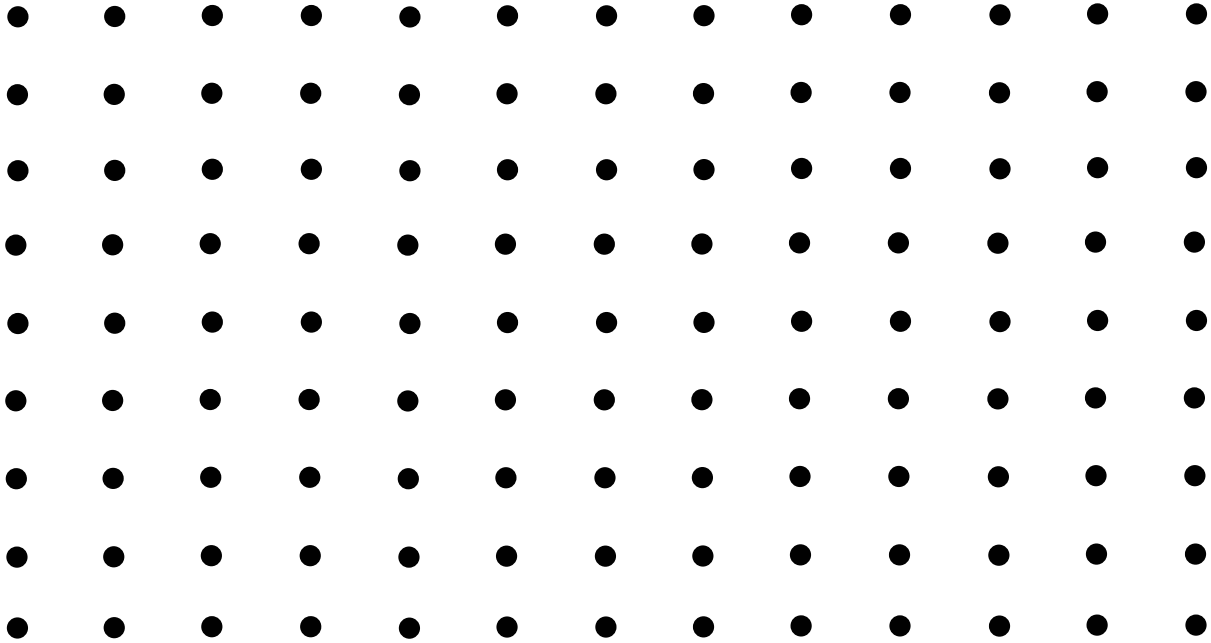


Drawing Plane Figures

Directions: Use the grid and the problem-solving steps presented below to answer the following question:

What happens when angles intersect with other geometric building blocks (lines, line segments, and rays) within the plane?



Problem-Solving Steps:

- **Understand the Problem**
- **Decide on a Plan**
- **Carry out the Plan**
- **Look Back and Review**

Step 1: Restate the problem in your own words:_____

List any questions you have at this time:_____

Jot down any hypotheses you have at this point:_____

Share your questions and hypotheses with others.

Step 2: List the first steps you plan to take in order to solve the problem:

Share your plan with others.

Step 3: Carry out the Plan

Step 4: Look Back and Review

NOTE: Steps 3 and 4 may occur several times before you find a solution. If new questions arise as you follow the plan, look back and review what you have learned. Do you need to adjust your plan in order to answer the new questions? If yes, then do so. Then, continue with your new plan. Remember that your goal is to find a solution!

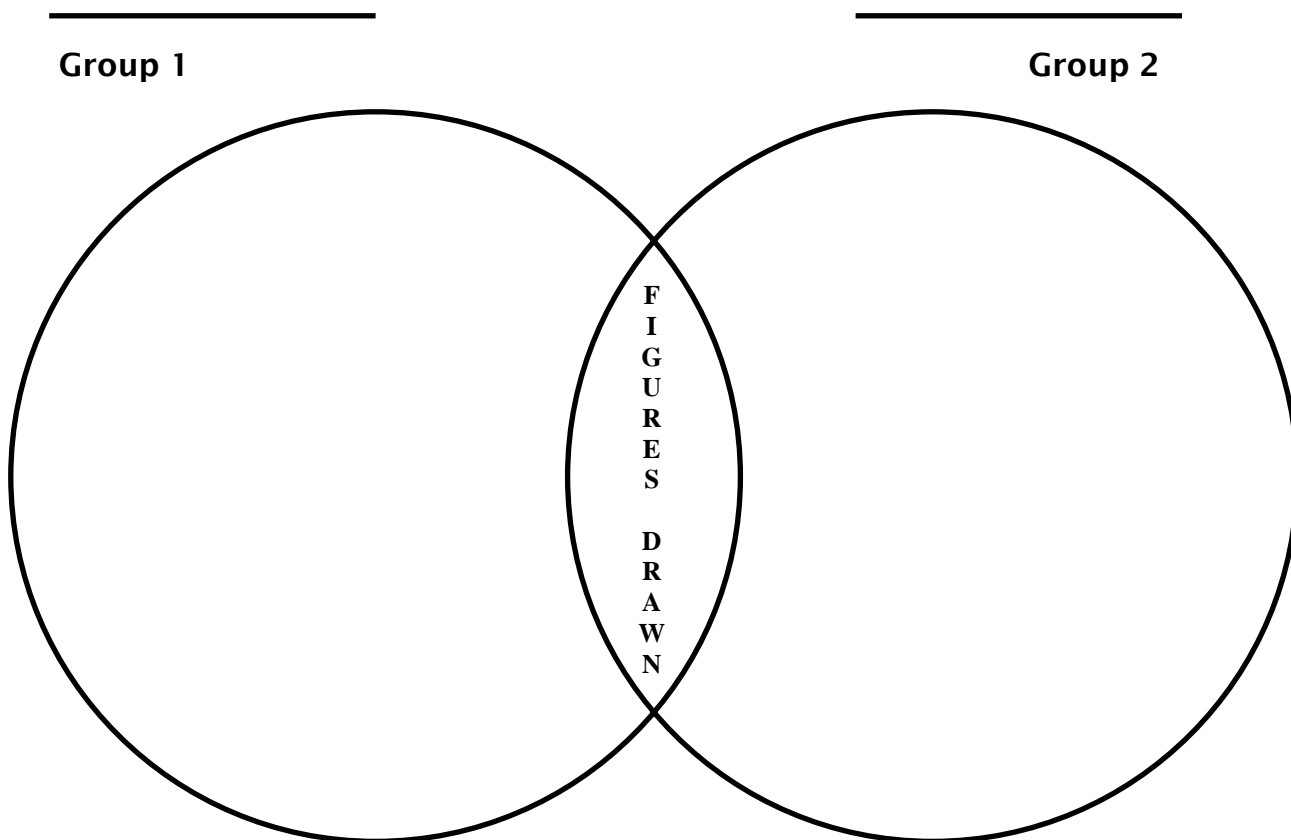


Problem:

What happens when angles intersect with other geometric building blocks (lines, line segments, and rays) within the plane?

My Solution: (Explain your answer in paragraph form.)

Classifying Plane Figures



Directions:

Classify the figures using the two-ring Venn Diagram. Write a title for each group on the line above each circle. Write a description for each classification using the definition format (general class + specific details).

Group 1

Group 2

What happens when angles intersect with other geometric building blocks (lines, line segments, and rays) within the plane?

Sample Notes

Characteristics of Group 1:

-
-
-
-

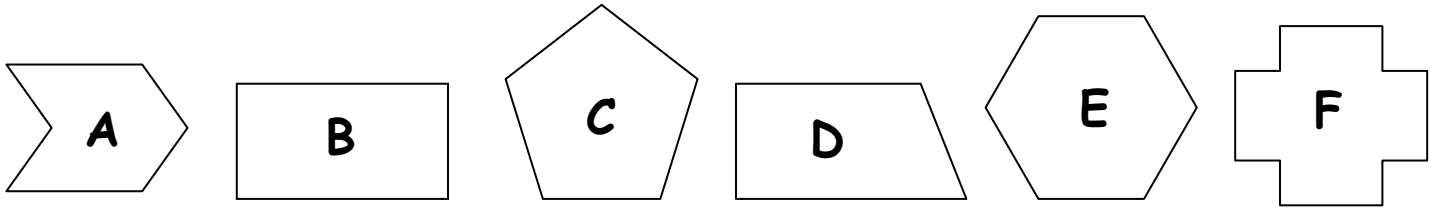
Characteristics of Group 2:

-
-
-
-

Sample Paragraph

Classifying Polygons

Here are some polygons.



Sort the polygons into two groups based on a common property. Each polygon must fit into one group, but not both. It is possible for a group to have only one shape.

Part A

- Fill in the chart below. Write the letters of the polygons in the groups you have made.
- Write a title for each group on the line below each box.

Group 1	Group 2

Part B

Draw one new polygon for each of your groups.

Group 1	Group 2

Explain why your new shapes fit each group.

Short-Answer Question Rubric

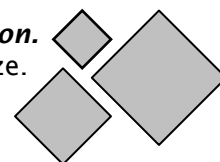
	2 points	1 point	0 points
Answering the Problem	You arrive at a correct answer.	You arrive at a partially correct answer.	Your answer was incorrect or not given at all.
Showing your Work	You follow the given directions in order to show how you solved the problem. All of the steps show correct math procedures.	You follow the given directions in an attempt to show how the problem was solved. Some of the steps show correct math procedures.	You make no attempt to show how you solved the problem, or all of the steps shown are incorrect.
Explaining & Interpreting your Answer	You explain how you solved the problem so clearly and completely that someone else can find the answer. When asked, you make true statements about the given answer.	You explain how you solved the problem, but leave out steps that are needed to guide the reader to the correct answer. When asked, you attempt to make true statements about the given answer.	Your explanations and interpretations are not correct, understood, or given.
Remember:	<i>A score of two means your work shows a complete understanding of the math concepts and procedures used in the problem.</i>	<i>A score of one means your work shows a partial understanding of the math concepts and procedures used in the task.</i>	<i>A score of zero means your work was completely incorrect, not understood, or that you gave no response at all.</i>

Building Polygons

Page 1

Polygons Created (Draw <i>similar</i> * shapes.)	Name of Polygon	# of Sides	# of Angles	# of Vertices
		3		
		4		
		5		
		6		
		7		
		8		

- A closed plane figure made up of three or more line segments is a ***polygon***.
- ***Similar*** polygons have the same shape, but not necessarily the same size.

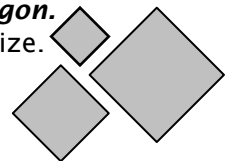


Building Polygons

Page 2

Polygons Created (Draw <i>similar</i> * shapes.)	Name of Polygon	# of Sides	# of Angles	# of Vertices
		9		
		10		
		11		
		12		
		13		
		14		

- A closed plane figure made up of three or more line segments is a ***polygon***.
- ***Similar*** polygons have the same shape, but not necessarily the same size.

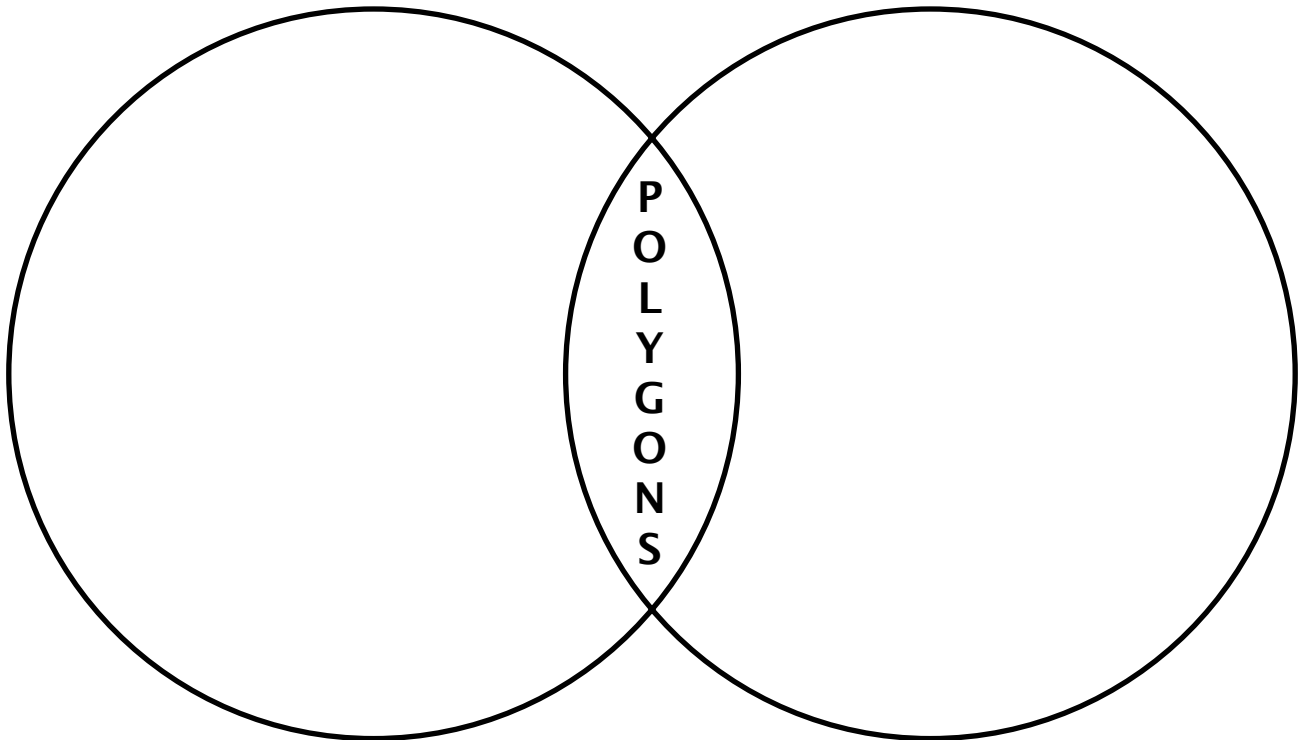


Venn Diagram

Classifying Polygons

Irregular Polygons

Regular Polygons



Building Polygons

Notes and Paragraph Page

Explain the differences that exist between **irregular** and **regular** polygons.

Sample Notes

Characteristics of Irregular Polygons:

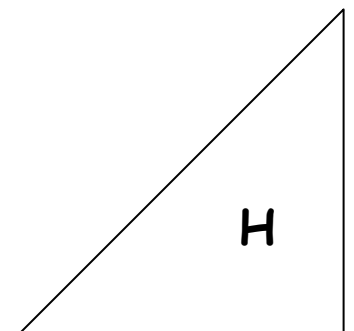
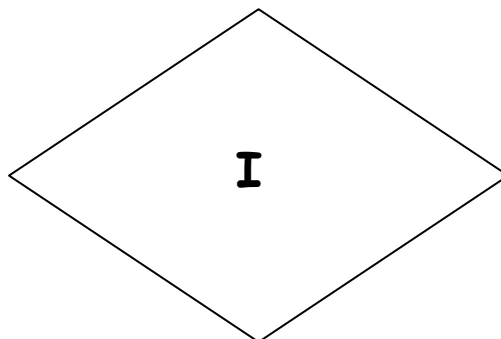
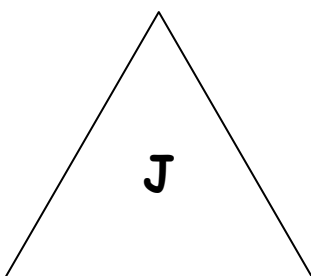
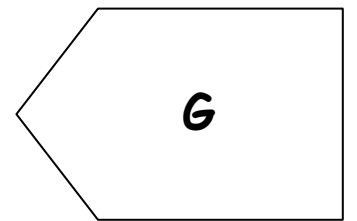
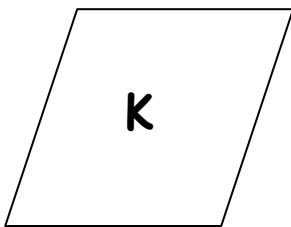
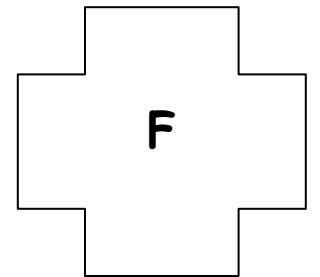
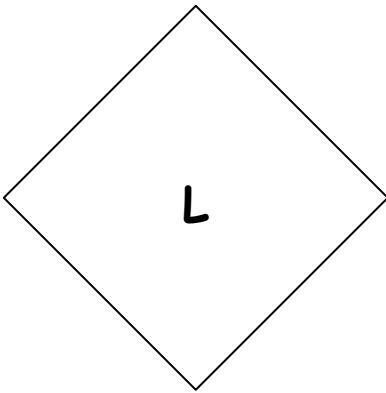
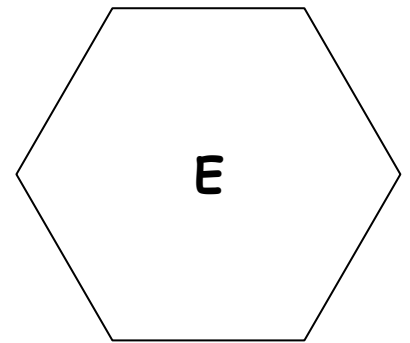
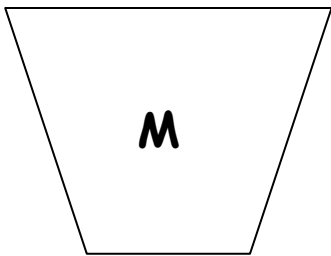
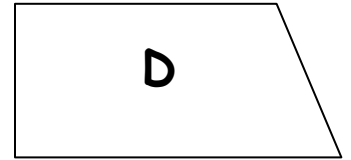
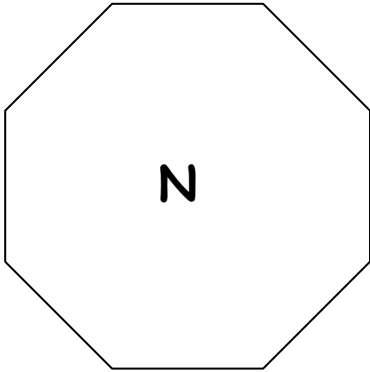
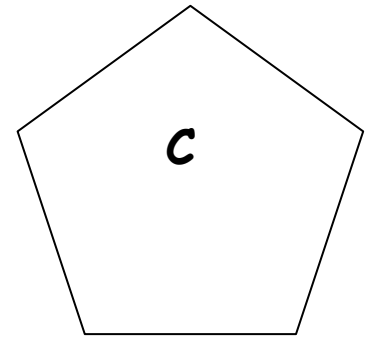
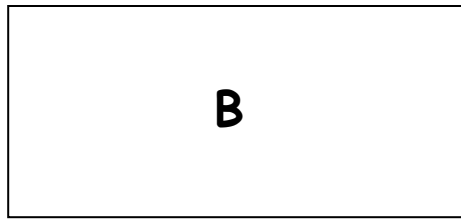
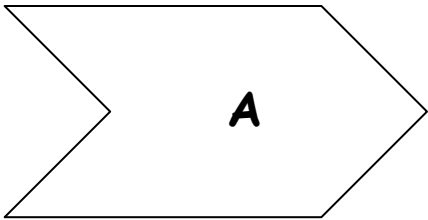
-
-
-
-

Characteristics of Regular Polygons:

-
-
-
-

Sample Paragraph





Sorting all Sorts of Polygons...

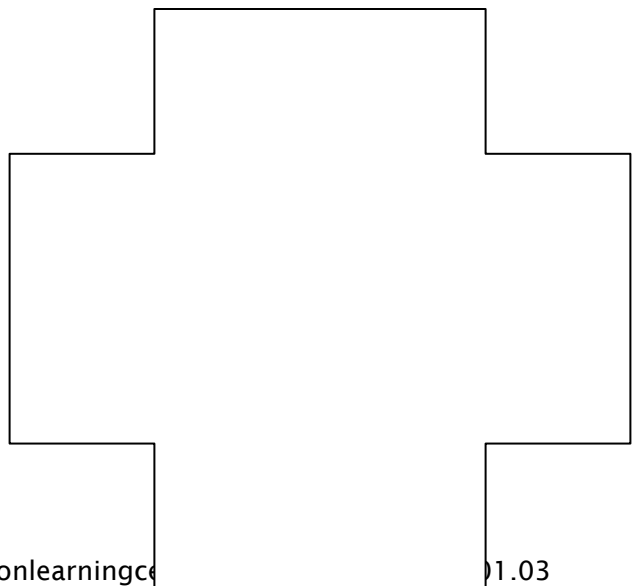
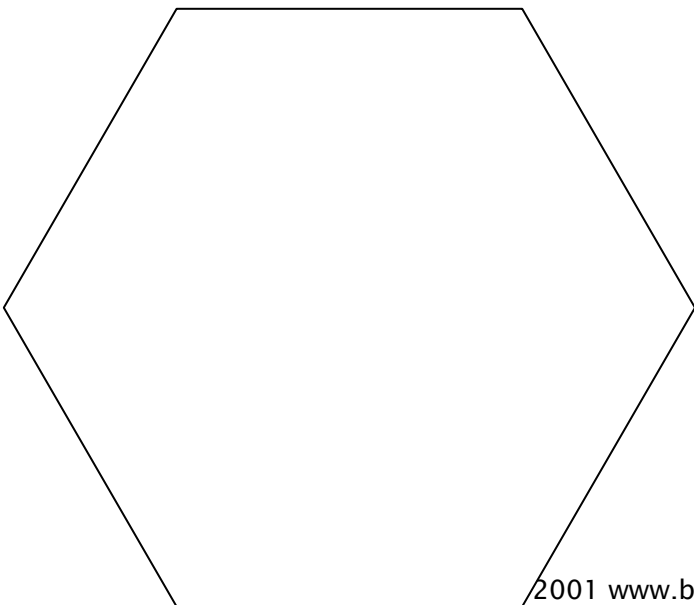
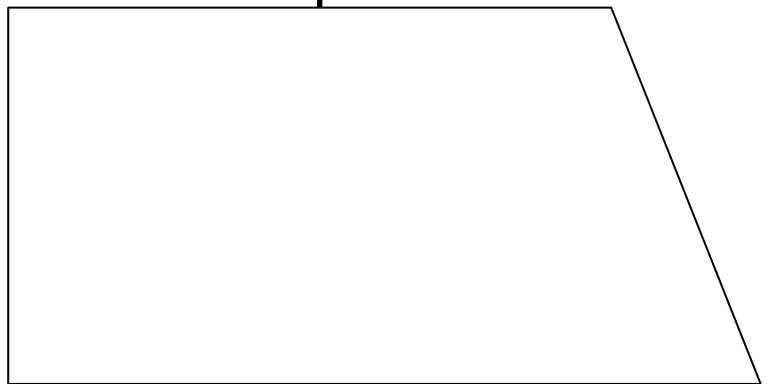
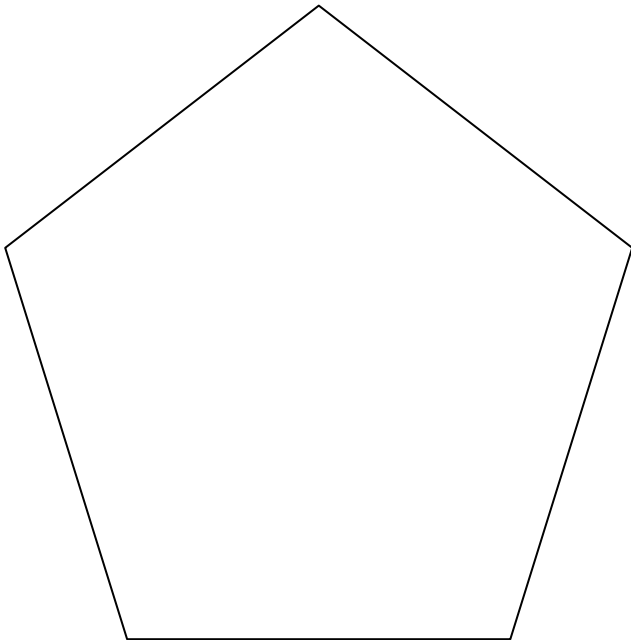
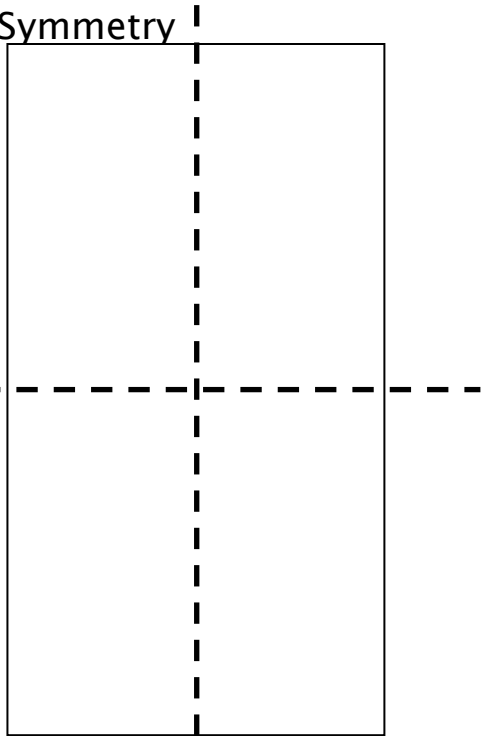
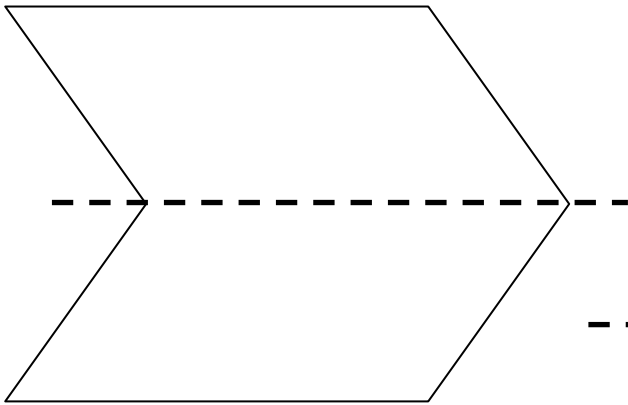
1. Write the ***name*** of each polygon on the shape.
2. List the ***regular*** polygons (by letter):

3. List the ***non-regular*** polygons (by letter):

4. **Measure** the angles and lengths of each regular polygon. **Record** the measurements on each polygon.

Polygons A-F

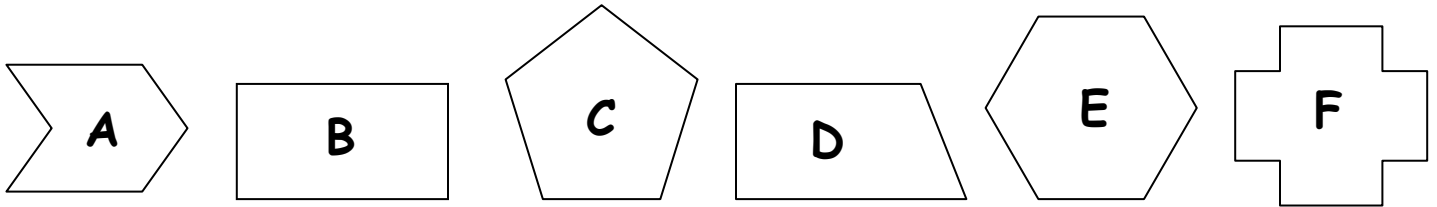
An Introduction to Symmetry



Building Code Check-Up #3

Part A

Here are some polygons.



Sort the polygons into two groups based on a common property. Each polygon must fit into one group, but not both. It is possible for a group to have only one shape.

1. Fill in the chart below. Write the letters of the polygons in the groups you have made.
2. Write a title for each group on the line below each box.

Group 1

Group 2

--	--

3. Draw one new polygon for each of your groups.

Group 1

Group 2

--	--

4. Explain in a paragraph why your new shapes fit each group.

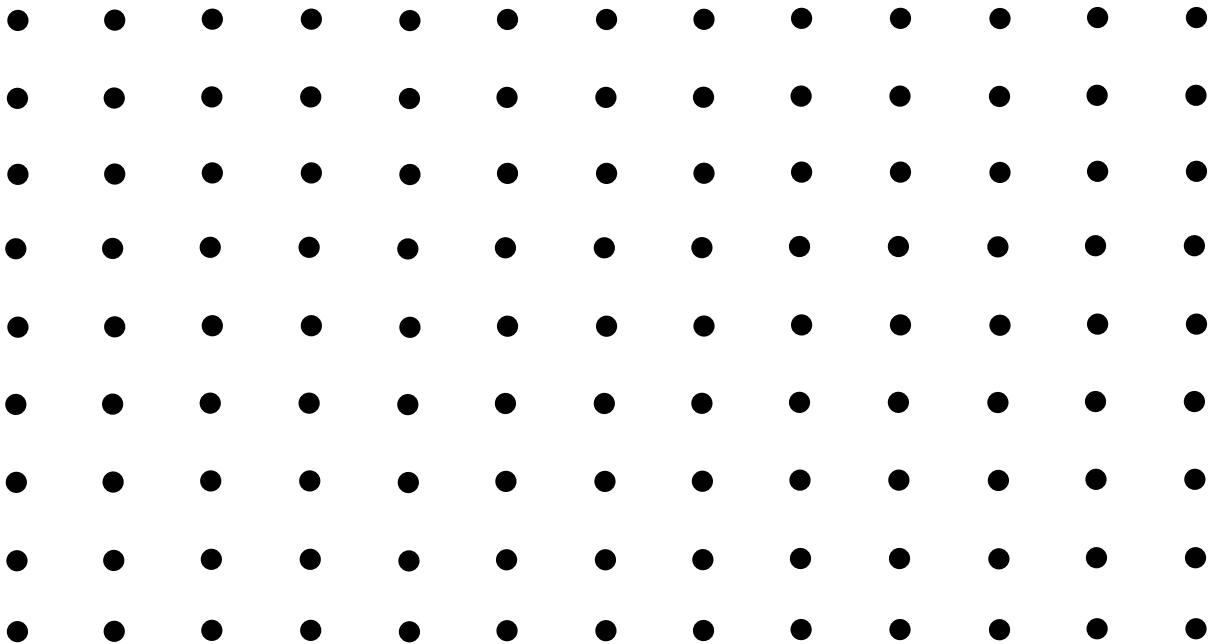
Part B

5. Draw three different polygons in the plane below.

- One of the three polygons should be *regular*.

6. Name each polygon.

- Remember to include "*regular*" in one of your labels.



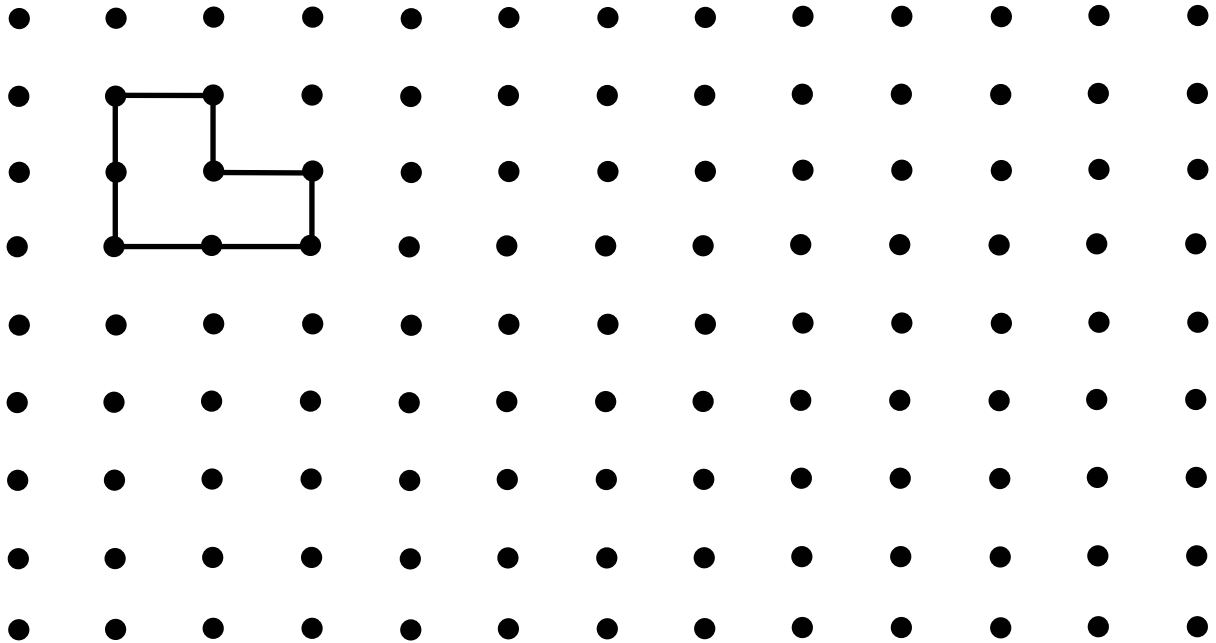
Part C

7. Draw a figure in the plane below that is *congruent* to the hexagon.

- Label it Figure C.

Draw a figure in the plane below that is *similar* to the hexagon.

- Label it Figure S.



8. Explain in a paragraph how you know that *Figure S* is similar to the original hexagon.

Building Code Check-Up #3 Scoring Criteria

Part A

1. **5 points** Students classify the polygons into two groups. Each polygon fits into one group, but not both.
2. **5 points** Students write a title for each group using appropriate geometric vocabulary to describe the common properties and/or attributes.
3. **10 points** Students draw polygons that match the common properties and/or attributes identified for each group.
4. **20 points** Students follow paragraph form to clearly and completely explain their classifications (# of points x 10). The explanations contain specific details that support the polygons and titles selected for each group.

See the adapted Short-Answer Question rubric below to understand what a “clear and complete” answer looks like for this prompt.

	2.0 points	1.5 points	1.0 points	0.5 points
Explaining your Answer	Your explanation is so clear and complete that the reader can use the specific details and vocabulary you provide to correctly group new polygons.	Your explanation is clear and complete. It is supported by specific and appropriate vocabulary. It is clear to the reader why the polygons are in each group.	Your explanation is vague. Appropriate vocabulary may be used, but specific details are lacking. It is hard for the reader to understand how or why the polygons are grouped.	Your explanation is unclear and/or incomplete. It contains inappropriate or insufficient vocabulary. The reader is confused about how the polygons are grouped.

Part B

5. **10 points** Students draw three different polygons (3 points each). One of the polygons drawn should be a *regular* polygon (1 point).
6. **10 points** Students label each polygon (3 points each), and identify which of the polygons is *regular* (1 point).

Part C

7. **20 points** Students draw (6 points each) and label (4 points each) figures that are similar and congruent to the given hexagon.
8. **20 points** Students follow paragraph form to clearly and completely explain how they know that Figure S is similar to the given hexagon (# of points x 10).

See the adapted Short-Answer Question rubric below to understand what a “clear and complete” answer looks like for this prompt.

	2.0 points	1.5 points	1.0 points	0.5 points
Explaining your Answer	Your explanation is so clear and complete that the reader could use the specific details and vocabulary you provide to draw other similar figures.	Your explanation is clear and complete. It is supported by specific and appropriate vocabulary. It is clear to the reader why you drew Figure S as you did.	Your explanation is vague. Appropriate vocabulary may be used, but specific details are lacking. It is hard for the reader to understand why you drew Figure S.	Your explanation is unclear and/or incomplete. It contains inappropriate or insufficient vocabulary. The reader is confused about similar figures.