Chapter 8

Properties of Triangles and Quadrilaterals

8-1A: Points, Lines, and Planes

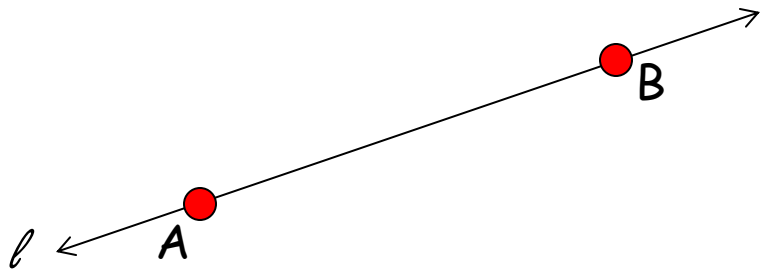
I can…

Identify and label basic geometric figures.

Vocabulary:

- Point: a point has no dimension. It is represented by a dot.

- Line: A line has one dimension. Through any two points, there is exactly one line.



Rays and line segments are parts of lines.

A line segment has a definite beginning and end.

- A line segment is part of a line containing two endpoints and all points between them.

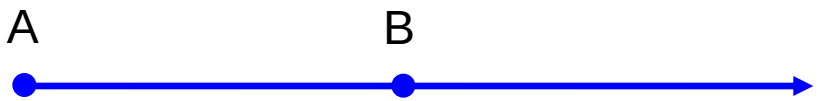
- A line segment is named using its endpoints.

- The line segment is named segment AB or segment BA

- The symbol for segment AB is $\overline{AB}$

Rays and line segments are parts of lines.

A ray has a definite starting point and extends without end in one direction.

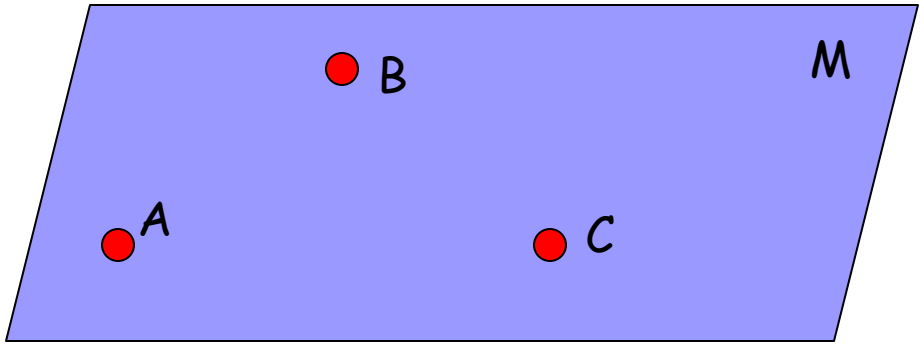


RAY: The starting point of a ray is called the endpoint.

A ray is named using the endpoint first, then another point on the ray.

The ray above is named ray AB.

The symbol for ray AB is $\overrightarrow{AB}$

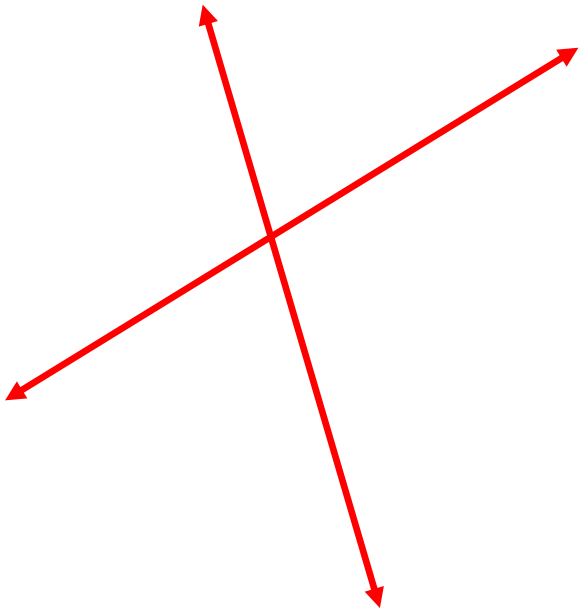


- Plane: a plane has two dimensions. It is represented by a shape that looks like piece of paper, but extends without end.

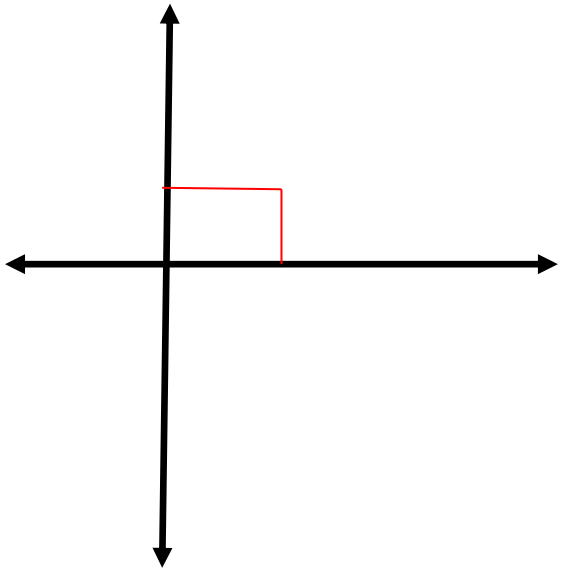
Use three points to name a plane.

Lines:

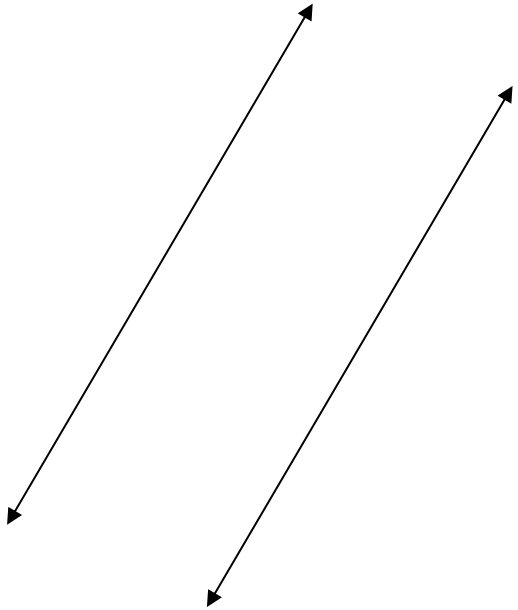
Intersecting lines



Perpendicular Lines



Parallel Lines



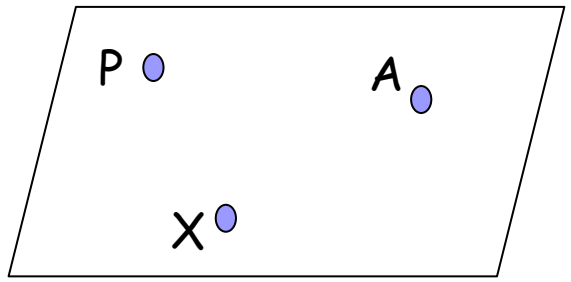
Congruent:

- Same shape and size

Symbol: $\cong$

Identify the figures:

1)



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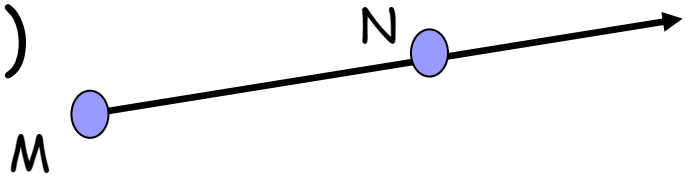

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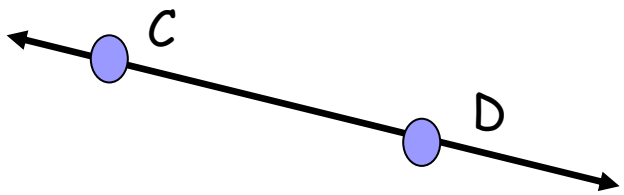
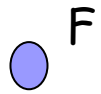


4)



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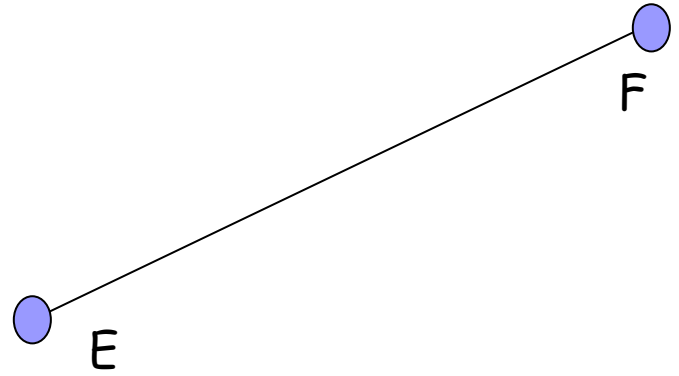


Homework:

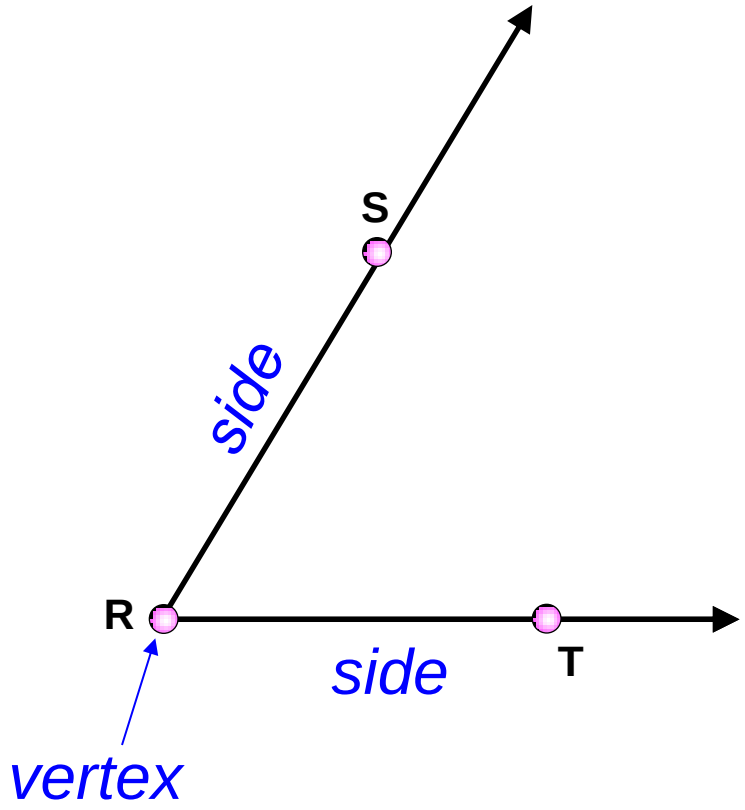
p. 443 #1 - 25

8-1B: Measuring Angles

I can…
measure and classify angles.

There is another case where two rays can have a common endpoint.

This figure is called an angle.



Some parts of angles have special names.

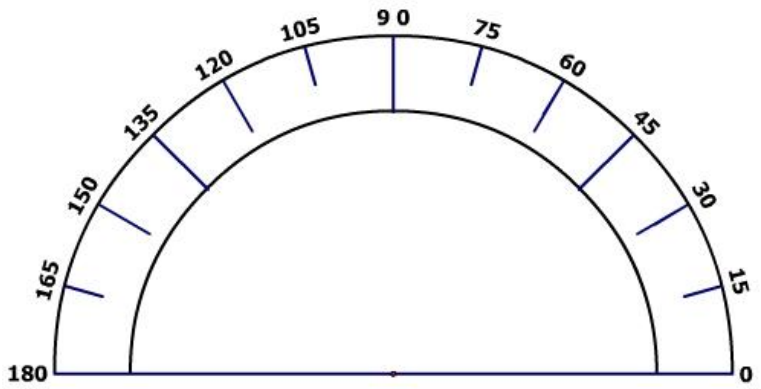
The common endpoint is called the vertex,

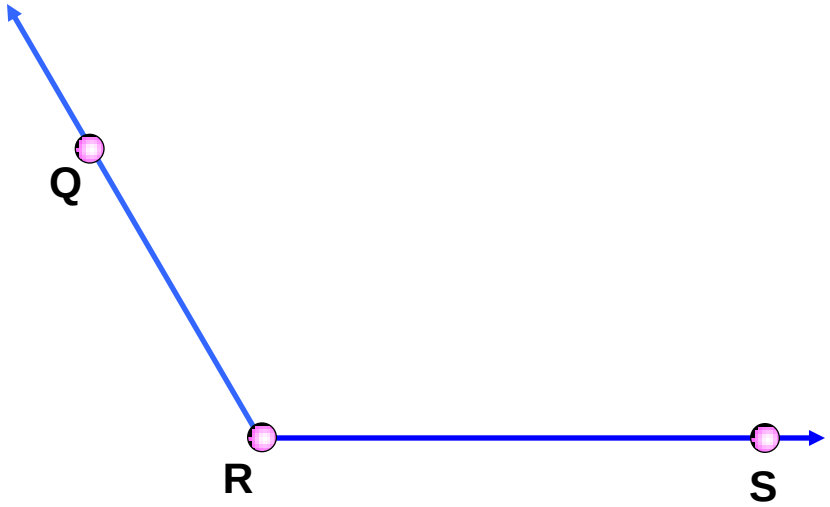
and the two rays that make up the sides of the angle are called the sides of the angle.

You can use a protractor to measure angles and sketch angles of given measure.

1) Place the center point of the protractor on vertex R. Align the straightedge with side $\overrightarrow{RS}$.

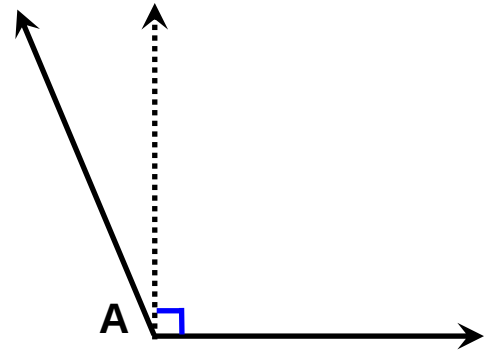
2) Use the scale that begins with 0 at $\overrightarrow{RS}$. Read where the other side of the angle, $\overrightarrow{RQ}$, crosses this scale.





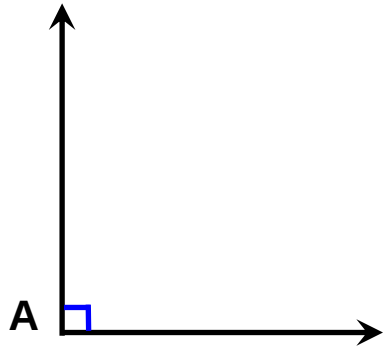
Once the measure of an angle is known, the angle can be classified as one of three types of angles. These types are defined in relation to a right angle.

Types of Angles



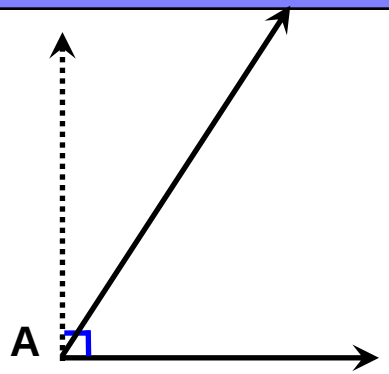
obtuse angle

$90 < m\angle A < 180$



right angle

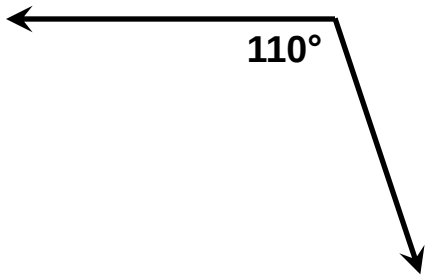
$m\angle A = 90$



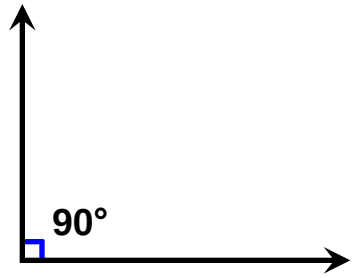
acute angle

$0 < m\angle A < 90$

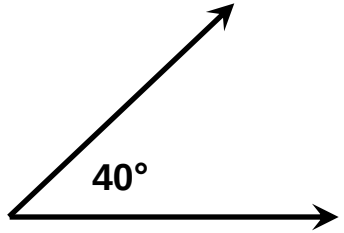
Classify each angle as *acute*, *obtuse*, or *right*.



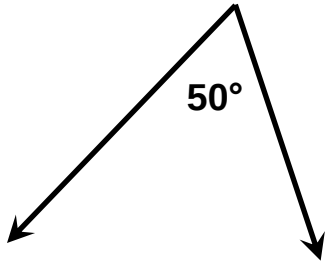
Obtuse



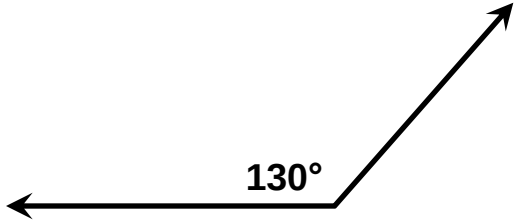
Right



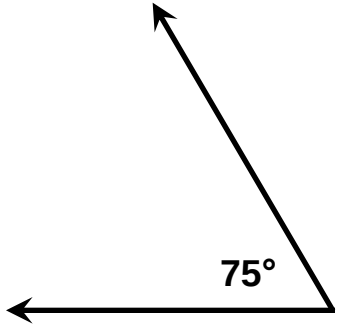
Acute



Acute



Obtuse



Acute

Homework:

p. 448 #1 - 27

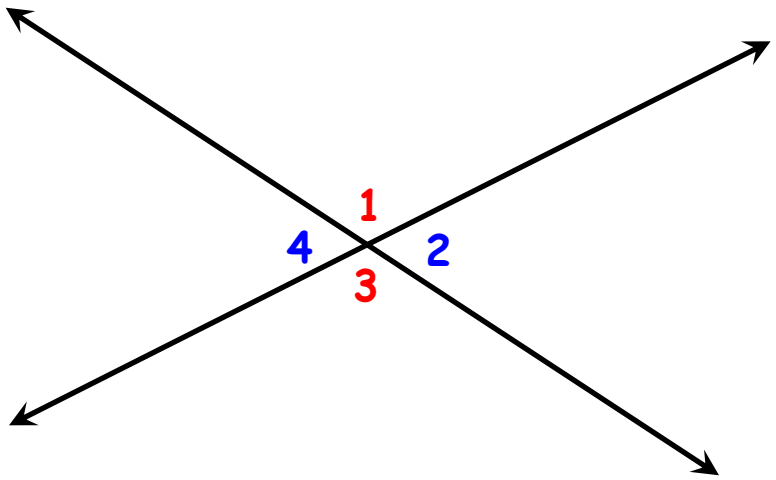
8-1C: Angle Relationships

I can…
classify and apply angle relationships

When two lines intersect, _four_ angles are formed.

There are two pairs of angles across from each other.

These pairs are called _vertical angles_.



Vertical angles are congruent!

Supplementary angles:

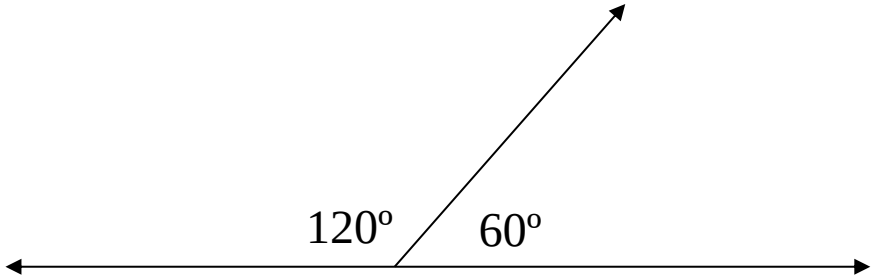
Two angles whose sum is 180^{o}

Complementary Angles:

- Two angles whose sum is 90^{o}

Example: Classify the angles as complementary, supplementary, or neither

1)



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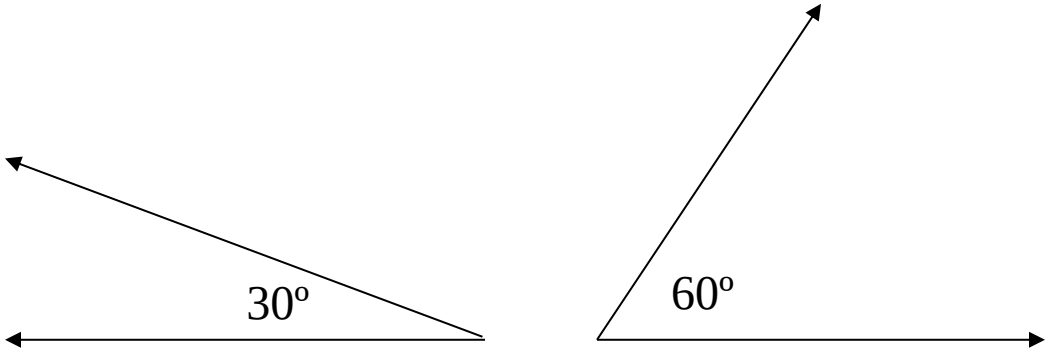
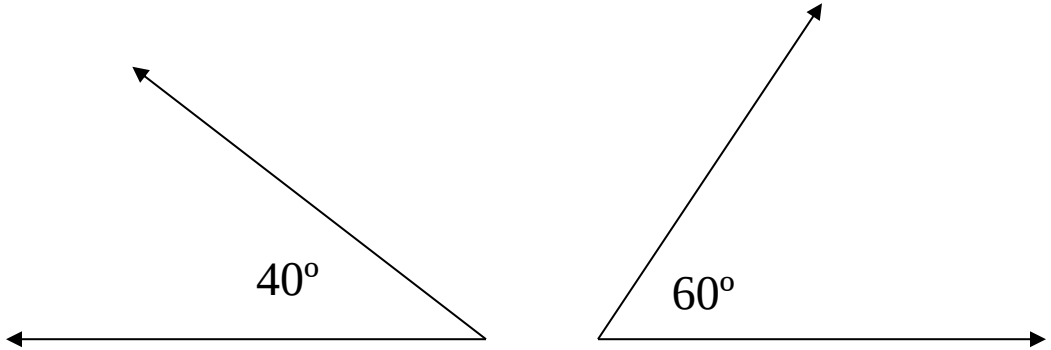
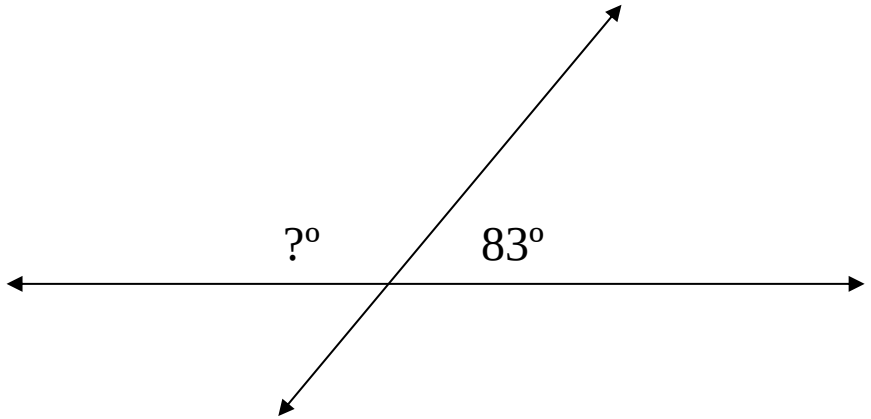


3)

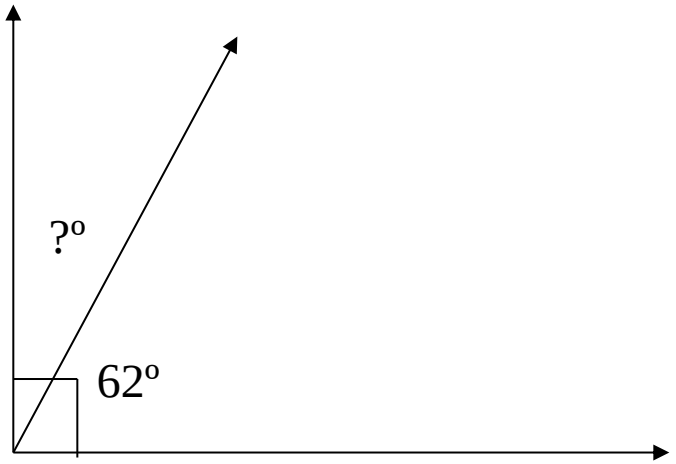


Find the missing angles.

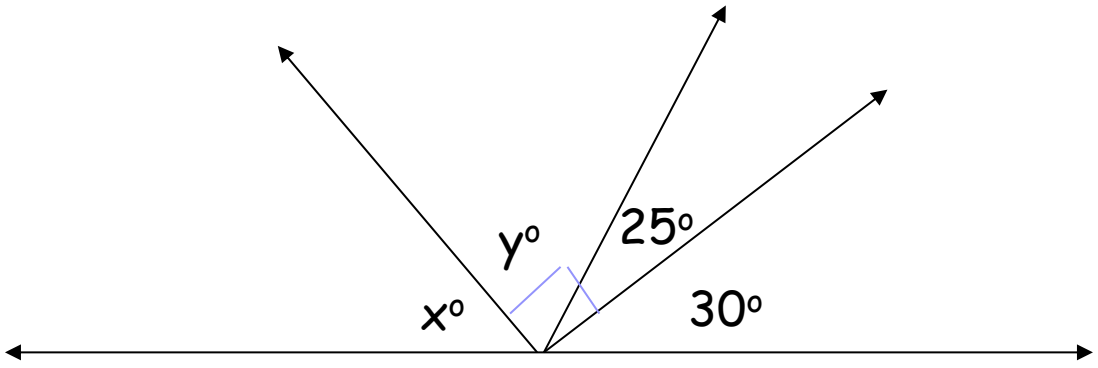
1)



2)



Find the missing angles.



Homework:

p. 454 #9 - 35

8-2B: Triangles

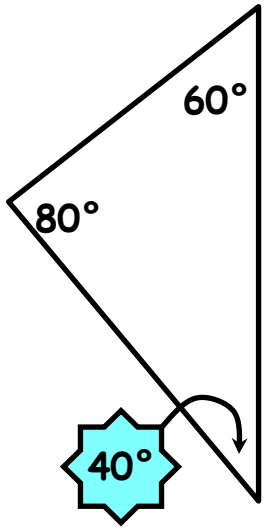
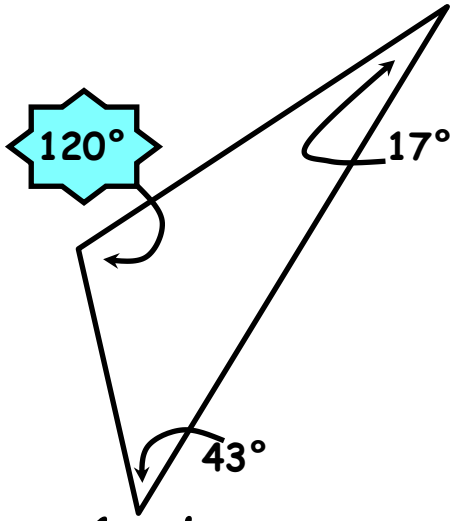
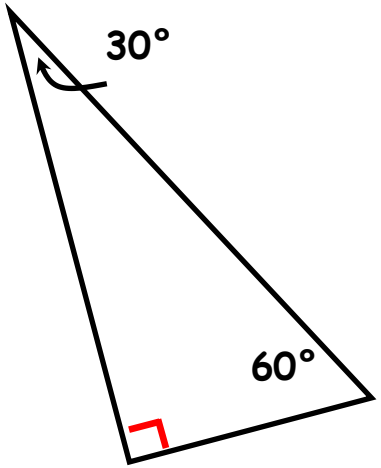
I can…
classify triangles and find missing angles measures in triangles

Triangle:

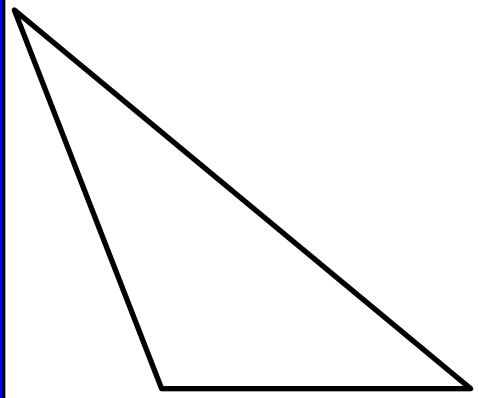
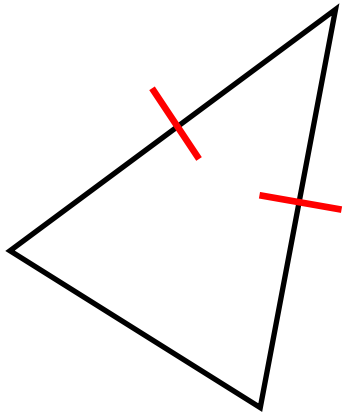
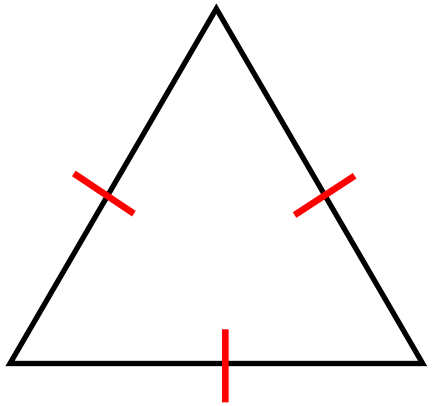
A figure with three sides and three angles.

The sum of its angles is **always** 180 degrees.

Triangles Classified by Angles

acute triangle	obtuse triangle	right triangle
		
All angles are acute	1 obtuse angle, 2 acute	1 right angle, 2 acute

Triangles Classified by Sides

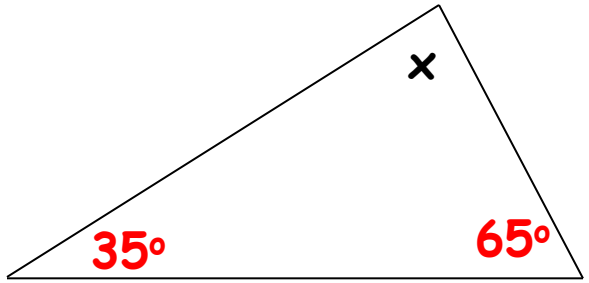
scalene	isosceles	equilateral
		
no sides congruent	at least two sides congruent	all sides congruent

Example:

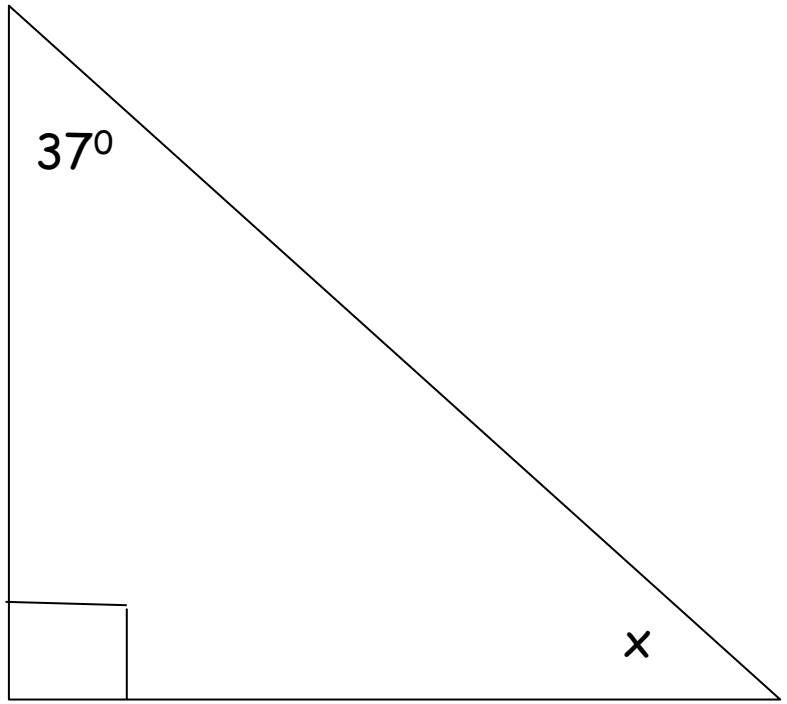
1) Draw a right isosceles triangle.

2) Draw an acute scalene triangle.

Example: Find the missing angle.



Find the missing angle.



Homework:

Workbook p. 127

Chapter 8
Midchapter Test

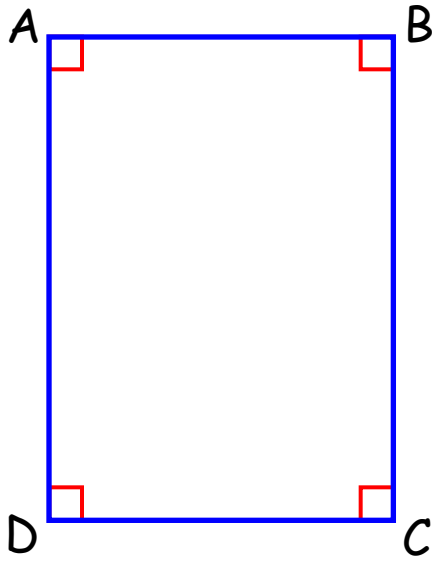
8-3B: Properties of Quadrilaterals

I can…

classify quadrilaterals and find missing angles measures in quadrilaterals.

Make Graphic organizer

Identify the parallelogram below.

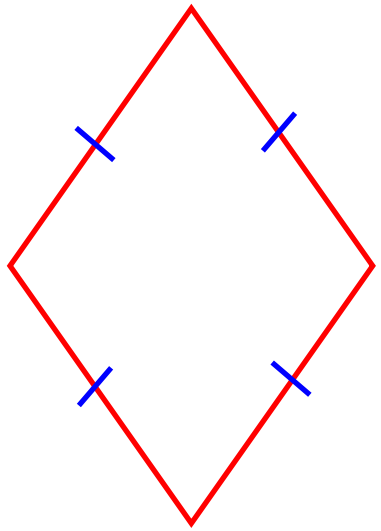


Parallelogram ABCD has 4 right angles, but the four sides are not congruent.

Therefore, it is a

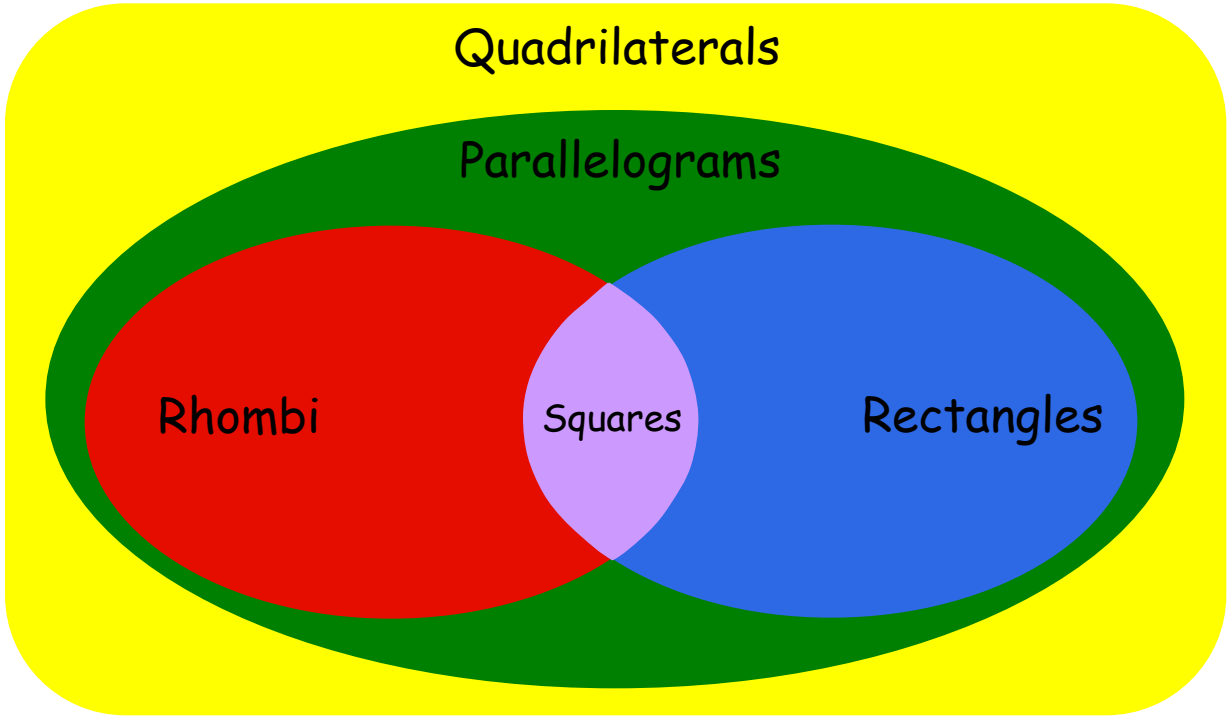
rectangle

Identify the parallelogram below.



rhombus

Use the Venn diagram to answer the following questions:
T or F



1) Every square is a rhombus: ___T

2) Every rhombus is a square: ___F

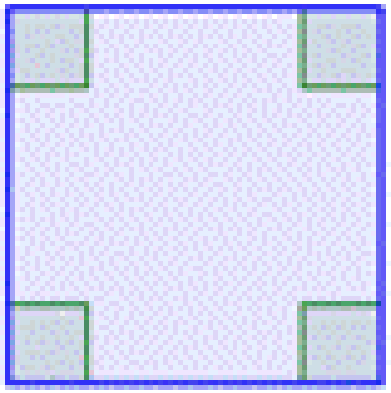
3) Every rectangle is a square: ___F

4) Every square is a rectangle: ___T

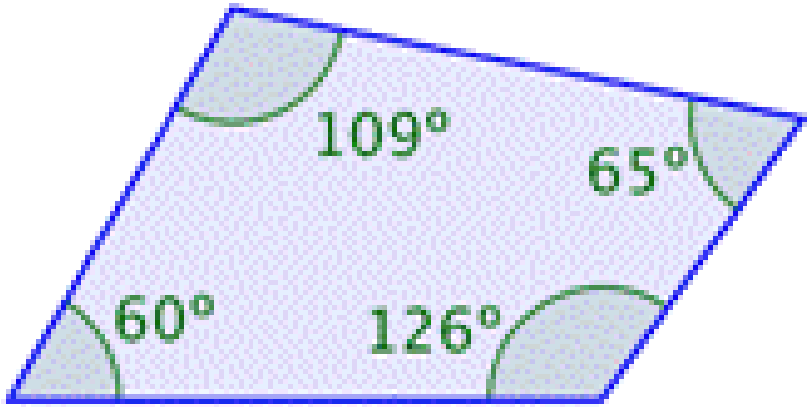
5) All rhombi are parallelograms: ___T

6) Every parallelogram is a rectangle: ___F

Sum of the interior angles of a quadrilateral is always 360°



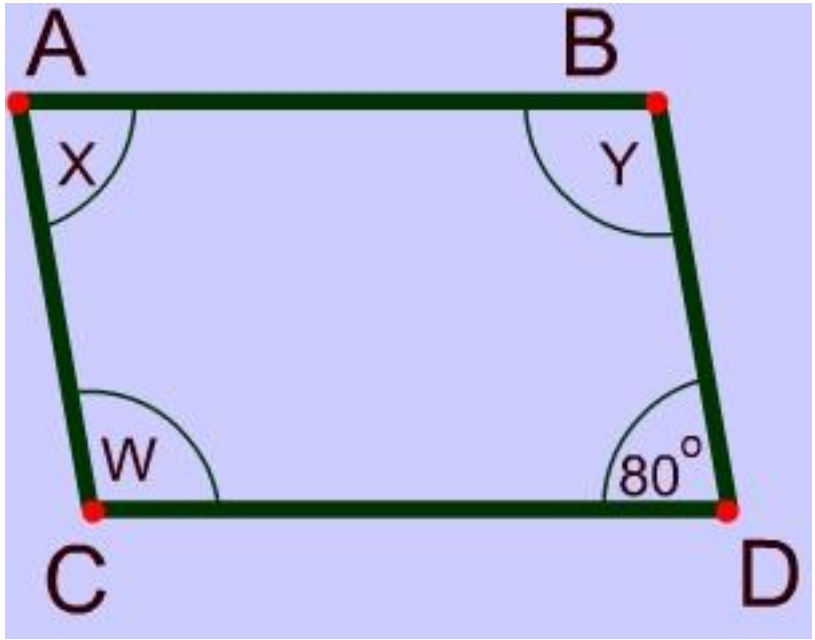
$90°+90°+90°+90°=360°$



$60°+109°+65°+126°=360°$

Example: Find the missing angle measurement.

ABCD is a parallelogram. Find the m$\angle D$



Homework:

Workbook p. 131

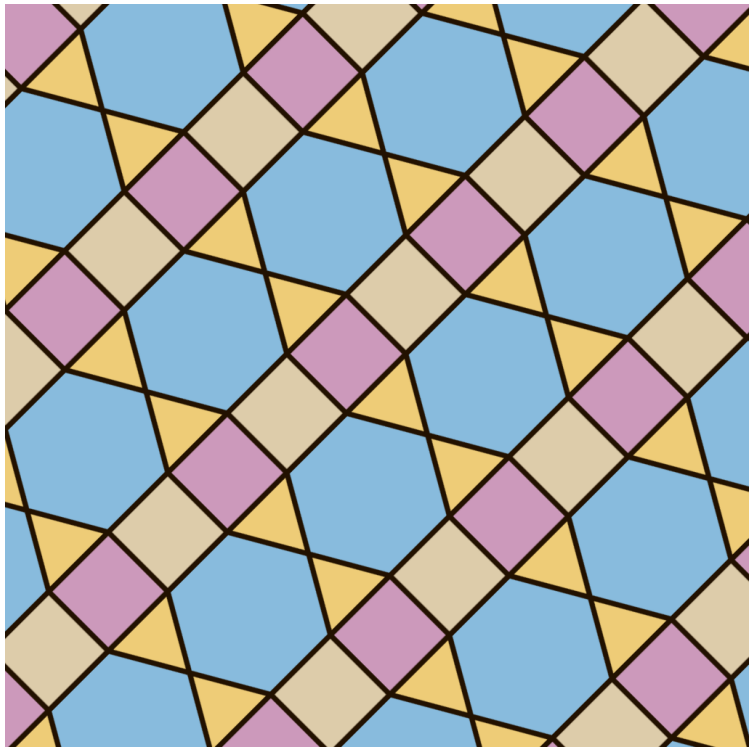
8-3C: Properties of Polygons

I can…

classify polygons and find the sum of angle measures in a polygon.

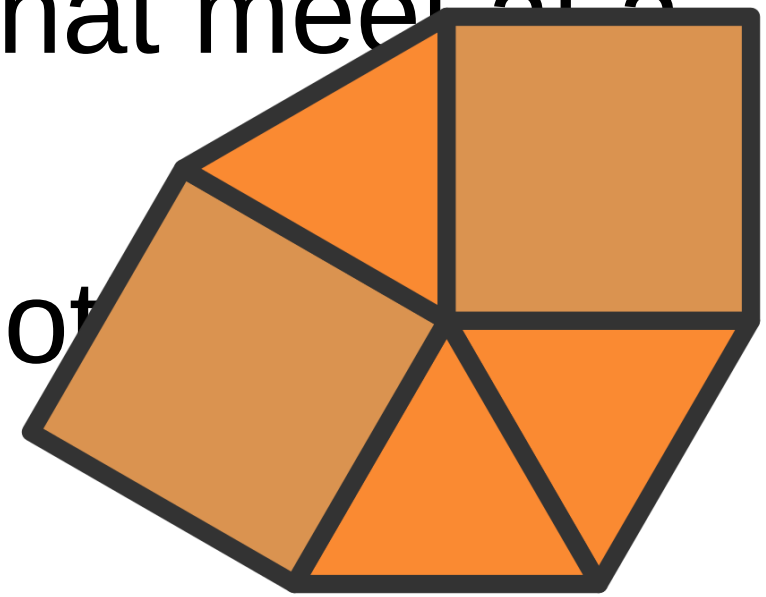
Polygons

- The word polygon means “many angles”
- A two dimensional object
- A closed figure

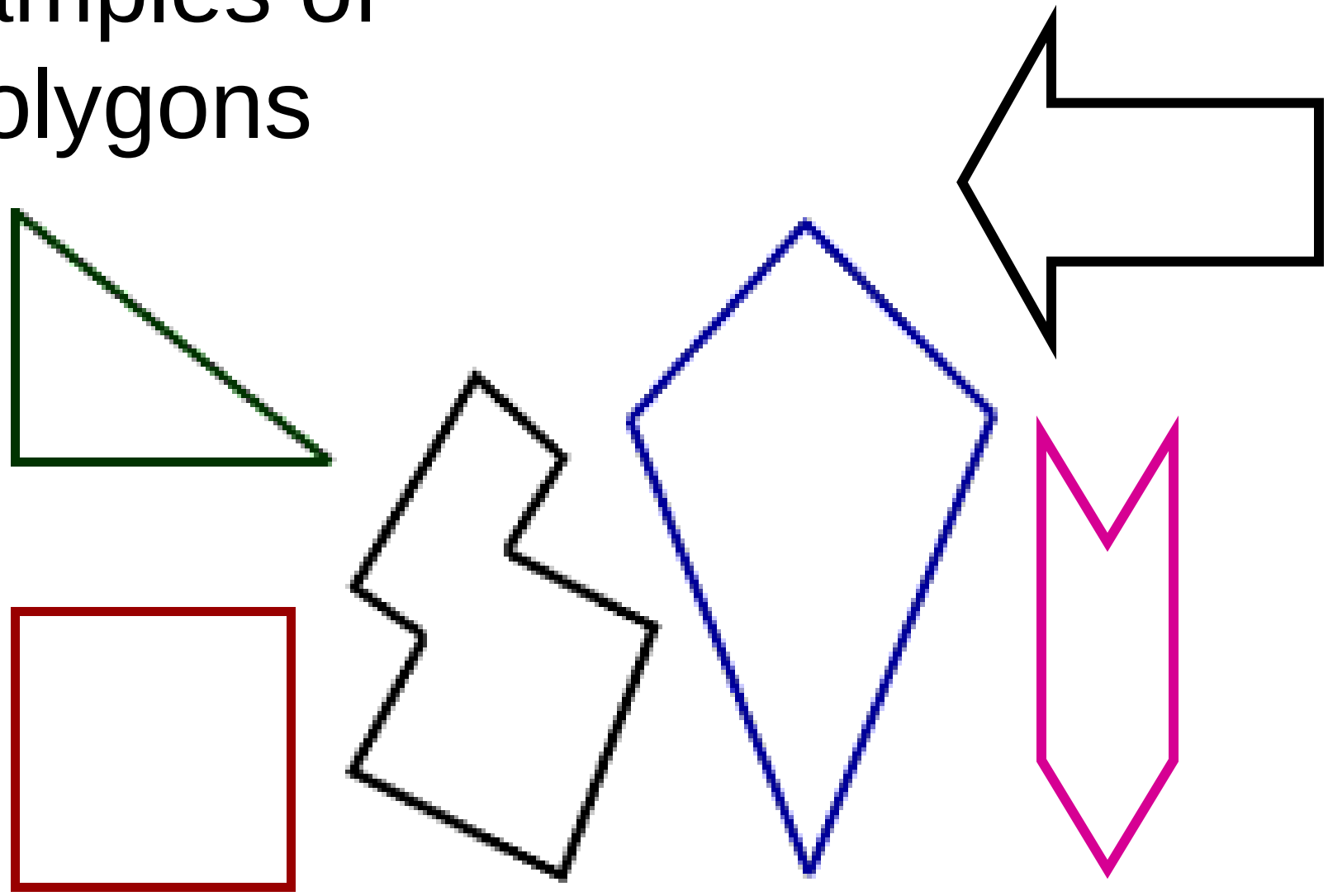


More about Polygons

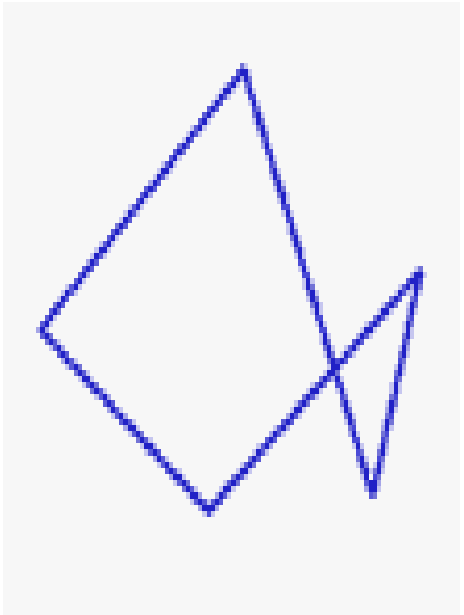
- Made up of three or more straight line segments
- There are exactly two sides that meet at a vertex
- The sides do not cross each ot

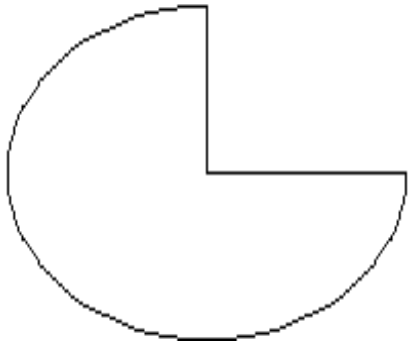


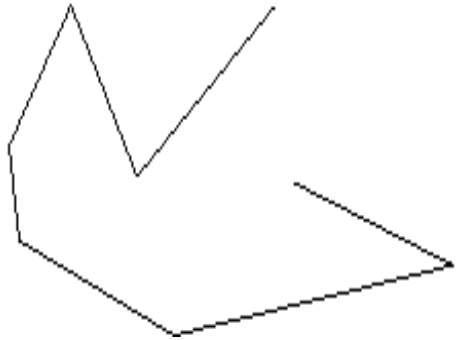
Examples of Polygons

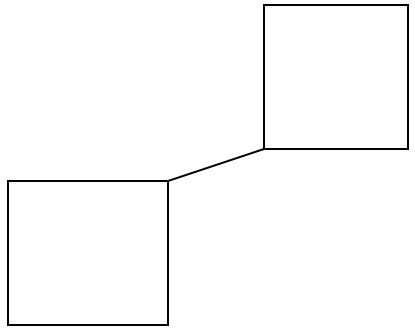


These are not Polygons









Regular polygons

Triangle

Quadrilateral

Pentagon

Hexagon

Heptagon

Octagon

Nonagon

Decagon

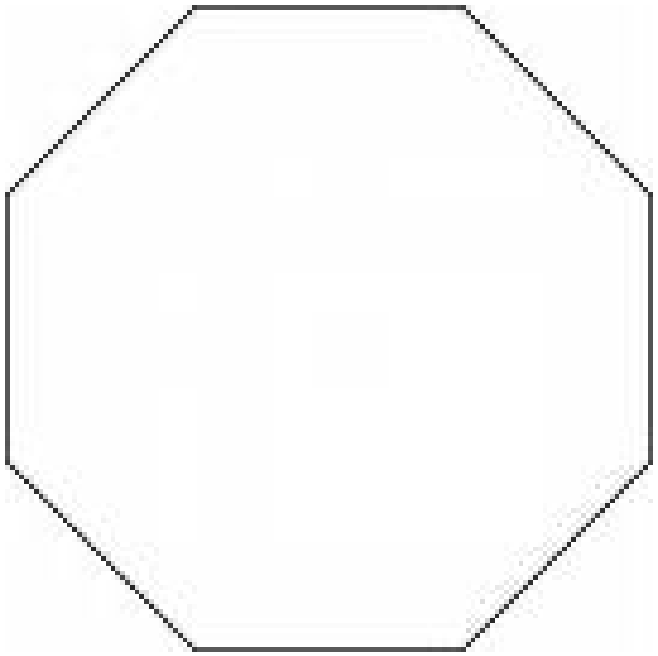
- Interior angle: An angle on the inside of the polygon.

- Sum of interior angles of a polygon:

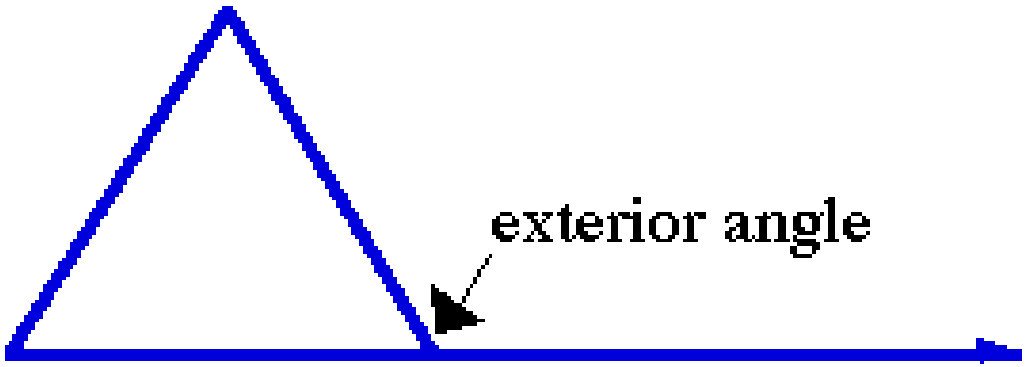
$D = (n-2)180$

Note: n is the number of sides

Find the measure of the interior angles of the regular octogon.



Exterior angle - the angle between any side of a figure and a line extended from an adjacent side. (aka outside angle)



Homework:

p. 477 #7-25odd, 34 - 37all

8-3D: Similar and Congruent Figures

I can…

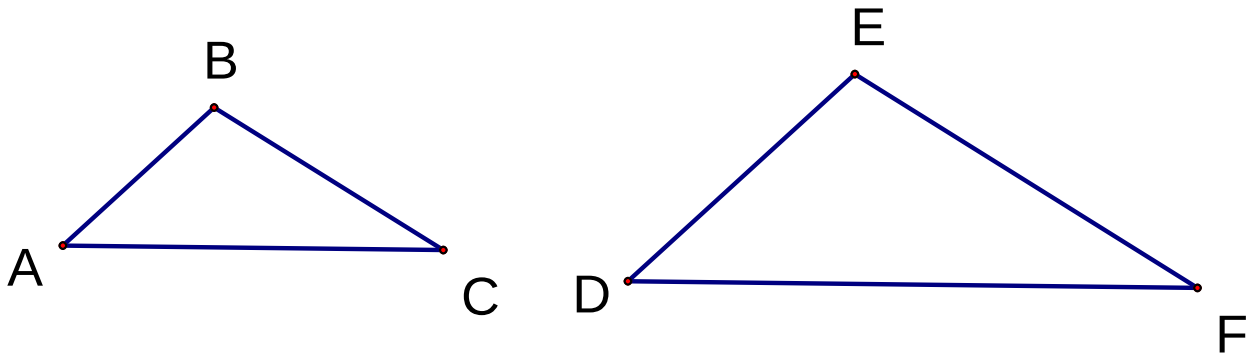
identify similar and congruent figures.

- **Similar Figures**: figures with the same shape, but can be different sizes; all angles are congruent

- **Congruent Figures**: figures with the same size and shape.

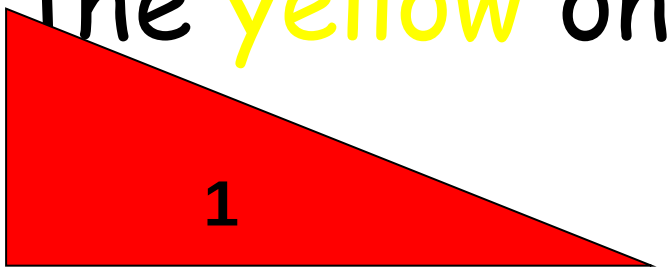
Corresponding Parts:

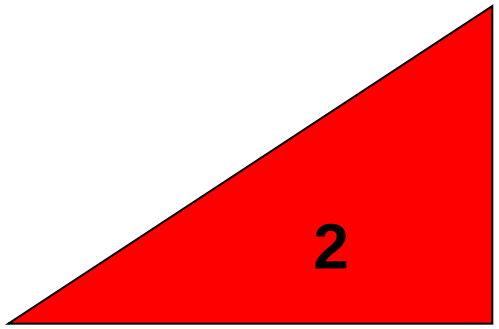
- Corresponding sides: sides of similar or congruent figures that are in the same relative position.

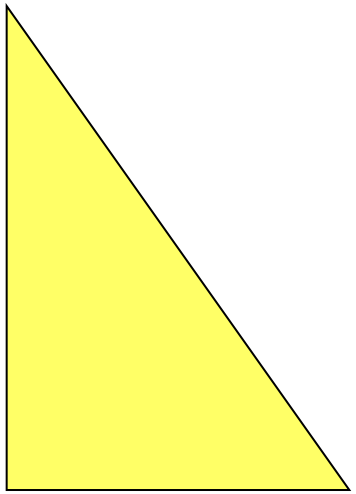


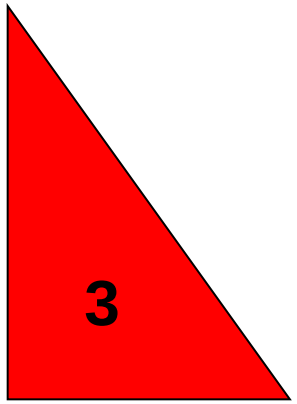
- Corresponding angles: angles of similar or congruent figures that are in the same relative position.

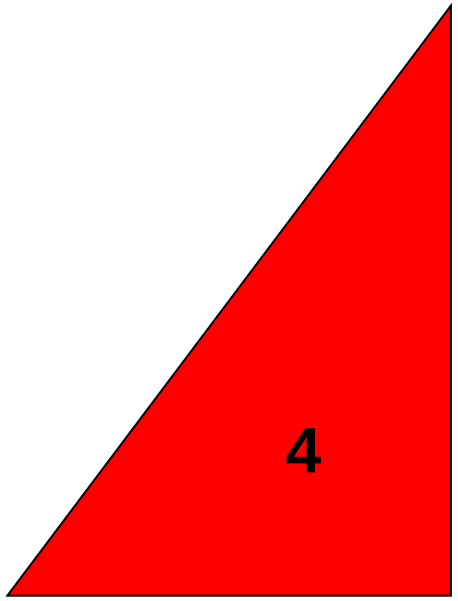
1. Which of these shapes are congruent to the yellow one?

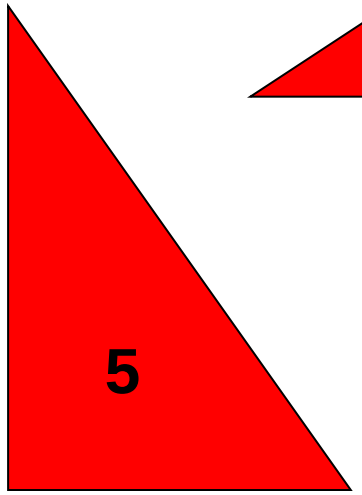


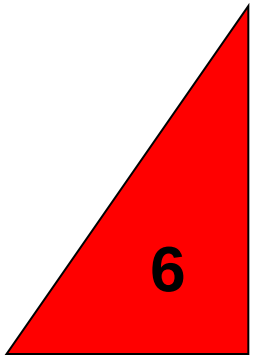


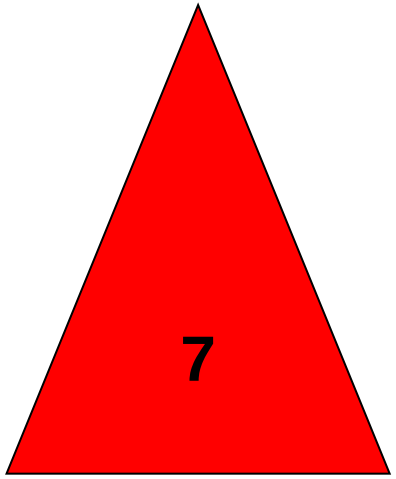


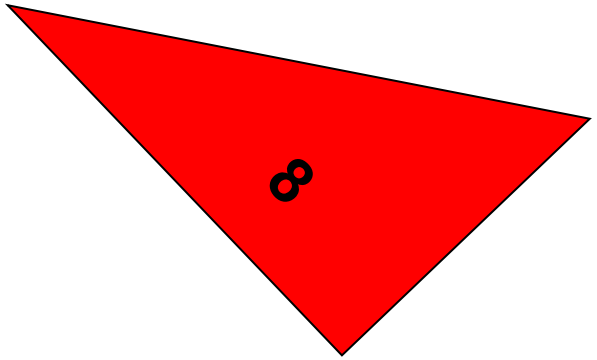




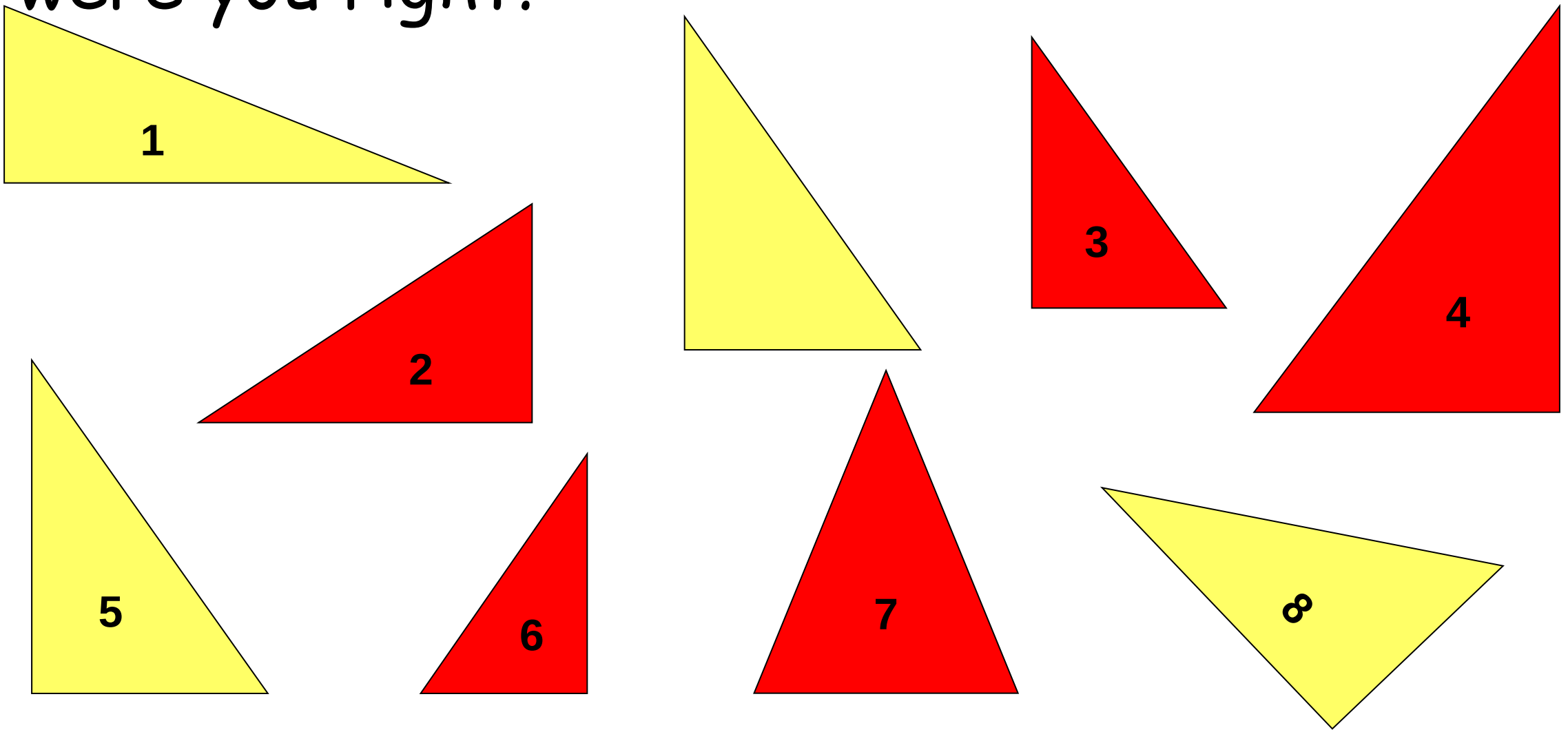




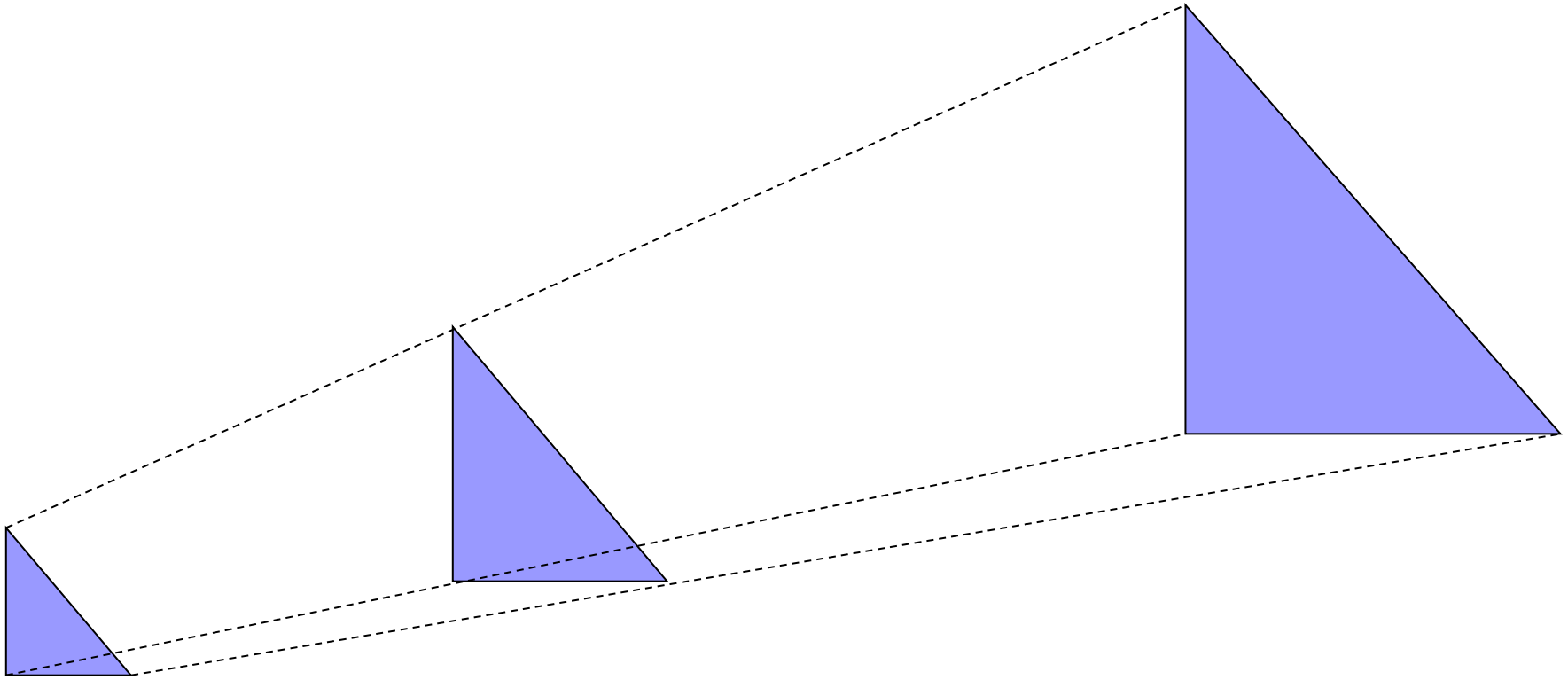




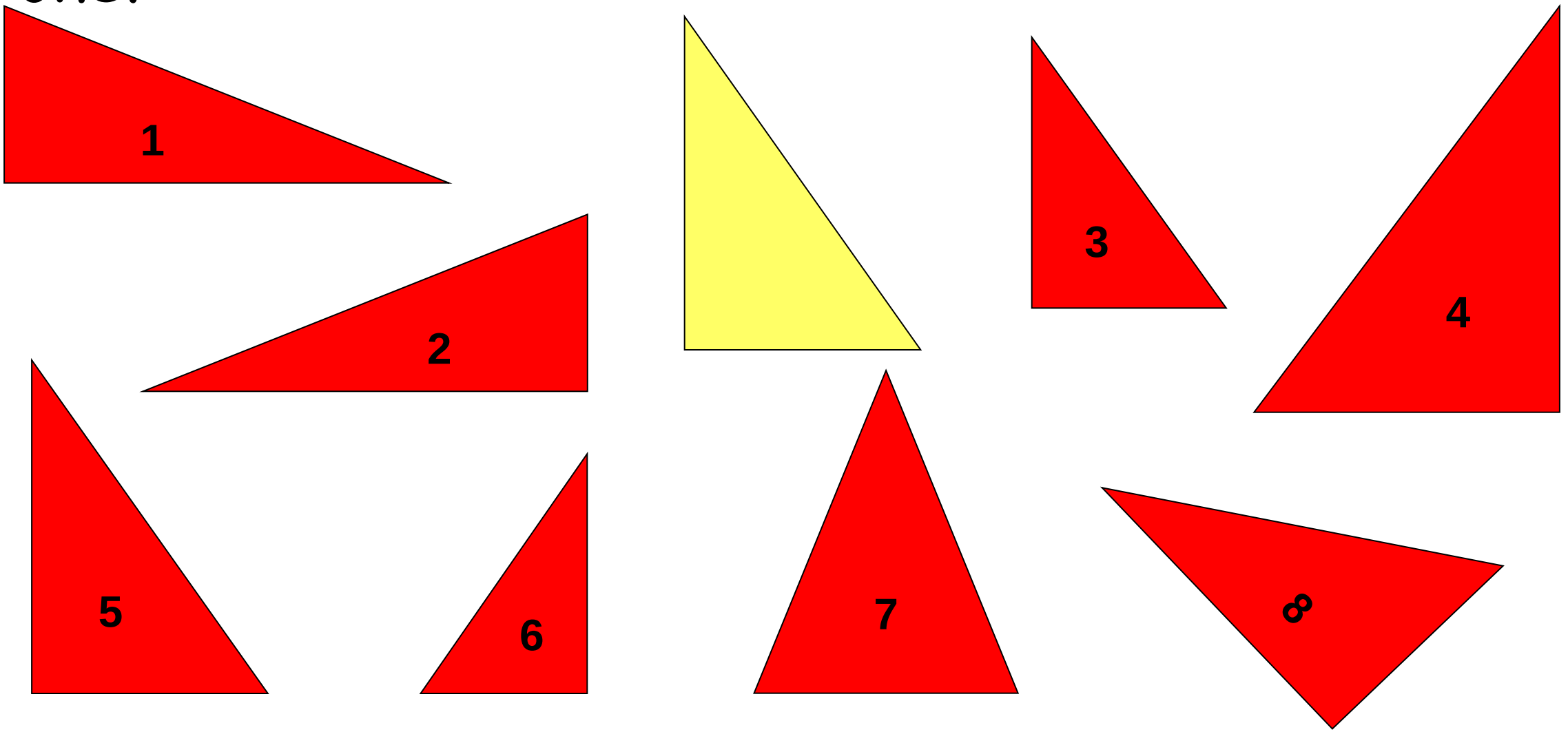
Congruent shapes are all shown in yellow – were you right?



Similar shapes

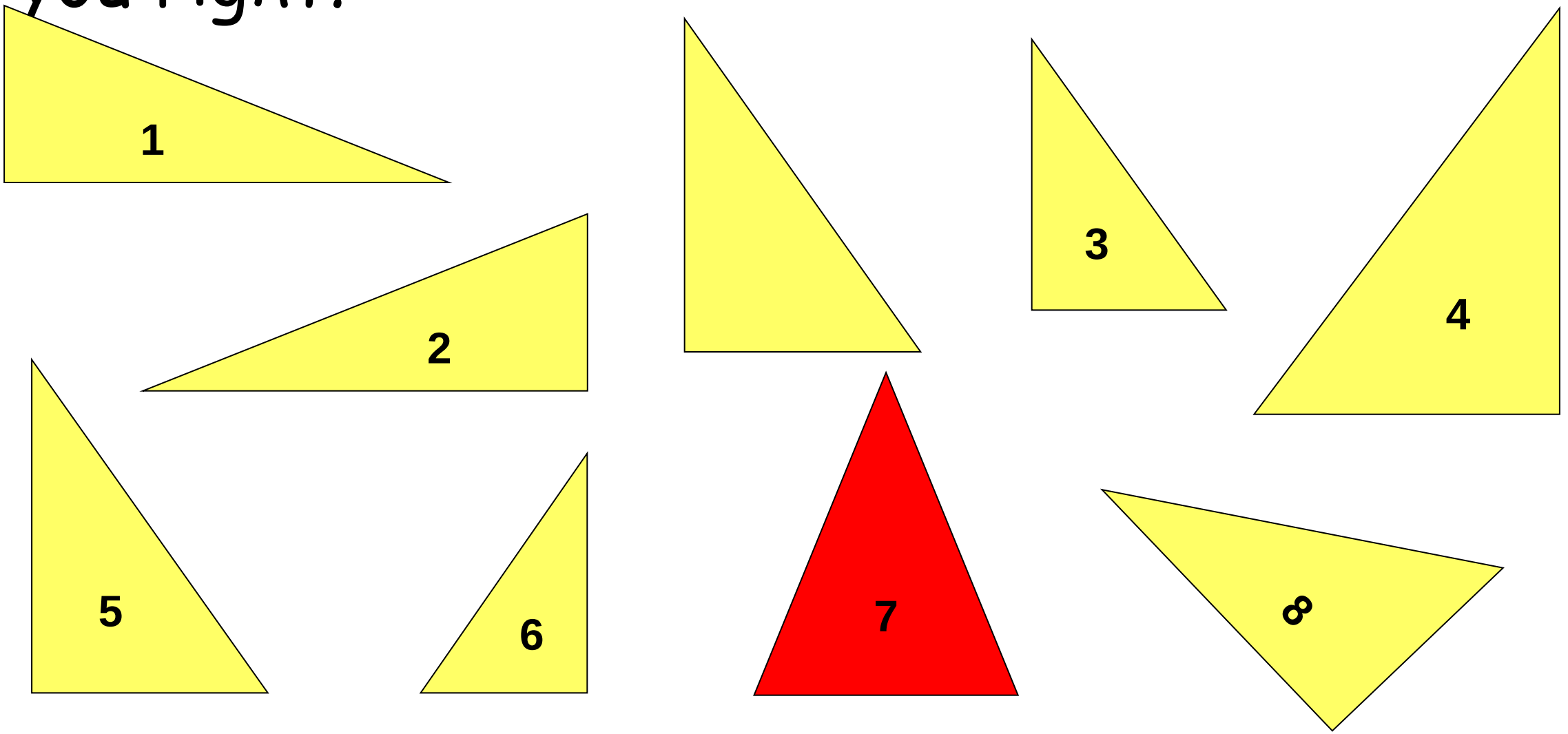


Which of these shapes are similar to the yellow one?

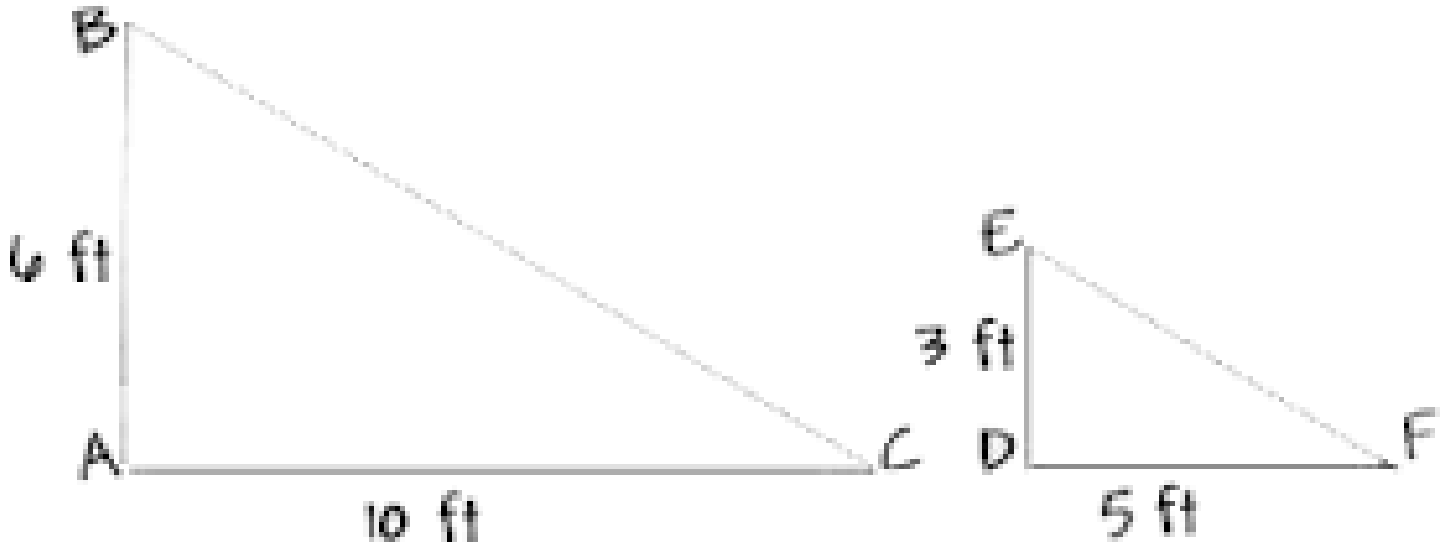


Start page

Similar shapes are all shown in yellow – were you right?



Identify similar figures:



Homework:

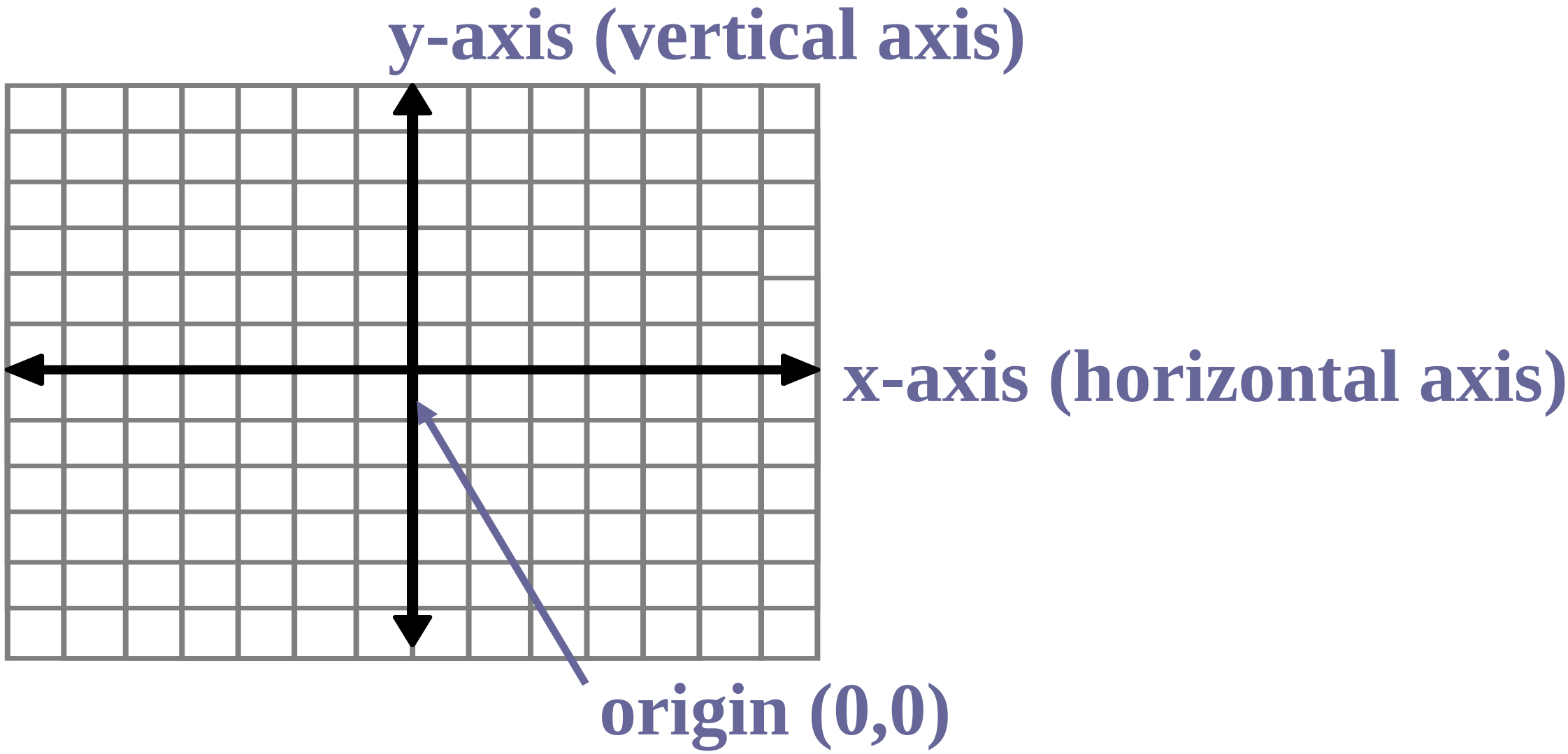
p.483 #1 – 23 odd, 29

Coordinate Plane Basics

I can…

draw a coordinate plane, label quadrants, and plot ordered pairs.

Ordered pairs are used to locate points in a coordinate plane.



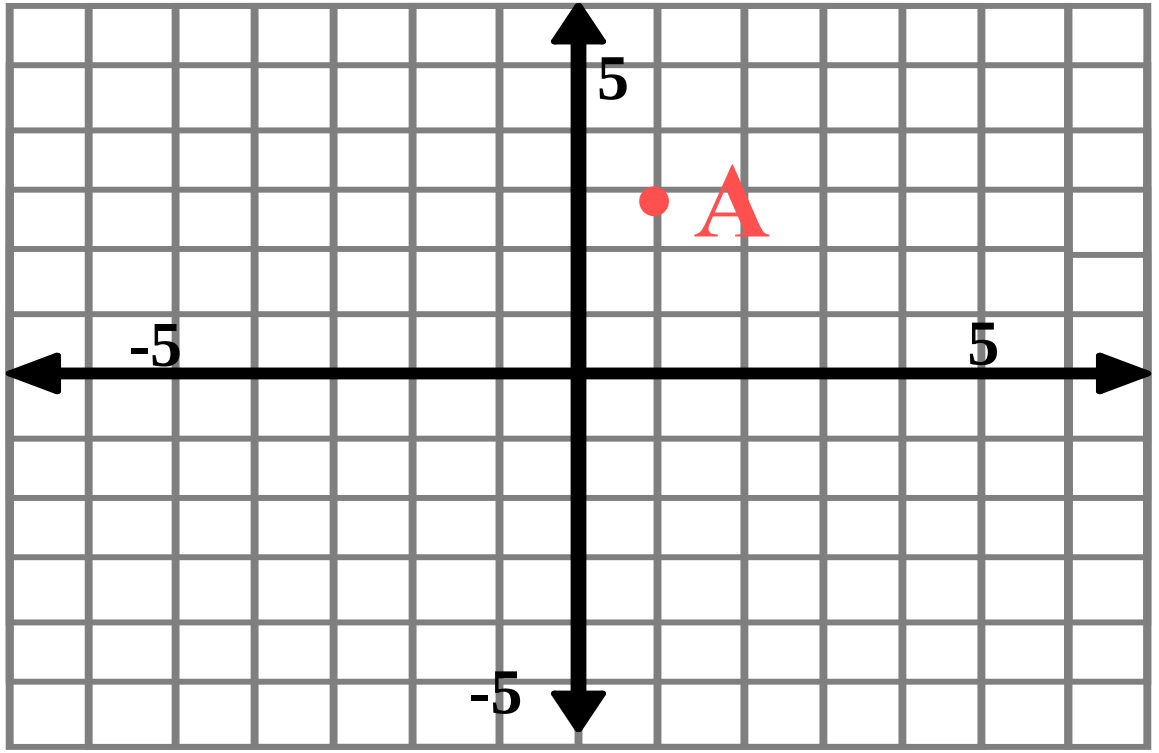
Quadrants:

In an ordered pair, the first number is the x-coordinate. The second number is the y-coordinate.

Graph. (-3, 2)

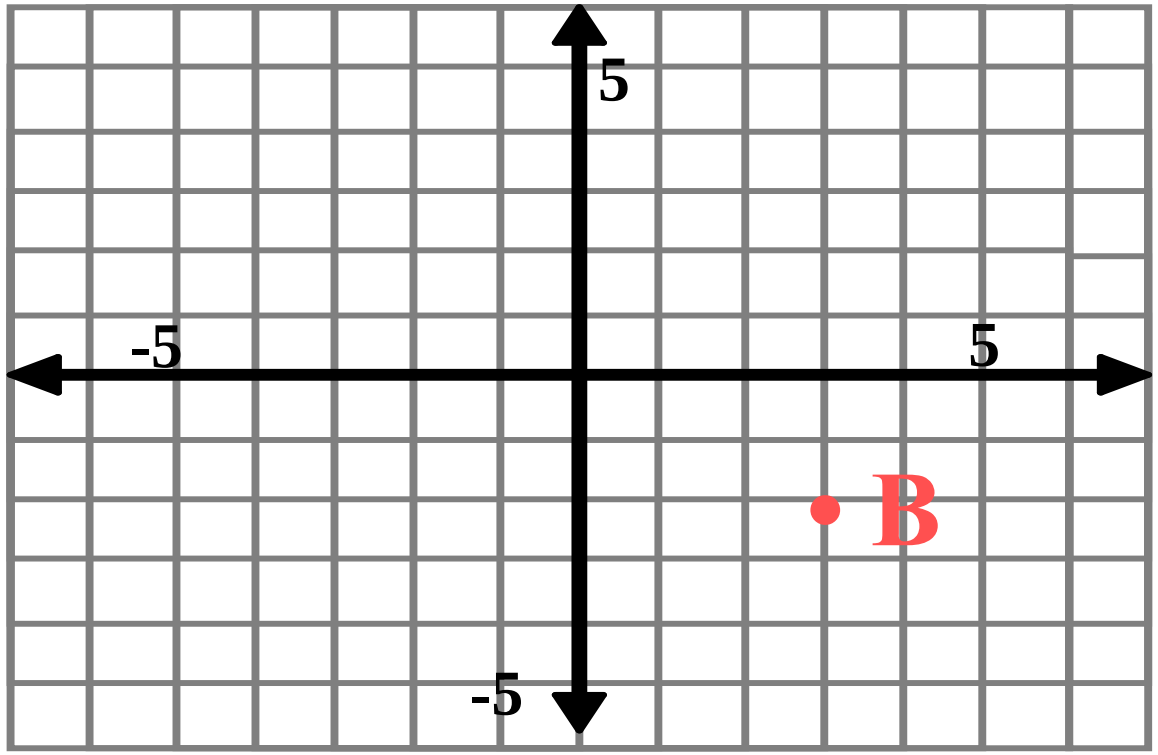
What is the ordered pair for A?

1. (3, 1)
2. (1, 3)
3. (-3, 1)
4. (3, -1)



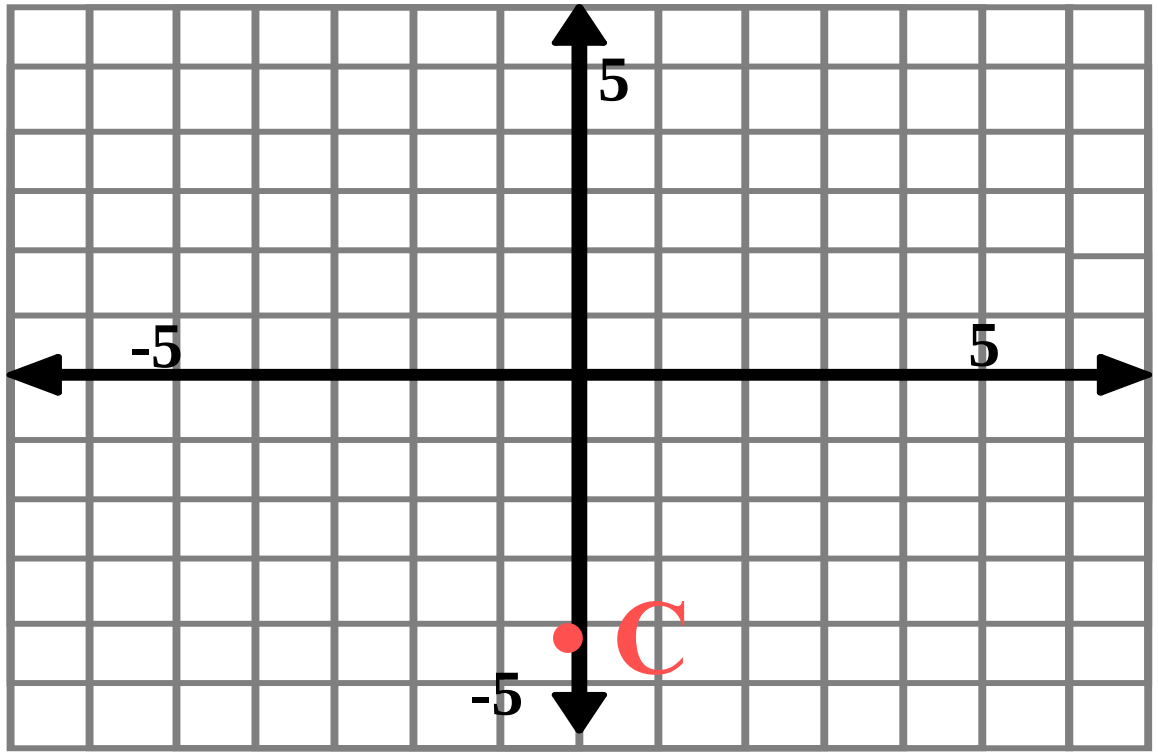
What is the ordered pair for B?

1. (3, 2)
2. (-2, 3)
3. (-3, -2)
4. (3, -2)



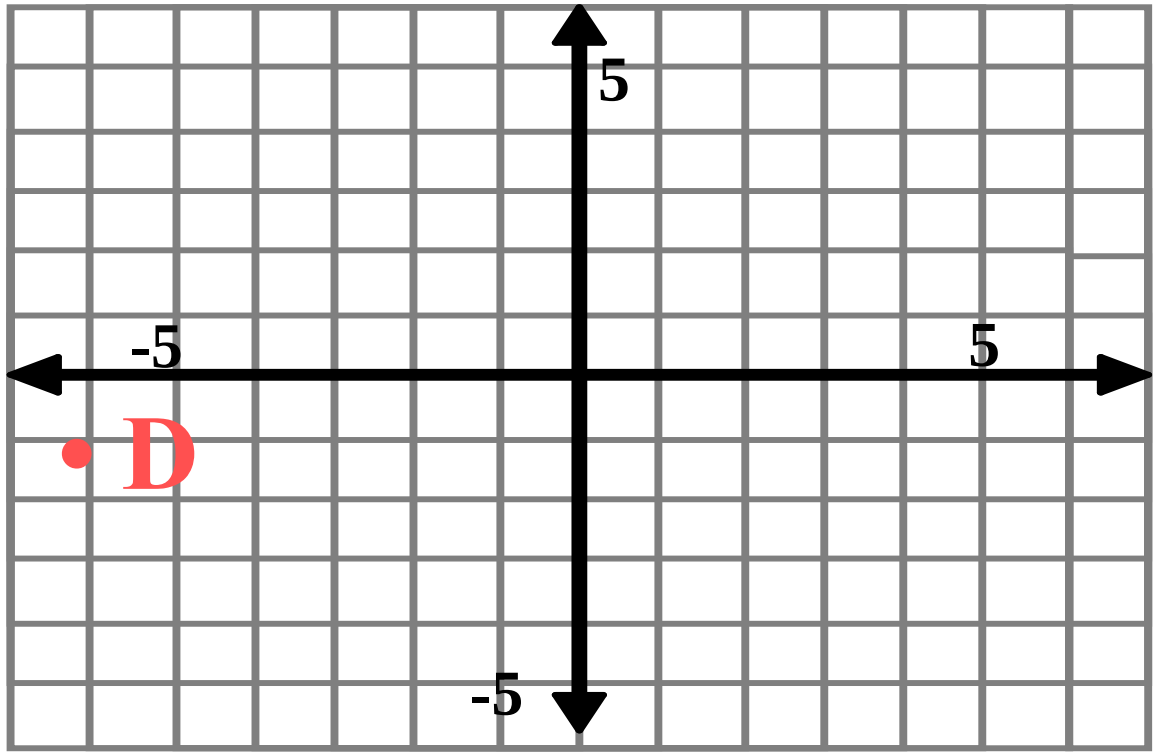
What is the ordered pair for C?

1. (0, -4)
2. (-4, 0)
3. (0, 4)
4. (4, 0)



What is the ordered pair for D?

1. (-1, -6)
2. (-6, -1)
3. (-6, 1)
4. (6, -1)



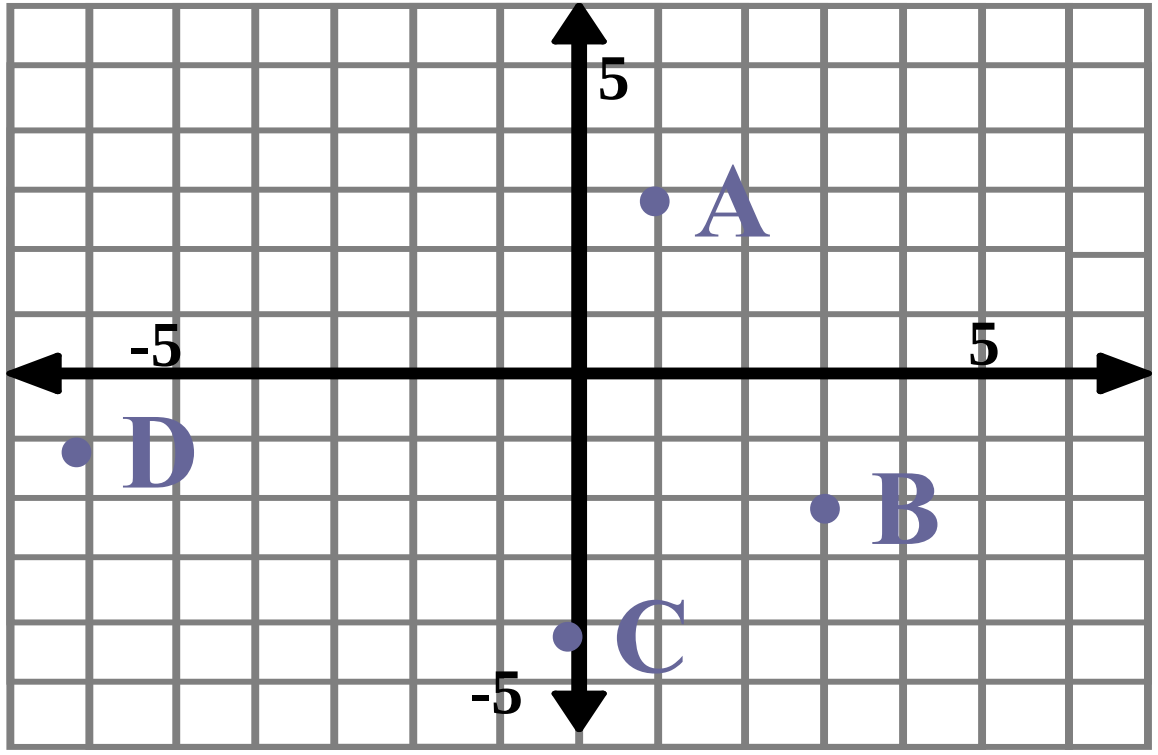
Write the ordered pairs that name points A, B, C, and D.

A = (1, 3)

B = (3, -2)

C = (0, -4)

D = (-6, -1)



Homework:

worksheets

8-4B: Translations

I can…

graph translations on a coordinate plane.

Vocabulary:

Transformations – a movement of a geometry shape

Preimage – the image before the transformation (original figure)

Image – the figure after the transformation

New points are called primes

Translations:

- A slide of the preimage where each point moves the same distance in the same direction
- 2 ways to find new points (primes)
    1) use a graph
    2) calculate new coordinates

Example: translate figure 8 units down.

Homework:

Workbook p. 137

8-4C: Reflections

I can…

graph reflections on a coordinate plane.

Reflection -

- A 'flip' over a line of reflection to create a mirror image (each point is moved to other side of line

- To find 'prime' points of the image:
  - If it reflects over the x-axis, x value stays same and y-value if opposite sign
  - If it reflects over the y-axis, x value is the opposite sign and y value stays the same

Whiteboard practice

Homework:

Workbook p. 139 &140

8-4D: Rotations

I can…

graph rotations on a coordinate plane.

Rotations: turn the geometric figure

- Dependent on:
  - Direction (clockwise vs. counterclockwise)
  - Degree (90, 180, 270, 360 – multiples of 90)

Example: 90 rotation

- Look for pattern and compare ordered pairs of vertices
- Preimage:

A (-5, 7)	A′ (7, 5)
B (-1, 6)	B′ (6, 1)
C (-3, 2)	C′ (2, 3)

General Rule: For each clockwise 90 rotation, switch the x and y and change sign of y

Whiteboard Practice

Homework:

Workbook p. 141

Chapter 8 Test