

Regular and Irregular Shape Reasoning

To reason about regular and irregular polygons.



Adult guided task 1:

- Cut out all of the shapes and lay them face down on the table.
- Children take turns to turn over a shape card.
- As a group, discuss if the shape is a polygon or not.
- As a group, children decide if the shape goes in the 'polygon' or 'not polygon' circle.
- Use the talk prompts below to support the children with discussing the shapes.

How do you know that this shape is a polygon/not a polygon?

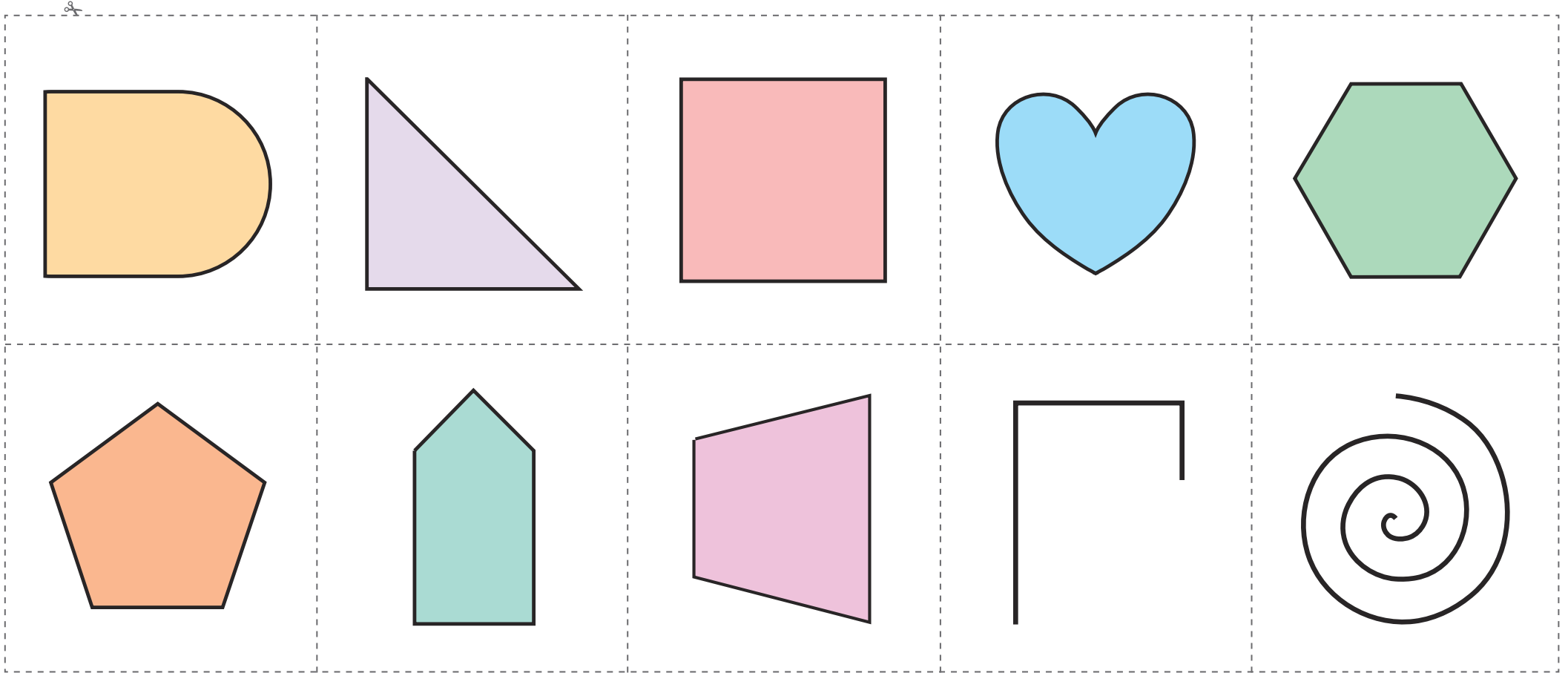
Are the shapes 2D?

Does the shape have curved or straight sides?

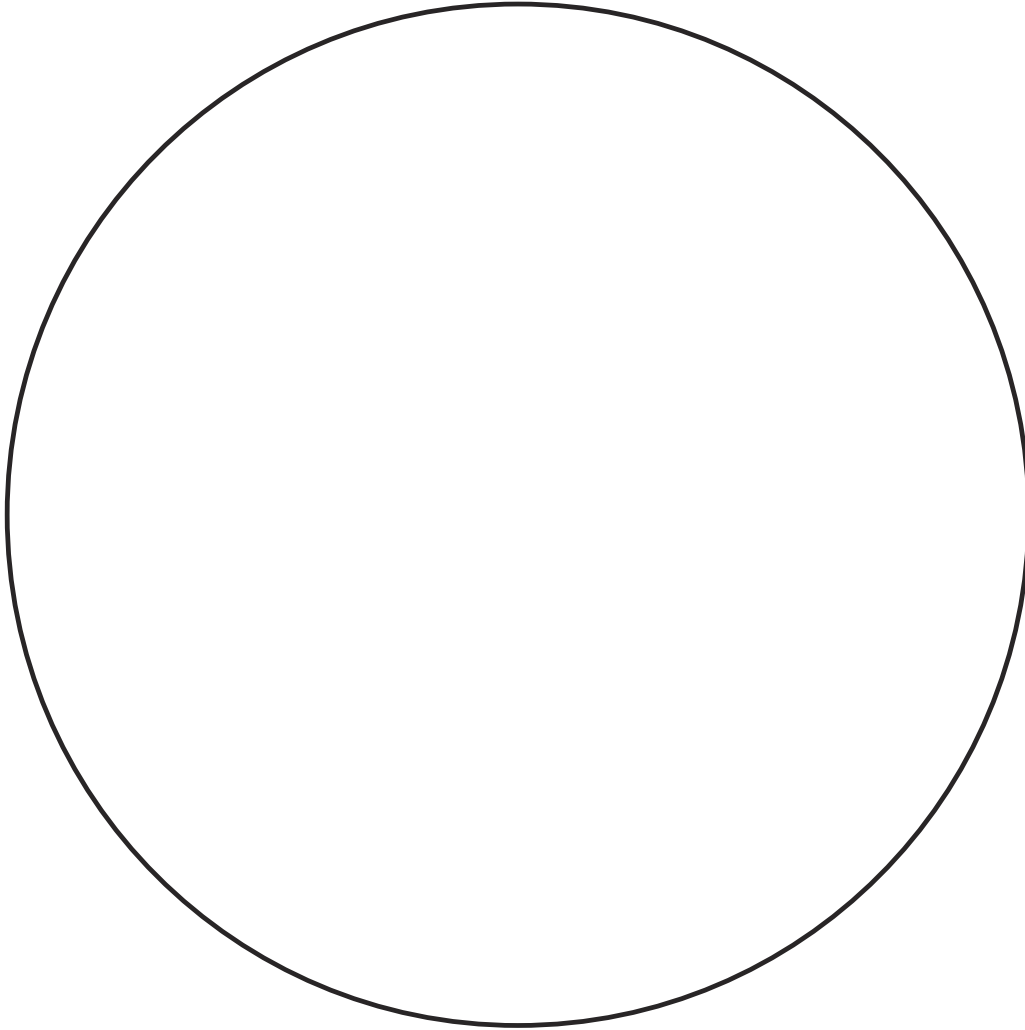
How many sides does the shape have?

Is the shape open or closed?

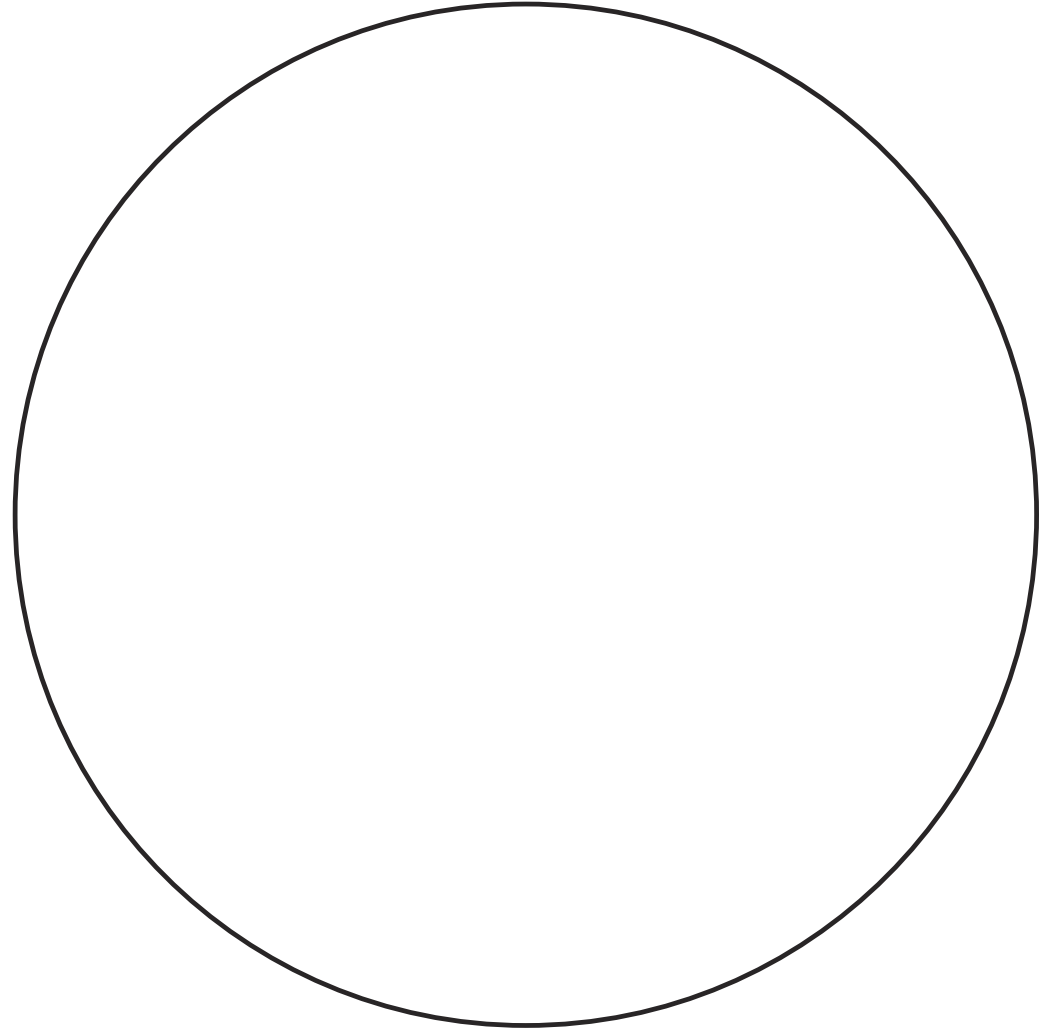
Regular and Irregular Shape Reasoning



Polygons



Not Polygons



Regular and Irregular Shape Reasoning

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Adult guided task 2:

- Cut out all of the shapes and lay them face down on the table.
- Children take turns to turn over a shape card.
- As a group, discuss if the shape is a regular or irregular polygon.
- Remind children that regular polygons have sides and angles that are equal.
- As a group, children decide if the shape goes in the 'regular polygon' or 'irregular polygon' circle.
- Instruct children to use rulers and protractors to prove if a polygon is regular or irregular.
- Use the talk prompts below to support the children with discussing the shapes.

How do you know that this shape is a regular/irregular polygon?

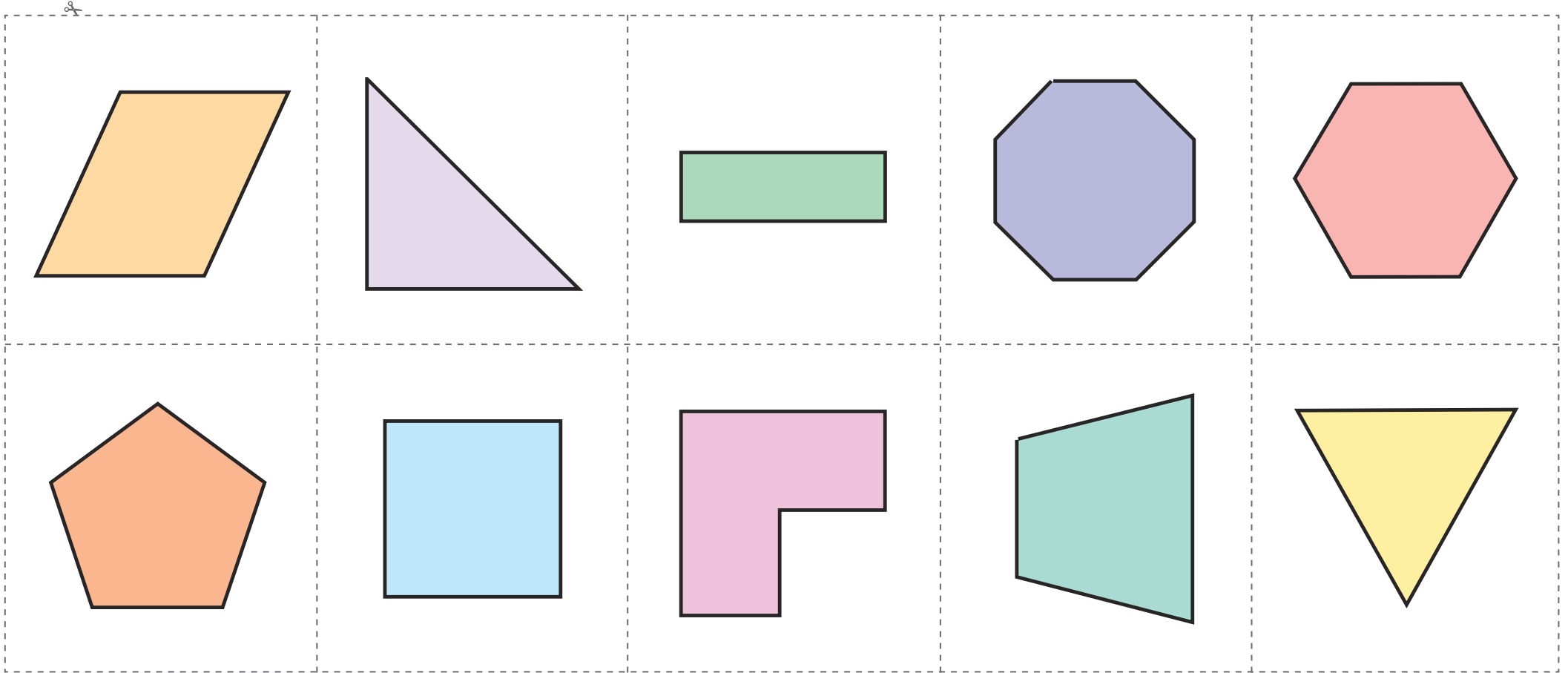
How could you use a protractor to check?

How could you use a ruler to check?

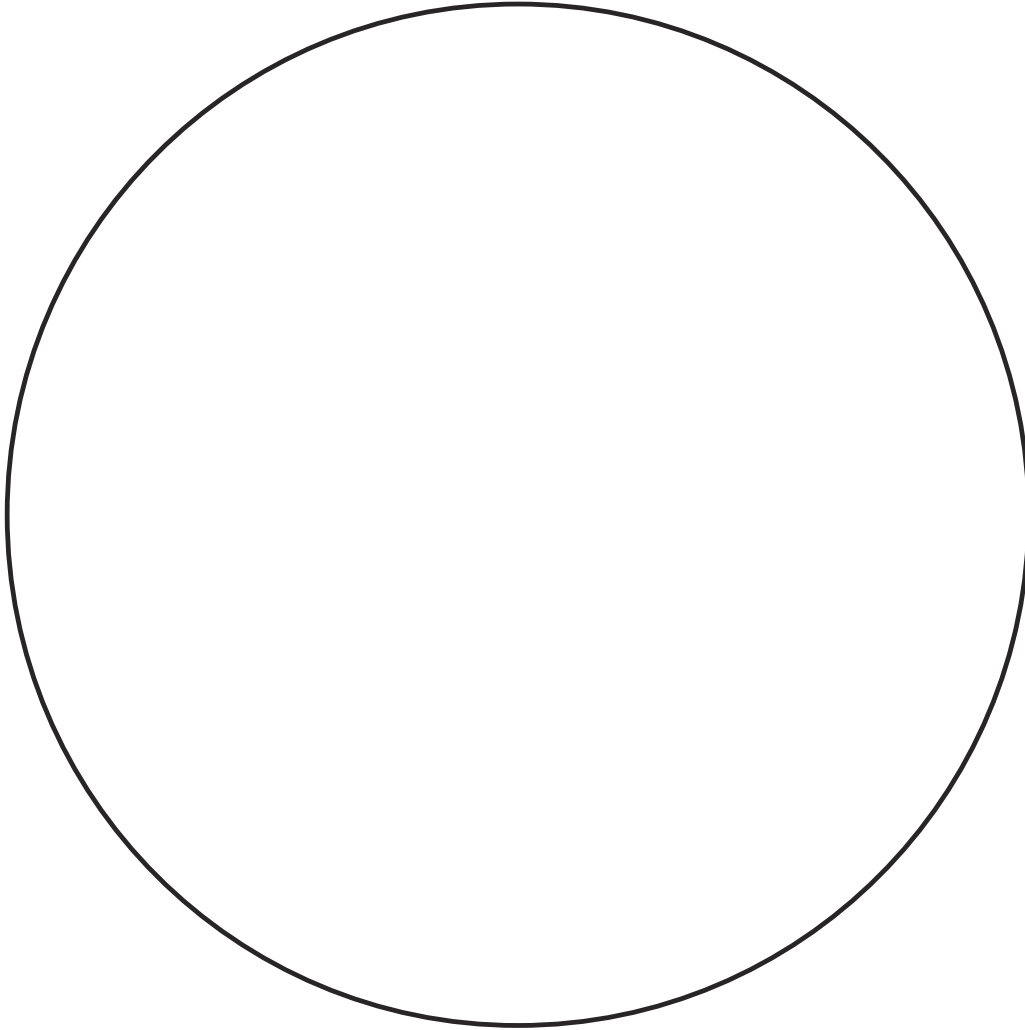
What do all regular polygons have?

Can you tell by looking at the polygon if it is regular or irregular?

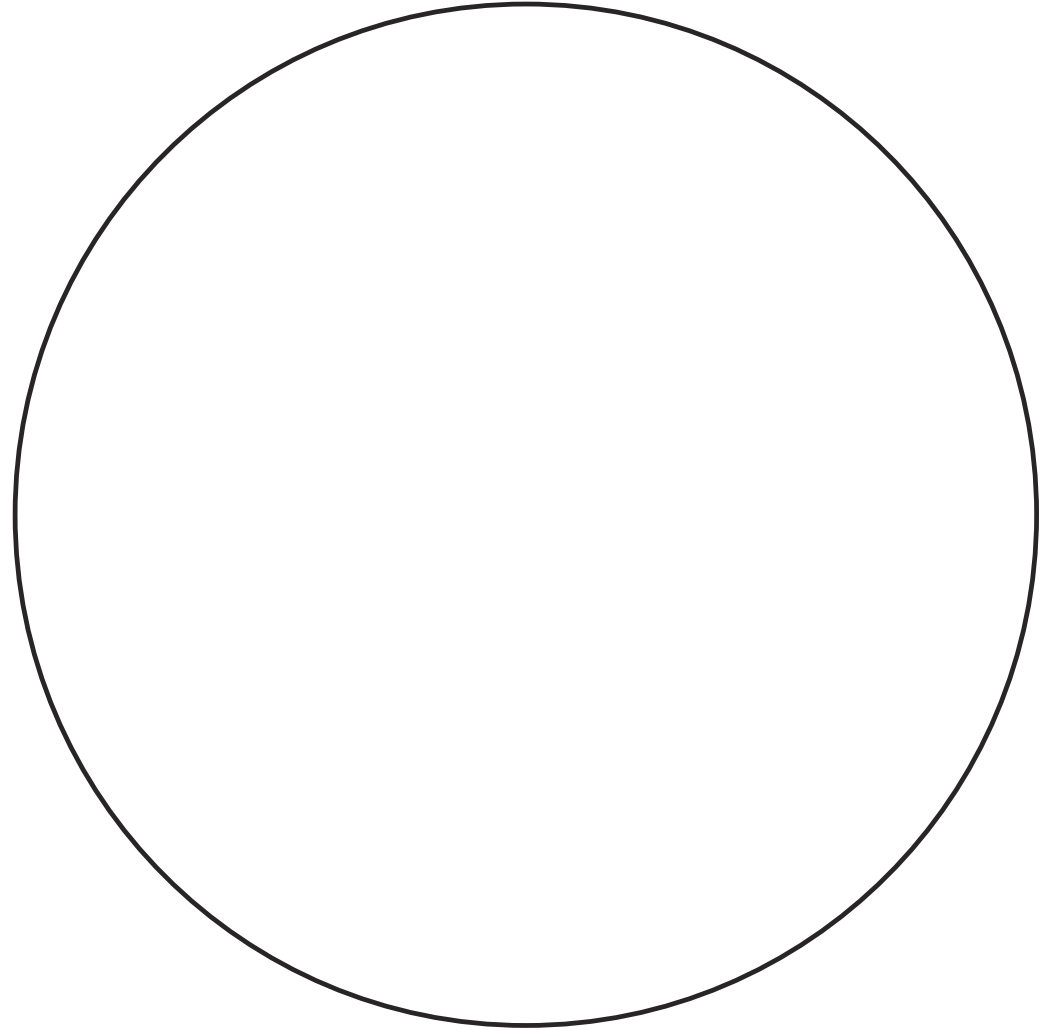
Regular and Irregular Shape Reasoning



Irregular Polygons

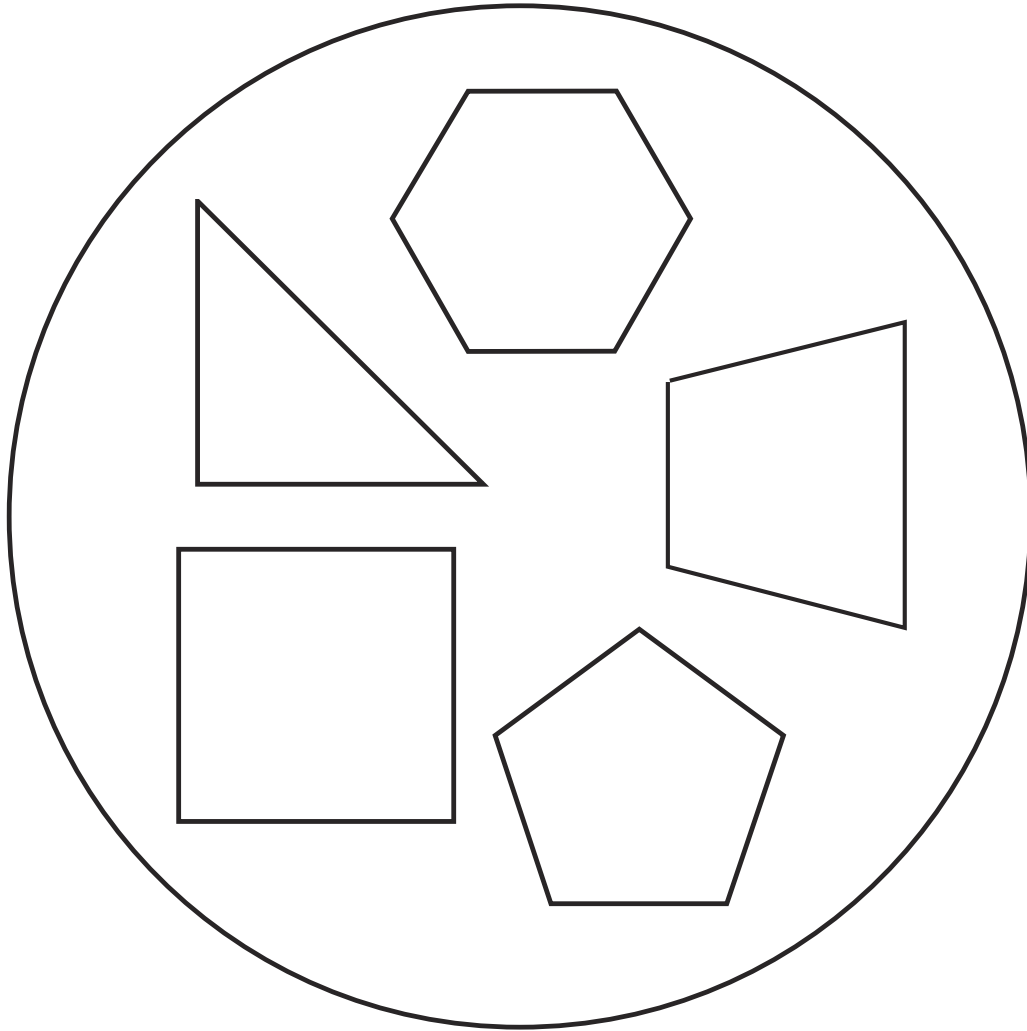


Regular Polygons

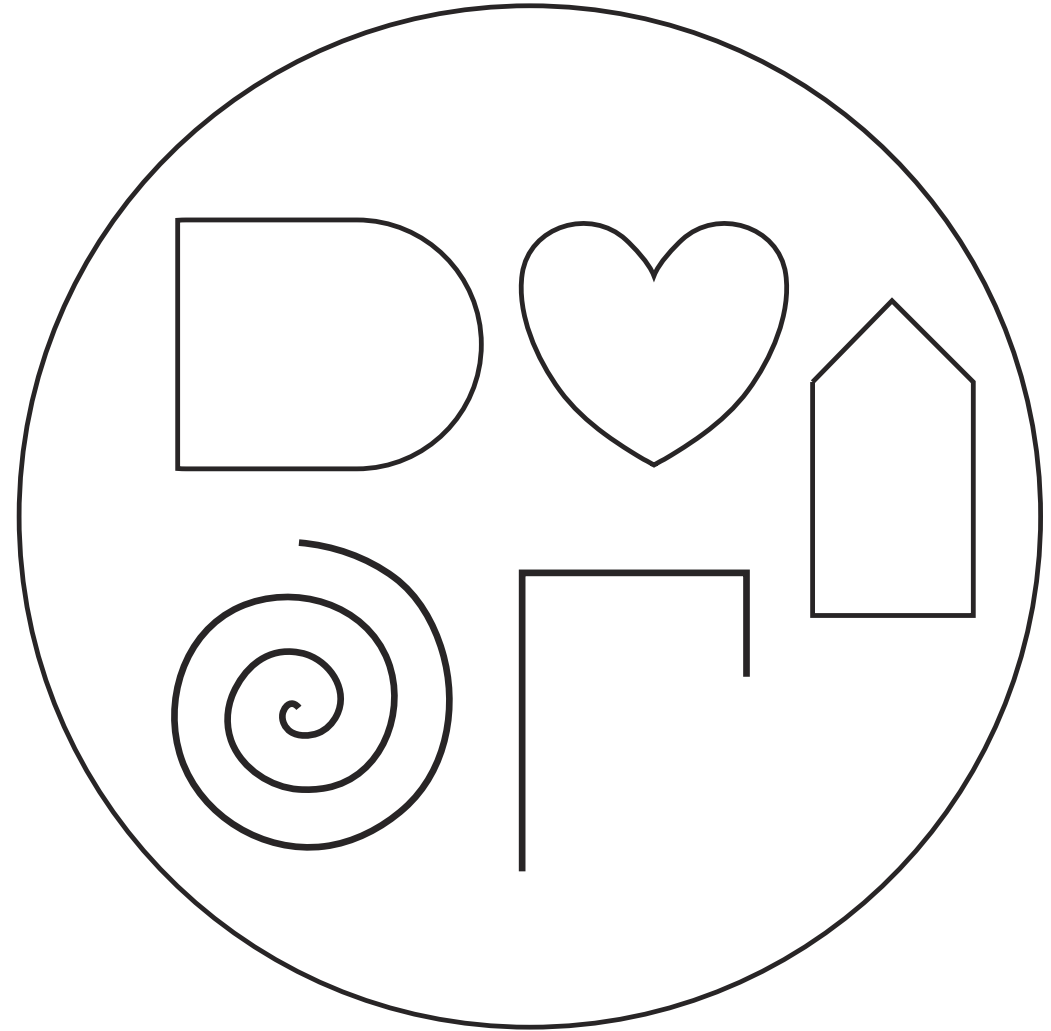


Regular and Irregular Shape Reasoning **Answers**

Polygons

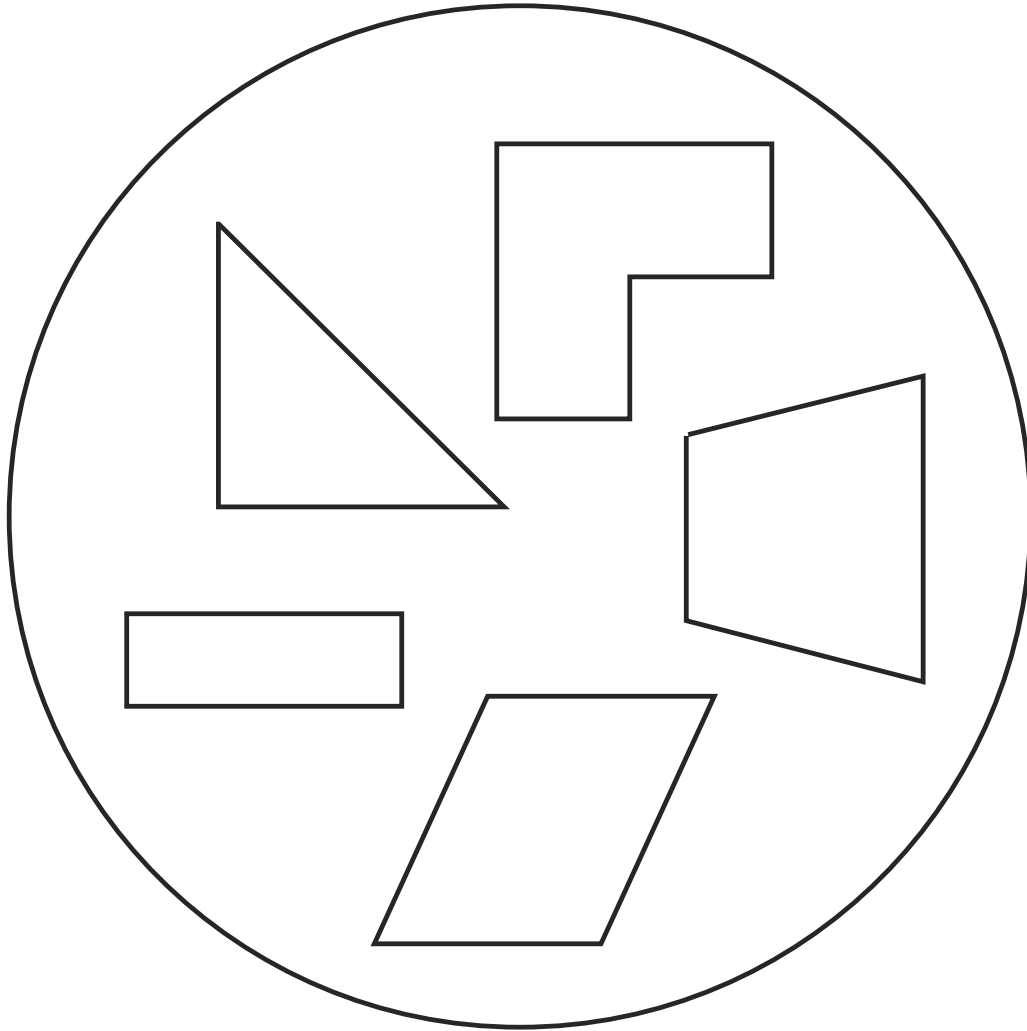


Not Polygons

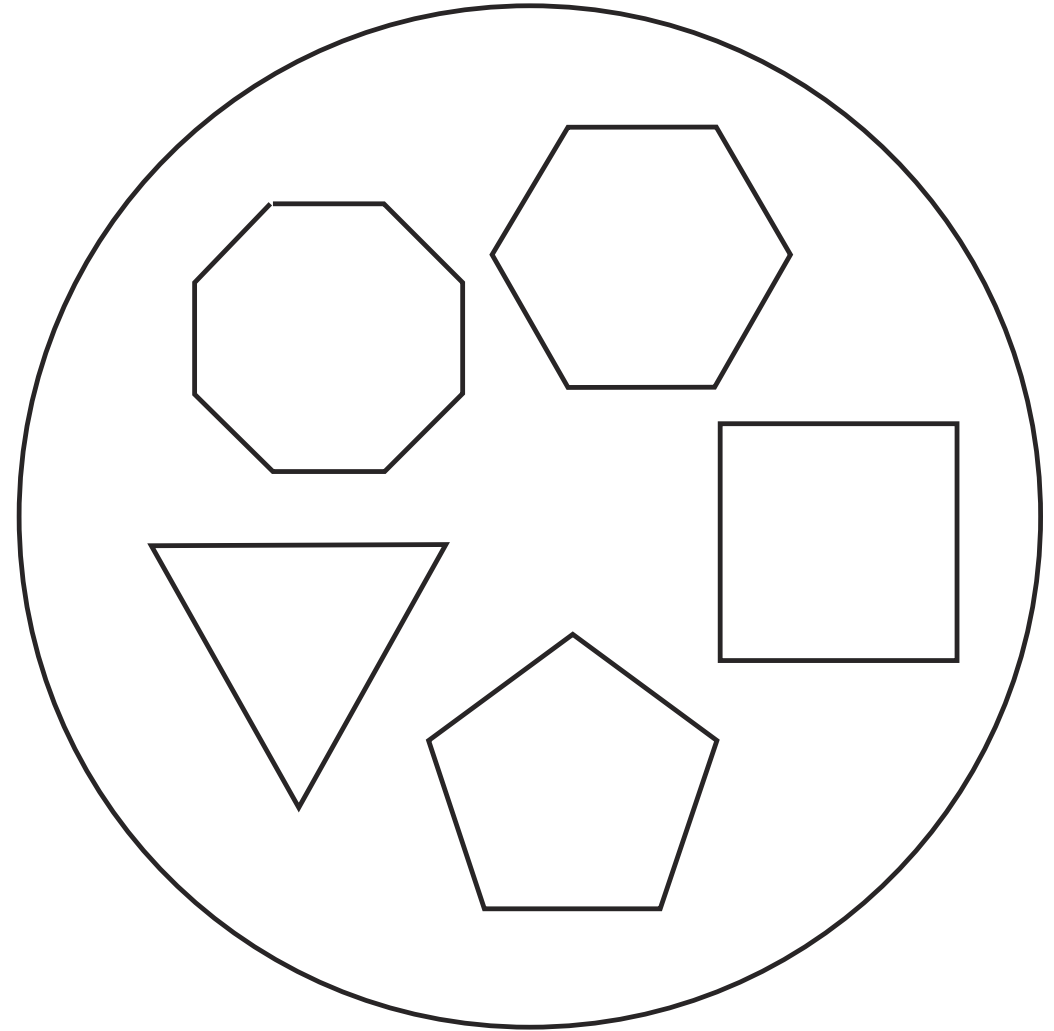


Regular and Irregular Shape Reasoning **Answers**

Irregular Polygons



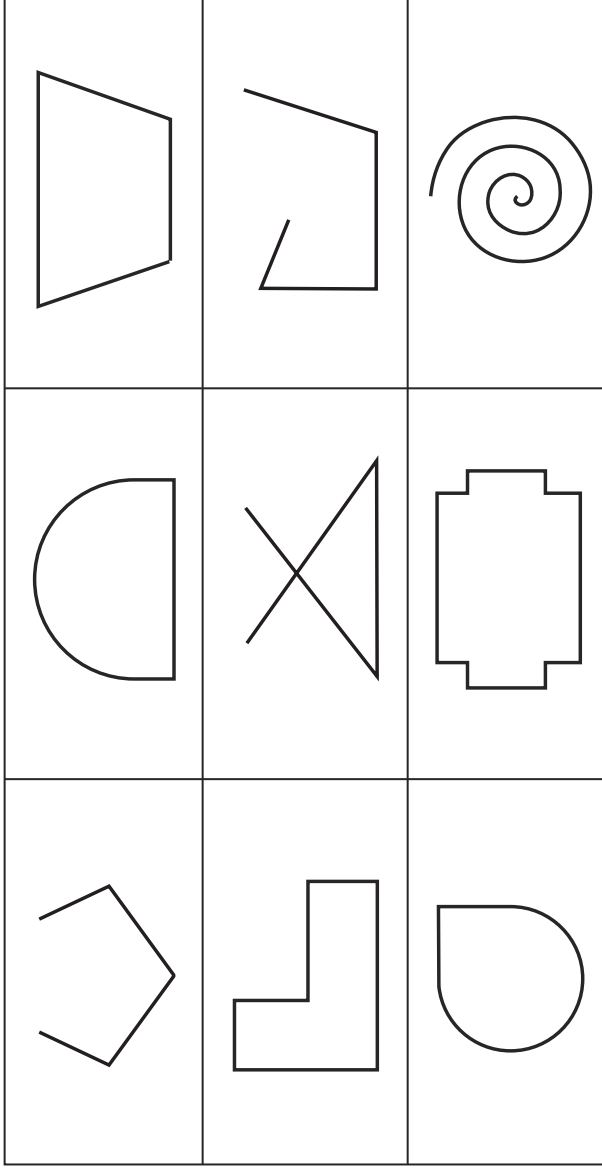
Regular Polygons



Regular and Irregular Shape Reasoning

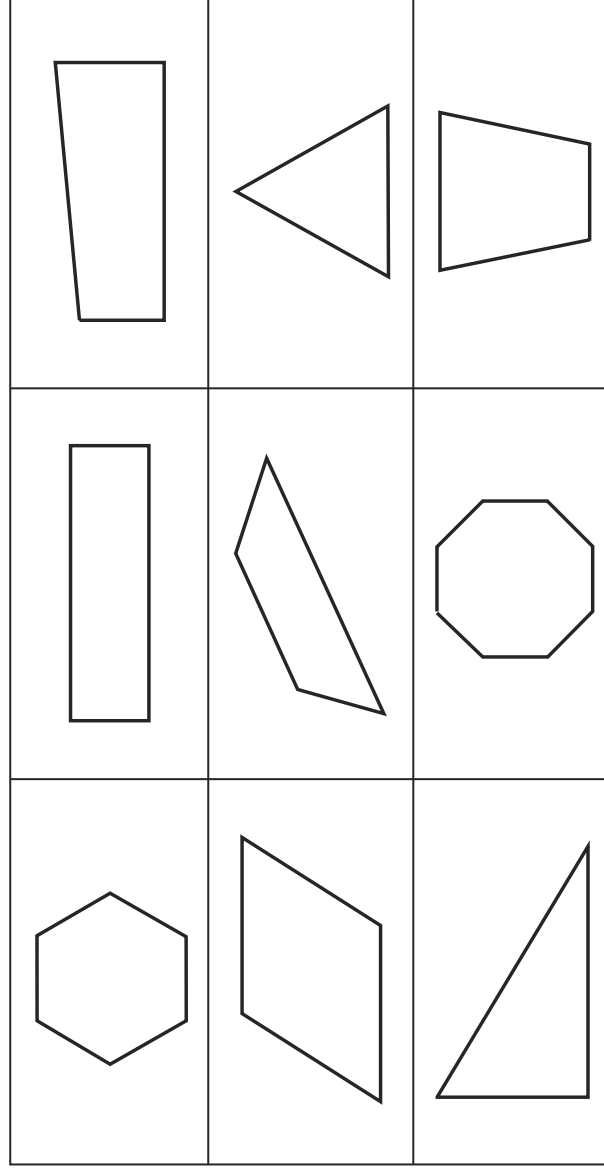
To reason about regular and irregular polygons.

- 1) One shape in each set is a polygon. Find the polygon in each set and circle it.



- 2) How do you know that these shapes are polygons?

- 3) One polygon in each horizontal set is a regular polygon. Find the regular polygon in each set and circle it.



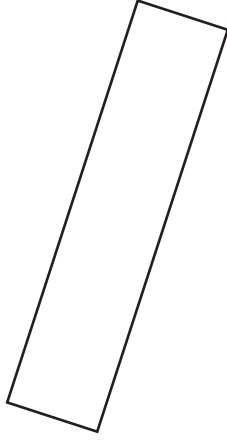
Regular and Irregular Shape Reasoning

4) What is the difference between irregular and regular polygons?

5) Zoe is investigating if polygons are irregular or regular.



I think that rectangles are definitely regular polygons because they have 4 angles that all measure 90° .



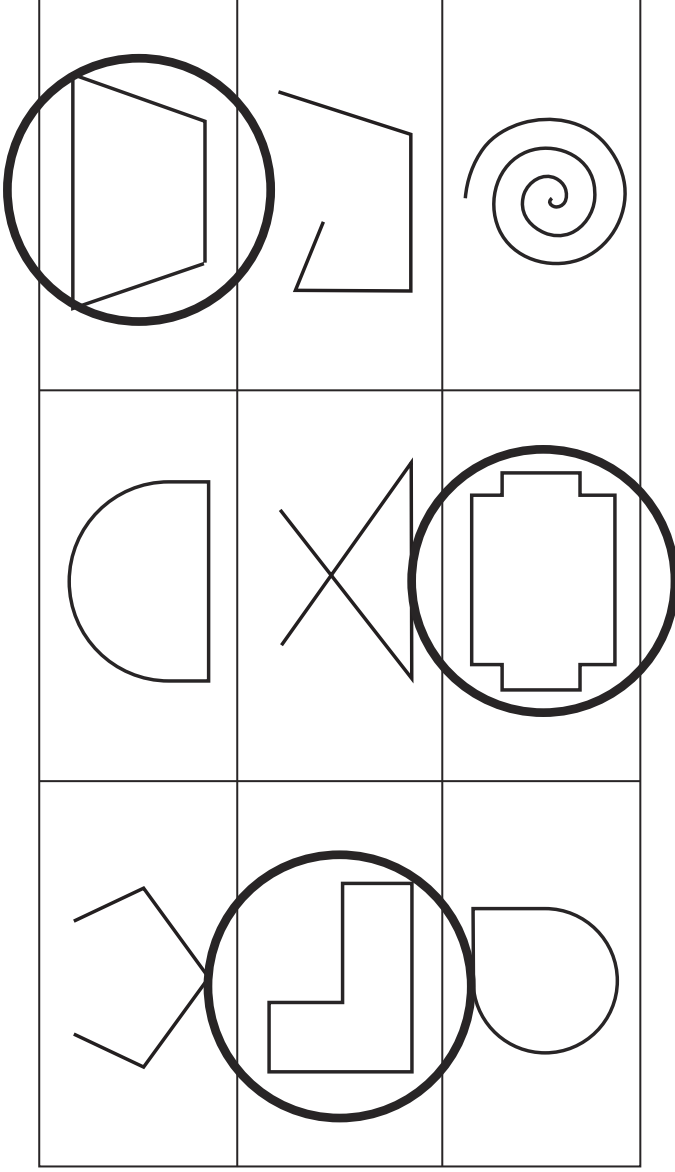
Is Zoe correct? Give reasons for your answer.

6) Write **always**, **sometimes** or **never** next to the statements in the table.

Four sided shapes with straight sides are regular polygons.	
Open shapes are polygons.	
Irregular polygons have angles of different sizes.	

Regular and Irregular Shape Reasoning Answers

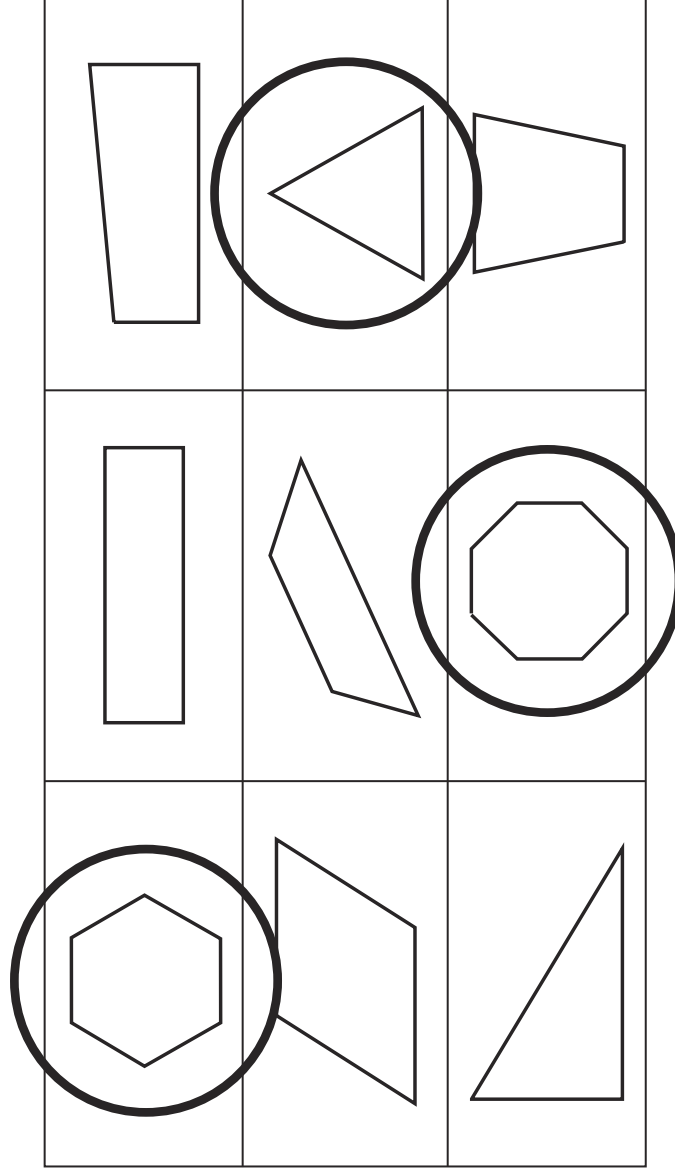
1) One shape in each set is a polygon. Find the polygon in each set and circle it.



2) How do you know that these shapes are polygons?

They are polygons because they are closed shapes that have 3 sides or more.

3) One polygon in each horizontal set is a regular polygon. Find the regular polygon in each set and circle it.



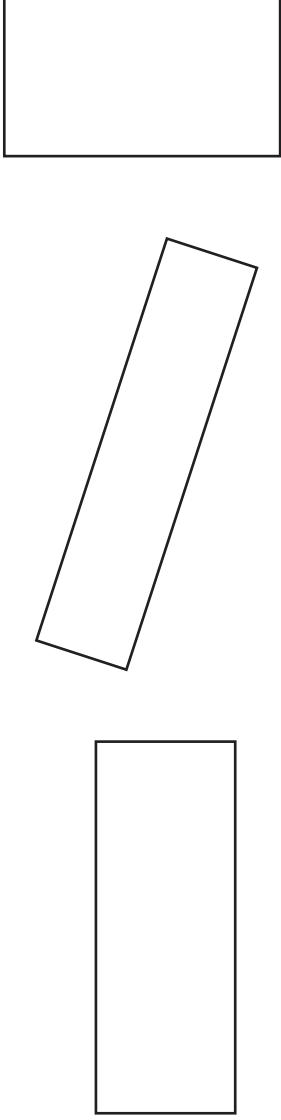
4) What is the difference between irregular and regular polygons?

Regular polygons have sides and angles that are equal. Irregular polygons can have sides and angles of different measurements.

5) Zoe is investigating if polygons are irregular or regular.



I think that rectangles are definitely regular polygons because they have 4 angles that all measure 90° .



Is Zoe correct? Give reasons for your answer.

Zoe is incorrect. Rectangles are not regular polygons because the sides are different lengths. To be classed as a regular polygon, the sides need to be equal lengths.

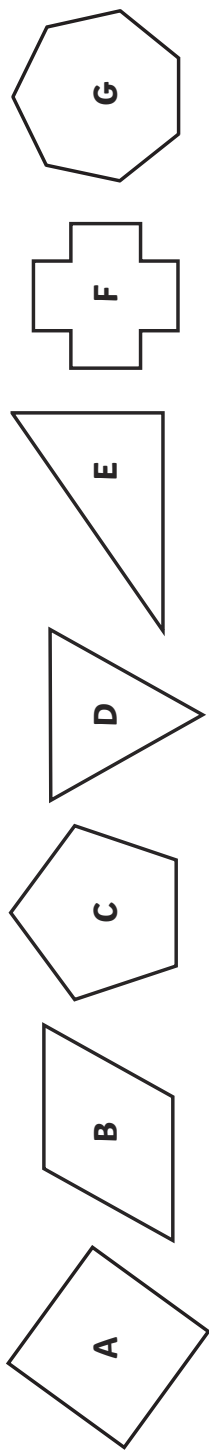
6) Write **always**, **sometimes** or **never** next to the statements in the table.

	Sometimes	Never	Always
Four sided shapes with straight sides are regular polygons.			
Open shapes are polygons.			
Irregular polygons have angles of different sizes.			

Regular and Irregular Shape Reasoning

To reason about regular and irregular polygons.

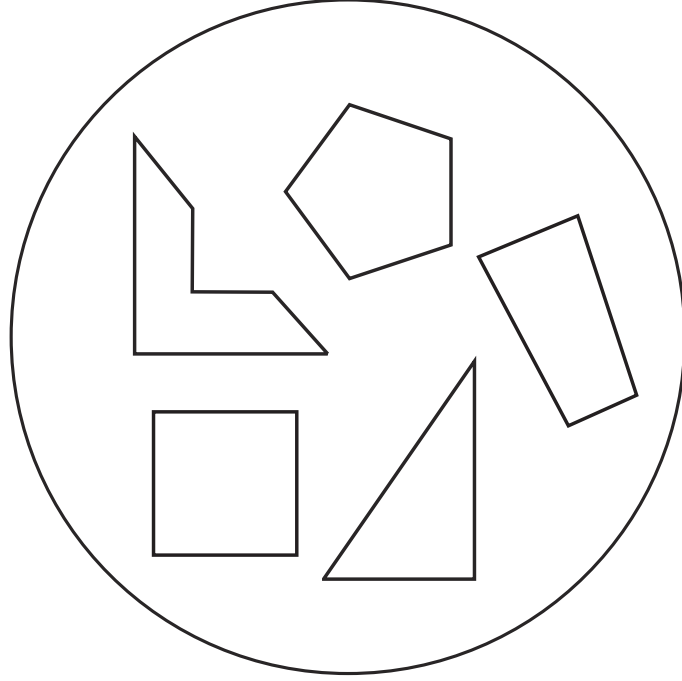
- 1) Sort the shapes into the diagram. Write each letter in the correct quadrant.



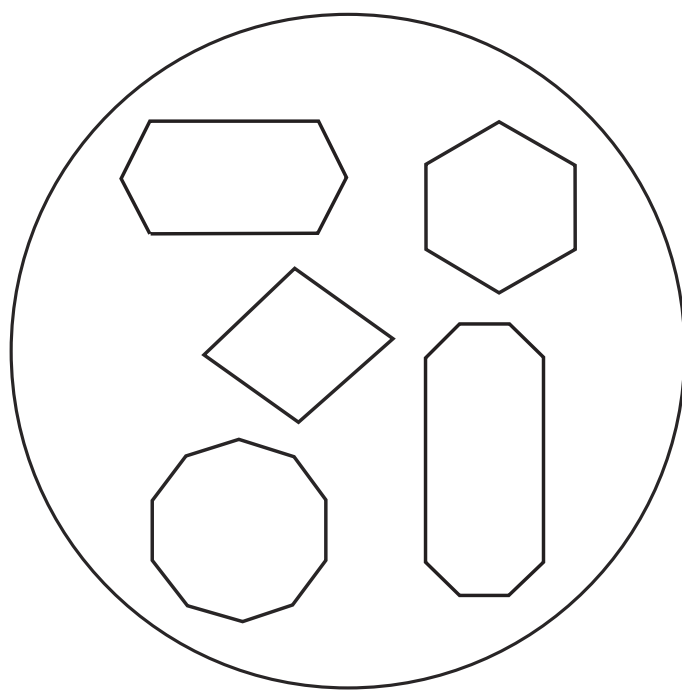
	Regular Polygon	Irregular Polygon
Has an even number of sides		
Has an odd number of sides		

- 2) Tick the polygons that are placed in the correct sorting hoops below. Use a protractor and a ruler to check your answers.

Irregular Polygons

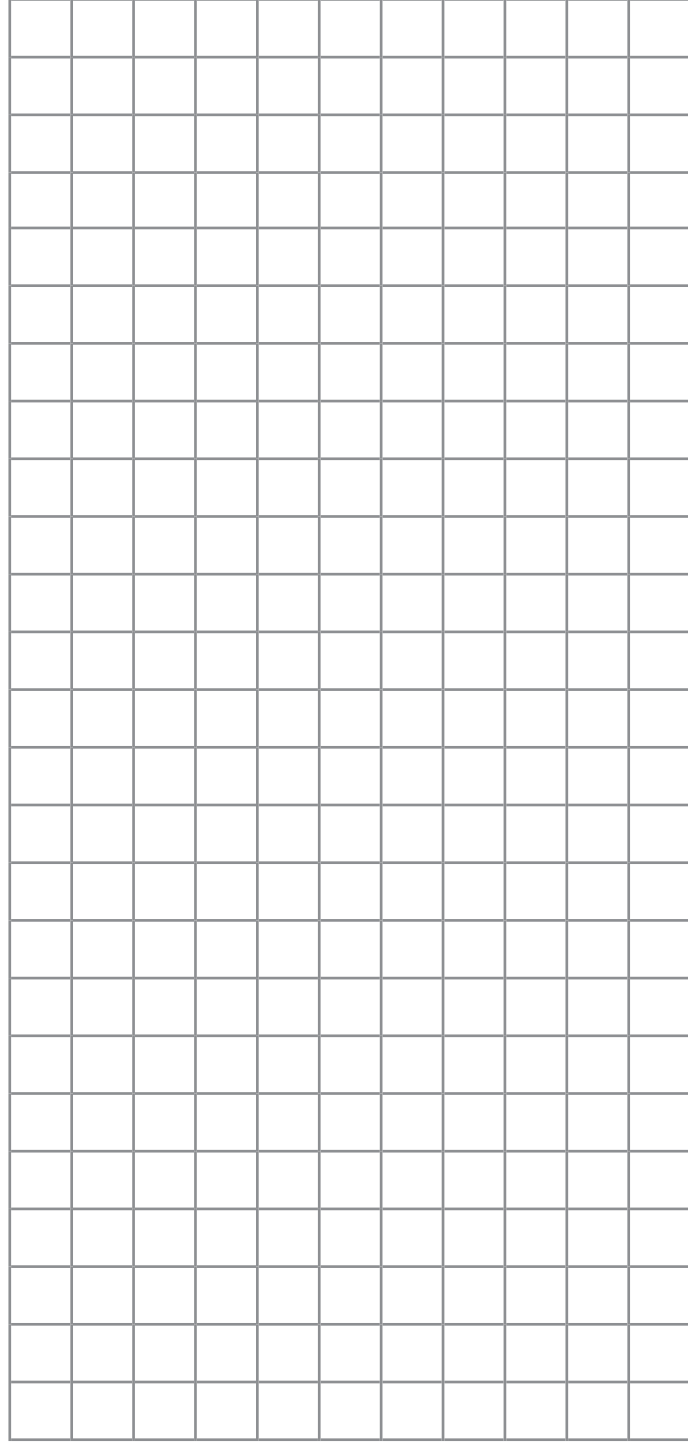


Regular Polygons



Regular and Irregular Shape Reasoning

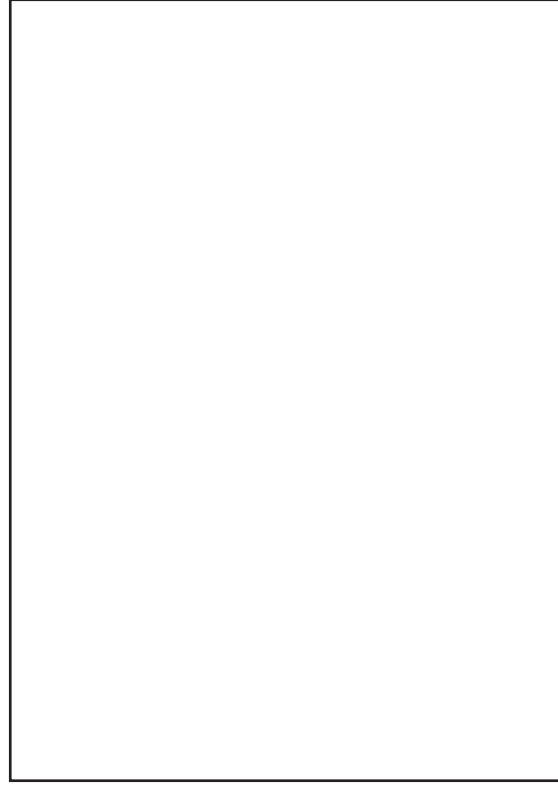
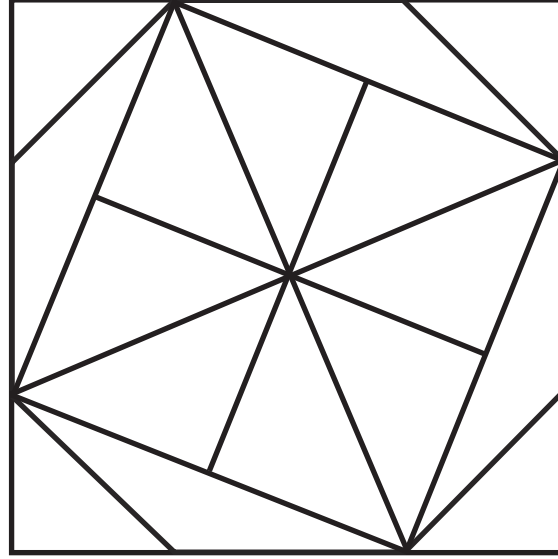
- 3)
a) Accurately draw two irregular polygons and two regular polygons.



- b) Write a definition for irregular and regular polygons.

A large empty rectangular box with a black border, intended for writing a definition for irregular and regular polygons.

- 4) How many regular polygons can you see in the shape picture?

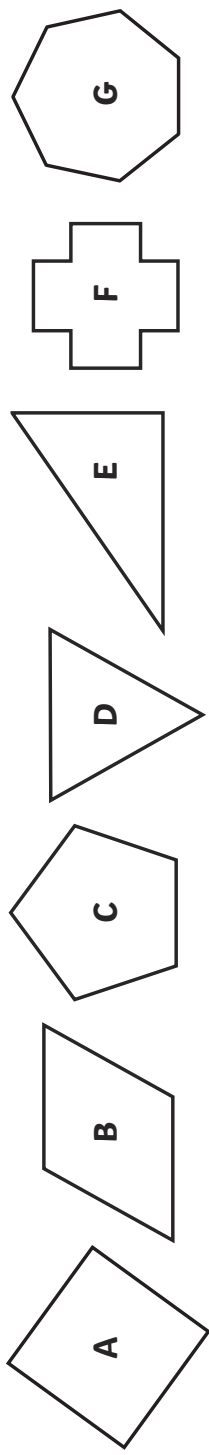


Regular and Irregular Shape Reasoning Answers



To reason about regular and irregular polygons.

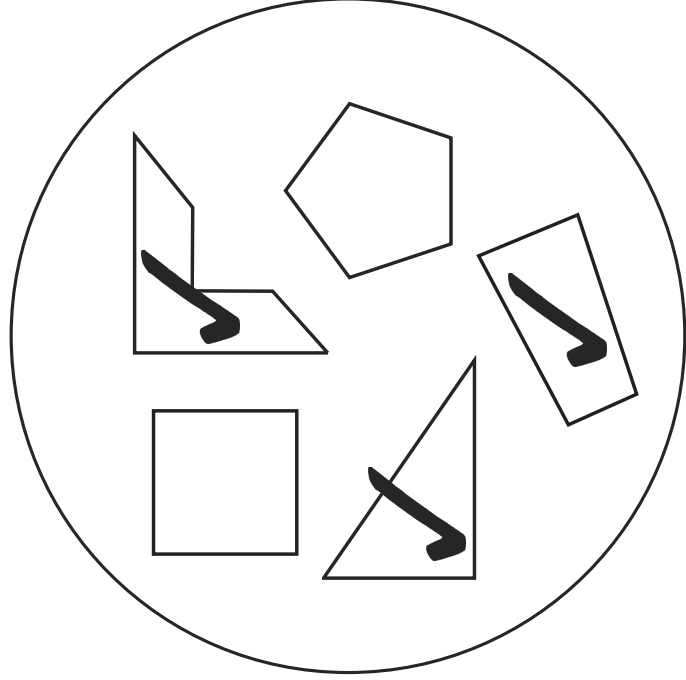
1) Sort the shapes into the diagram. Write each letter in the correct quadrant.



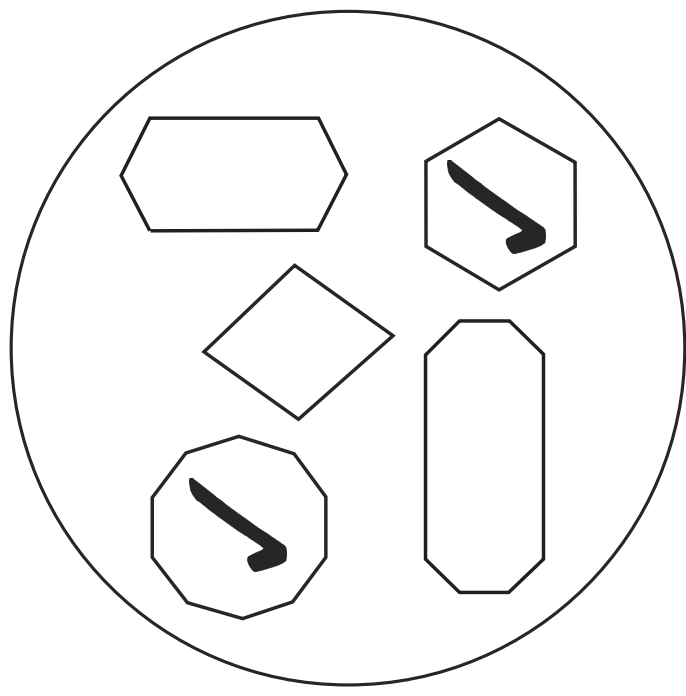
	Regular Polygon	Irregular Polygon
Has an even number of sides	A	B F
Has an odd number of sides	C D G	E

2) Tick the polygons that are placed in the correct sorting hoops below. Use a protractor and a ruler to check your answers.

Irregular Polygons



Regular Polygons



3)

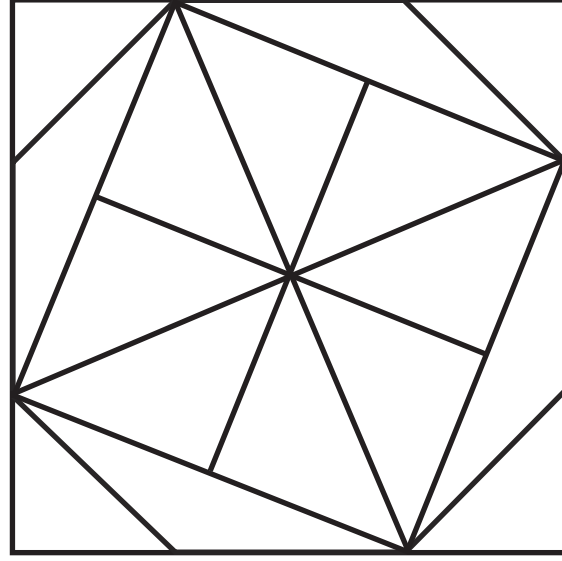
a) Accurately draw two irregular polygons and two regular polygons.

Drawings will differ. Check to see that children have drawn regular polygons with equal sides and angles.

b) Write a definition for irregular and regular polygons.

Children should mention that regular polygons are 2D shapes which have sides and angles that are equal. They may say that polygons are closed shapes that have at least three straight sides. Children may provide examples of irregular and regular polygons.

4) How many regular polygons can you see in the shape picture?



6 squares

1 regular octagon