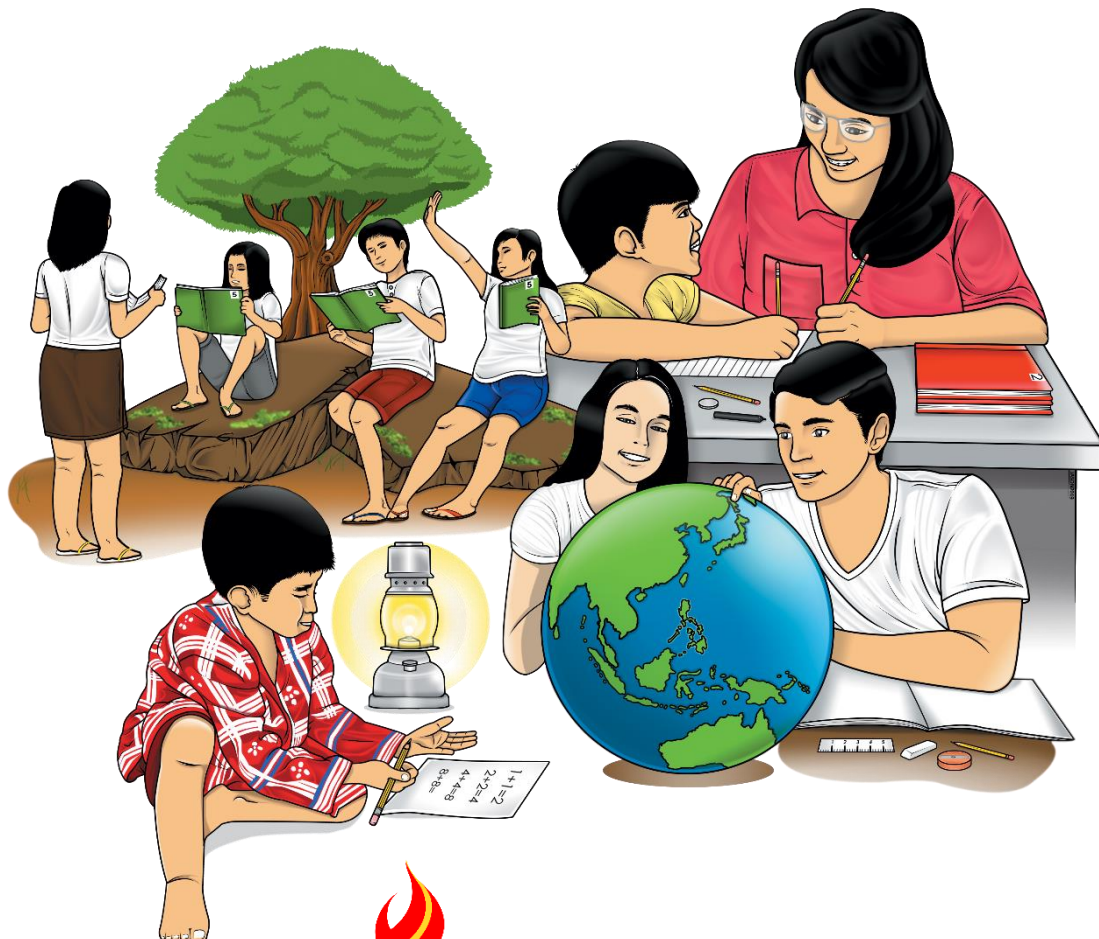


5

# Mathematics

## Quarter 3 – Module 8: Visualizing Congruent Polygons



**Mathematics – Grade 5**  
**Alternative Delivery Mode**  
**Quarter 3 – Module 8: Visualizing Congruent Polygons**  
**First Edition, 2020**

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# **Mathematics**

## **Quarter 3 – Module 8: Visualizing Congruent Polygons**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## ***What I Need to Know***

Good day Mathletes! The idea of equality in numbers is now extended to figures and this is referred to as congruence. You can see congruent figures all around us. Go to a grocery and what do you see? Packs of drinks are of uniform shapes and sizes. In this module, you are going to understand and visualize congruent polygons. You will learn what makes shapes or plane figures congruent.

After going through this module, you are expected to:

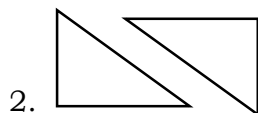
1. visualize congruent polygons.

Before you begin the lesson, first, let us check what you know about congruent polygons.



## ***What I Know***


- A. Directions: Write the letter of your choice of answer on a separate sheet of paper.
1. When are two figures congruent?
    - A. They are both line segments.
    - B. They have the same size.
    - C. They have the same shape.
    - D. They have the same size and shape.

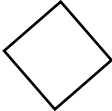

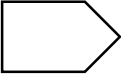



Are these two triangles congruent?

- A. No
- B. Yes
- C. Maybe
- D. Never

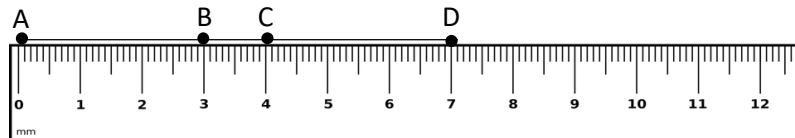
3. In congruent figures, the corresponding sides are congruent, and the corresponding angles are \_\_\_\_\_.
- A. congruent
  - B. complementary
  - C. non-congruent
  - D. supplementary

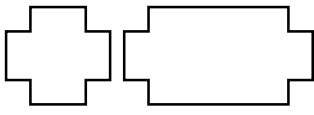
4. Among the figures below, which one is most likely to be congruent to  ?

- A. 
- B. 
- C. 
- D. 

5. Matching sides are called \_\_\_\_\_ sides.
- A. equal
  - B. opposite
  - C. congruent
  - D. corresponding

6. Which two-line segments are congruent in the figure?
- A.  $\overline{AB}$  and  $\overline{BC}$
  - B.  $\overline{AB}$  and  $\overline{AC}$
  - C.  $\overline{BC}$  and  $\overline{BD}$
  - D.  $\overline{AC}$  and  $\overline{BD}$



7.  Are these figures congruent?

- A. No
  - B. Yes
  - C. Maybe
  - D. Never
8. How do you call this given pair of triangles?
- A. congruent
  - B. corresponding
  - C. non-congruent
  - D. same triangle
9. Which of the following is **TRUE** for any two congruent polygons?
- A. Their areas are equal.
  - B. Their perimeters are equal.
  - C. They can be made to fit together when superimposed.
  - D. All of the above
10. Which of the following is a pair of congruent polygons?
- A. Any two right triangles
  - B. Any two isosceles triangles
  - C. Any two rectangles
  - D. None of these

## Lesson

# 1

# Visualizing Congruent Polygons

Two polygons are congruent if and only if their corresponding sides and angles are congruent. Thus, polygons that have the same size and shape are congruent. Success in completing this module shows that you have understood what polygons are, their types, their properties and when they are congruent. Learning about polygons does not just end in the identification of shapes, sizes and properties. Knowledge on visualizing congruent polygons has an important role in our daily living such as the awareness of its presence in nature, in art, in human-built structures and its other applications all around us.

Are you ready to learn? Let's explore the lesson.



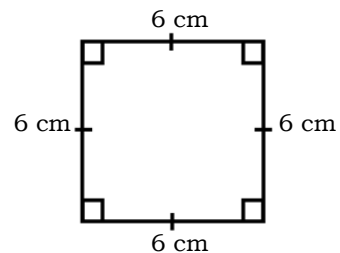
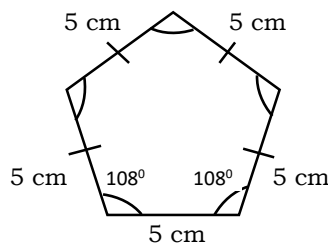
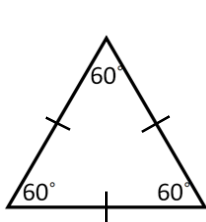
## What's In

Before we go further on visualizing congruent polygons, let us review the previous lesson. Let's check if you can still remember how to describe and compare properties of regular and irregular polygons.

### Regular Polygon

- It is a polygon that is both equilateral and equiangular. **Equilateral** means all sides have equal measures. **Equiangular** means all angles have equal measures.
- A **square** is a regular polygon because all of its angles are right angles and all of its sides have equal measures.

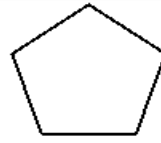
### Examples of regular polygon



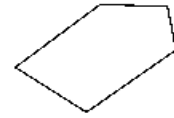


A "Regular Polygon" has:

- all **sides** equal and
- all **angles** equal.



Regular Pentagon



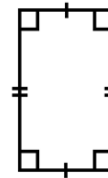
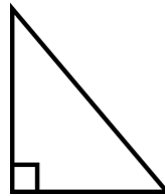
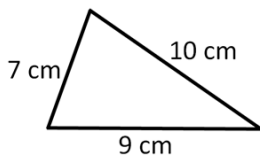
Irregular Pentagon

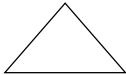



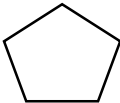

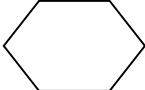


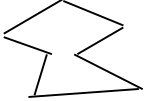
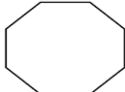
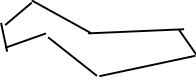
Otherwise, it is **irregular**.

### Irregular Polygon

- It is a polygon that has sides with different measures and has angles with different measures.
- A rectangle is an irregular polygon because all of its angles are right angles, but not all of its sides have the same measures.

### Examples of irregular polygon



Polygon/Shape	Regular	Irregular
Triangle		
Quadrilateral		
Pentagon		
Hexagon		
Heptagon		
Octagon		



## What's New

In the previous module, you were taught how to describe and compare the properties of polygons (regular and irregular polygons). This module is going to teach and guide you how to visualize congruent polygons.

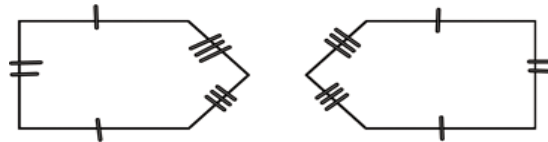
Always remember that the word “**congruent**” is defined as “identical in form; coinciding exactly when superimposed.” The origin of the word “congruent” is from the Latin to “agree” or “to meet together”.

**Congruent polygons** are exactly the same size and exactly the same shape. All of their sides have the same length and all of their angles have the same measure.

### Example 1:

Study the following figures. What can you say about each set of figures?

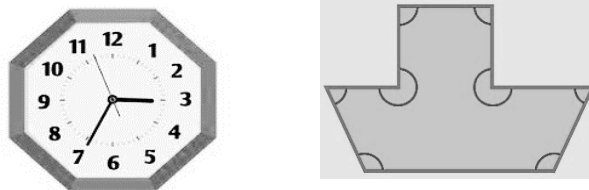
Set A:



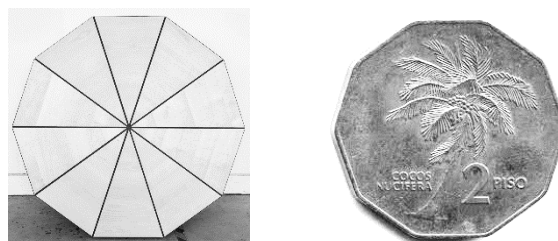
Set B:



Set C:



Set D:





## What is It

In our everyday encounter with objects, structures, shapes and figures, we can observe polygons in them in different forms, colors and sizes. Understanding how to visualize congruent polygons is easy when you have also mastered the skill on visualizing, naming and describing polygons with 5 sides or more as well as on describing and comparing properties of regular and irregular polygons.

Polygons are congruent if they are equal in all respects: same number of sides; all corresponding sides have the same length; and all corresponding interior angles have the same measure.

Intuitively, **congruent figures** are of the same size and shape. It is possible to **turn, flip and/or slide** one figure so it will fit exactly on the other figure. The **areas** of congruent figures are **equal**. The **perimeters** of congruent figures are **equal**. The **corresponding angles** of congruent figures are **equal in measure**. The **corresponding line segments** of congruent figures are **equal in length**.

### Congruent Figures

- These are pairs of figures which have exactly the same size and shape.
- These figures have equal measures for all the sides and angles.

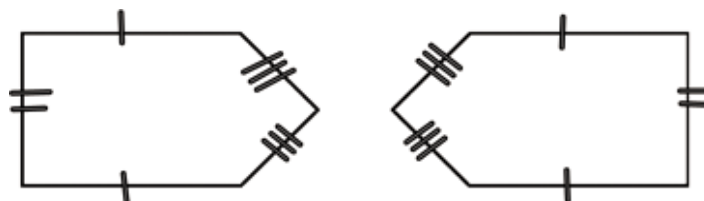
### Congruent Polygons

- Two polygons are congruent if their corresponding sides and angles are congruent.

Let's consider the polygons shown above.

#### Congruent polygons

Set A:



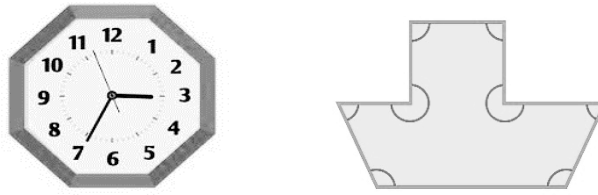
#### Not Congruent polygons

Set B:



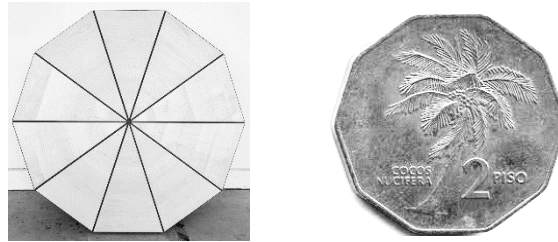
**Not Congruent polygons**

Set C:



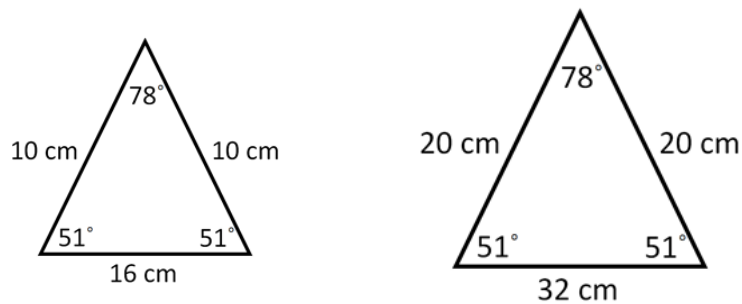
**Not Congruent polygons**

Set D:



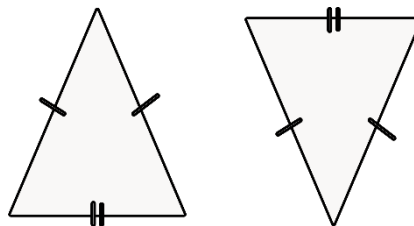
Identify whether the following are congruent polygons.

1.



The two triangles have equal measures of angles. However, notice that the measures of their sides are not equal. This means that the two triangles are not congruent.

2.



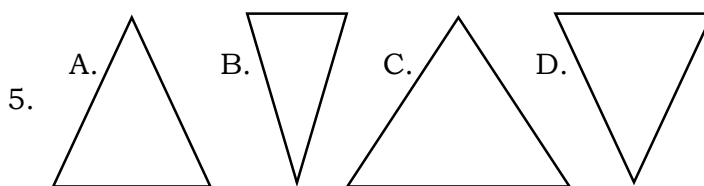
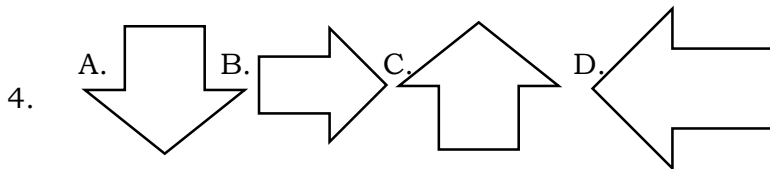
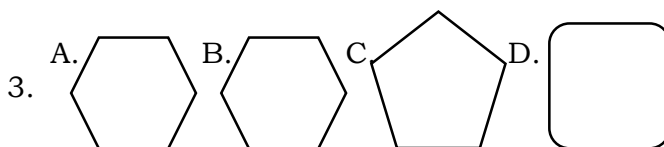
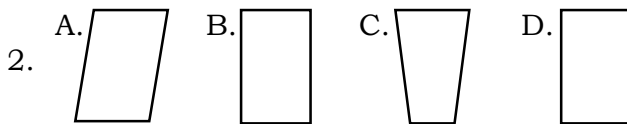
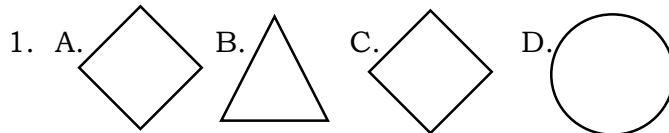
The tick marks indicate that the corresponding sides of the two triangles are congruent. The second triangle is just a rotated version of the first triangle. Therefore, the triangles are congruent.



## What's More

### Activity 1: Find My Pair!

**Directions:** Identify the figures that appear to be congruent. Write your answer on a separate sheet of paper.



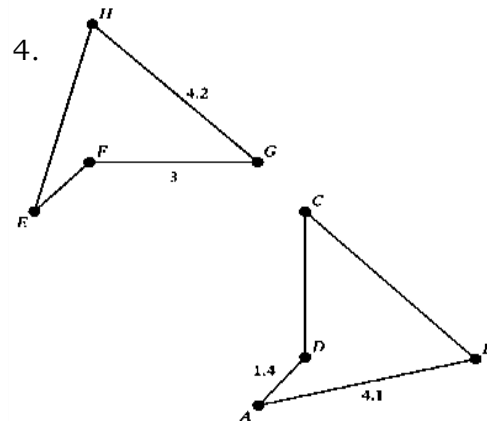
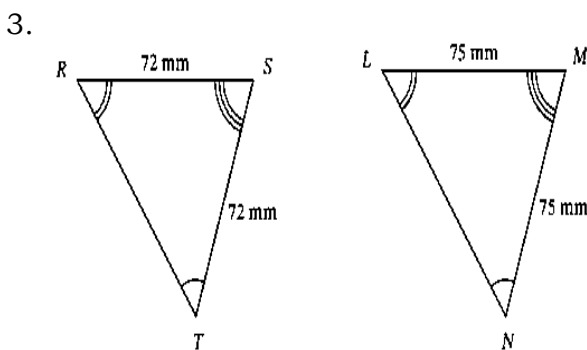
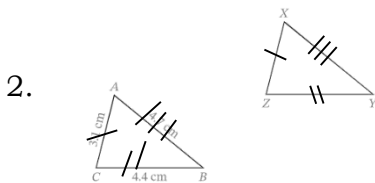
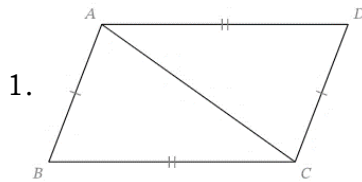
### Activity 2: Be True to Me!

**Directions:** Identify whether the statement is True or False. Write your answer on a separate sheet of paper.

1. Congruent polygons have the same shape and size.
2. The shape and size are not considered in congruent polygons.
3. The two congruent polygons must fit on one another.
4. In congruent polygons, their corresponding angles and sides are congruent.
5. The color of the polygons is not considered in deciding whether two polygons are congruent.

### Activity 3: Yes or No!

**Directions:** For items 1 -4: Analyze the given polygons if they are congruent or not. Write Yes or No only for your answers. Write your answer on a separate sheet of paper.



5. Are two polygons congruent if their corresponding sides have the same length?



### What I Have Learned

**Directions:** Fill in the blanks with the correct word or group of words to make the statement complete. Write your answer on a separate sheet of paper.

(1)\_\_\_\_\_ are congruent if, (2)\_\_\_\_\_ have the same (3)\_\_\_\_\_ and (4)\_\_\_\_\_. Tracing one perfectly (5)\_\_\_\_\_ the other, their corresponding (6)\_\_\_\_\_ and sides are (7)\_\_\_\_\_. All corresponding sides have the (8)\_\_\_\_\_ length; and all corresponding (9)\_\_\_\_\_ have the same (10)\_\_\_\_\_.

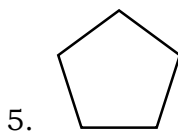
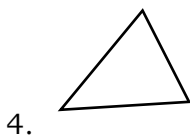
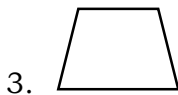
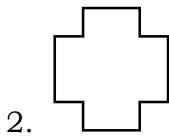
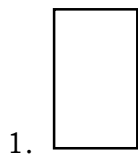
*Good job! Just keep going.*



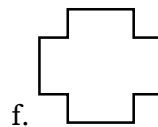
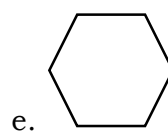
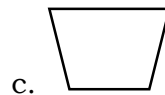
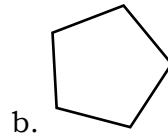
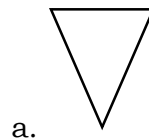
## What I Can Do

**Directions:** Match the polygons in both columns that are most likely to be congruent. Write your answer on a separate sheet of paper.

### Column A



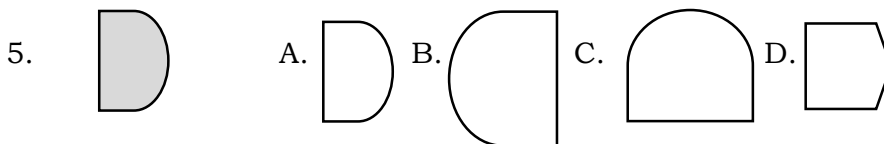
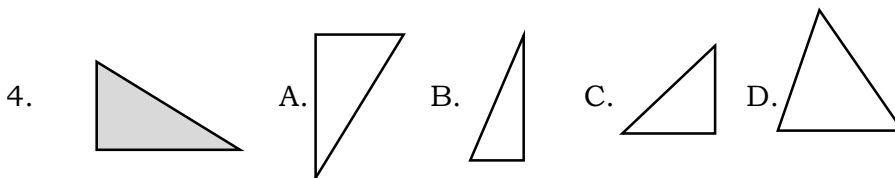
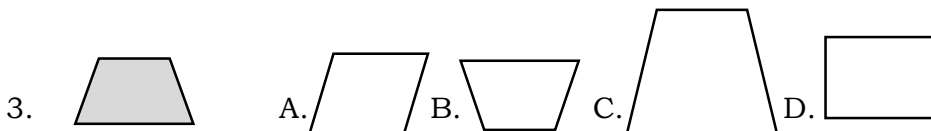
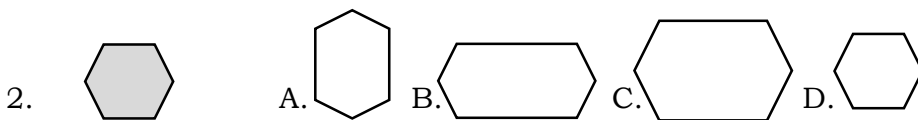
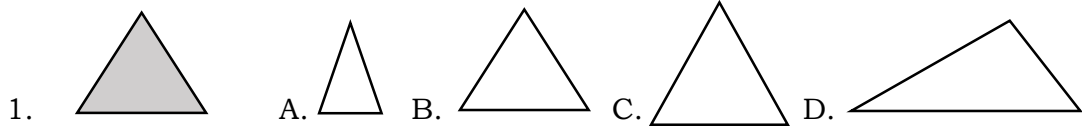
### Column B





## Assessment

A. **Directions:** Choose the figure that is likely to be congruent to the given figure. Write your answer on a separate sheet of paper.

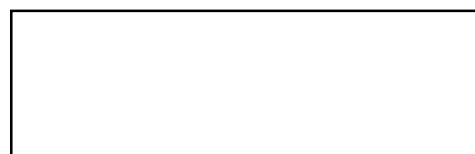


B. **Directions:** Construct the pair of polygons being described. Write your answer on a separate sheet of paper.

1. equiangular triangles

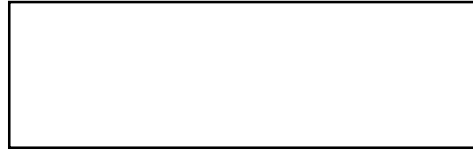


2. rhombuses with 15-decimeter sides

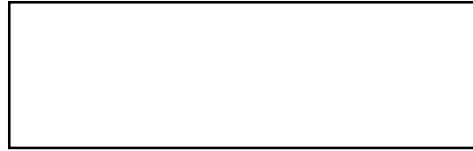




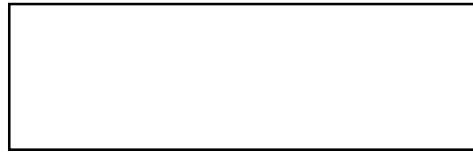
3. right triangles with side lengths 6 cm, 8 cm, and 10 cm.



4. isosceles triangles - in each triangle, the congruent sides measure 12 cm each.



5. squares with 20-centimeter sides





# Answer Key

**Assessment**

A.  
1. B  
2. D  
3. B  
4. A  
5. A

B.

1.

2.

3.

4.

5.

**What I Can Do**

1. D  
2. F  
3. C  
4. A  
5. B

**What I Have Learned**

1. Polygons  
2. Both/They  
3. Shape  
4. Size  
5. Fits  
6. Angles  
7. Congruent  
8. Same  
9. Interior  
10. Measure

**What's More**

**Activity 3**

1. Yes  
2. Yes  
3. No  
4. No  
5. No

**What's More**

**Activity 2**

6. True  
7. False  
8. True  
9. True  
10. True

**Activity 1**

1. A & C  
2. B & D  
3. A & B  
4. A & C  
5. A & D

**What I Know**

1. D  
2. B  
3. A  
4. A  
5. D  
6. D  
7. A  
8. A  
9. D  
10. D

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