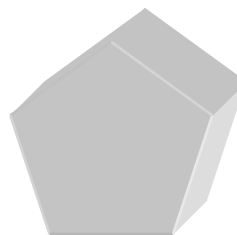
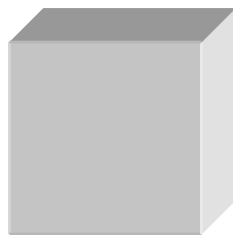
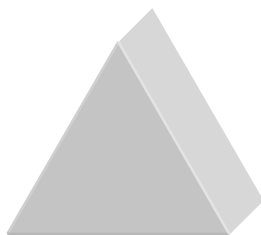
**Part A:**



This octagon has 8 lines of symmetry. Using a dotted line, draw in all 8 lines of symmetry.

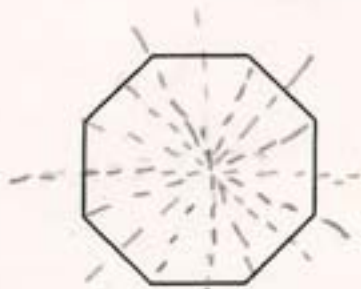
Now, draw 4 other figures (or letters) that have more than one line of symmetry. Be sure to show all the lines of symmetry in each shape. Explain your drawings to your teacher. (This can be done orally or in writing.)

**Part B:** Using straws and twist ties, build shapes similar to the ones shown here.



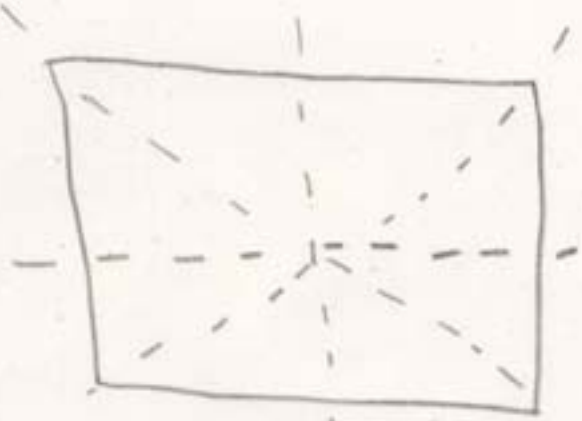
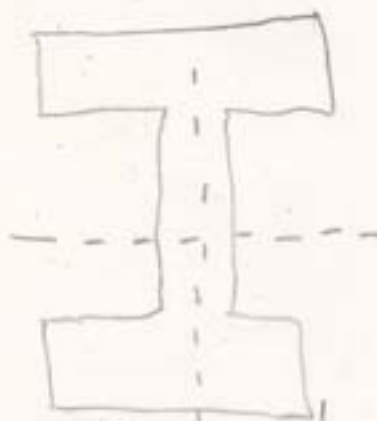
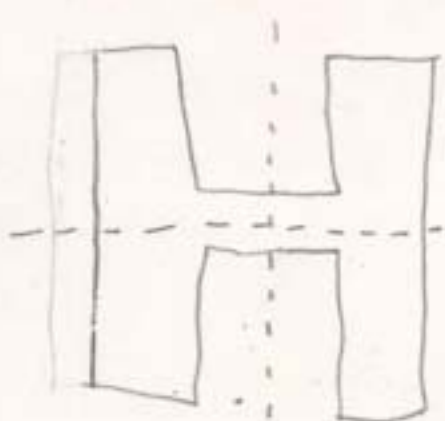
**SYMMETRY AND CONGRUENCE**

**Part A:**



This octagon has 8 lines of symmetry. Using a dotted line, draw in all 8 lines of symmetry.

Now, draw 4 other figures (or letters) that have more than one line of symmetry. Be sure to show all the lines of symmetry in each shape. Explain your drawings to your teacher. (This can be done orally or in writing.)



**Part B:** Using straws and twist ties, build shapes congruent to the ones shown here.



