Eureka Math

4th Grade
Module 4
Lesson 15

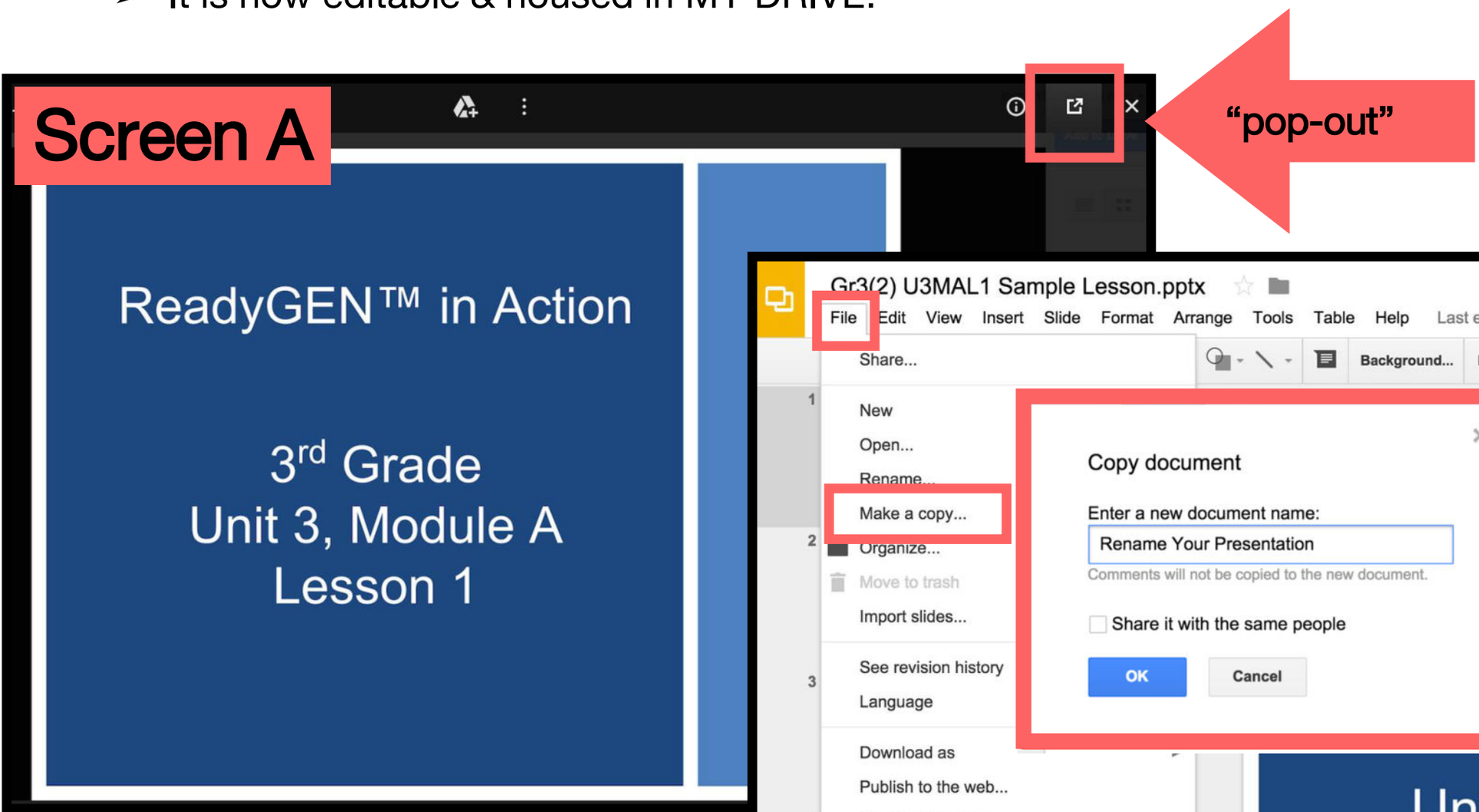
At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

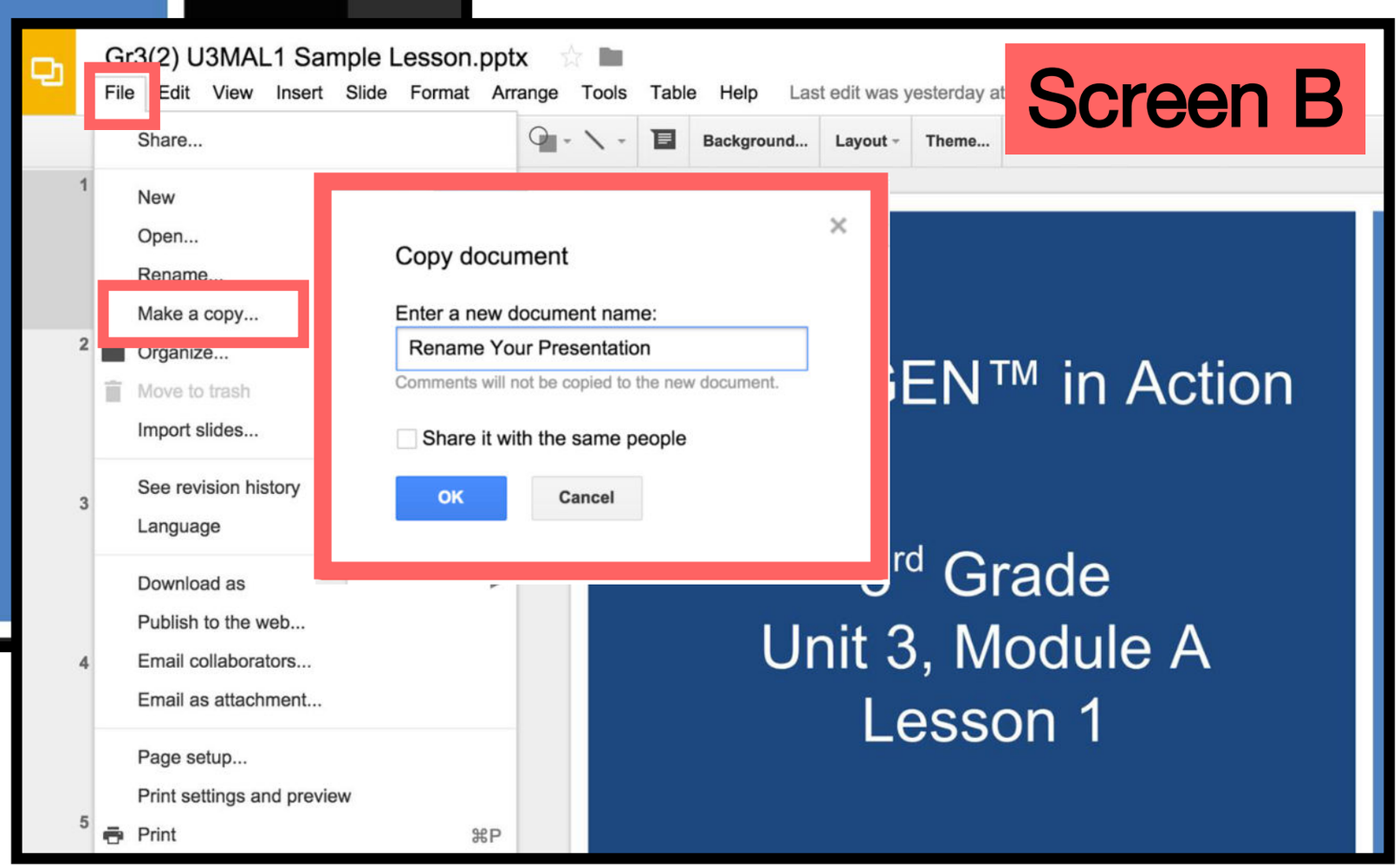
Directions for customizing presentations are available on the next slide.

Customize this Slideshow

Reflecting your Teaching Style and Learning Needs of Your Students

- When the Google Slides presentation is opened, it will look like Screen A.
- Click on the “pop-out” button in the upper right hand corner to change the view.
- The view now looks like Screen B.
- Within Google Slides (not Chrome), choose FILE.
- Choose MAKE A COPY and rename your presentation.
- Google Slides will open your renamed presentation.
- It is now editable & housed in MY DRIVE.



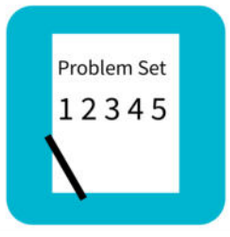


Icons

Read, Draw, Write

Learning Target

Personal White Board

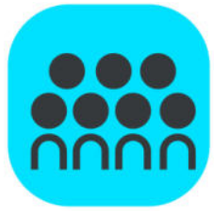


Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

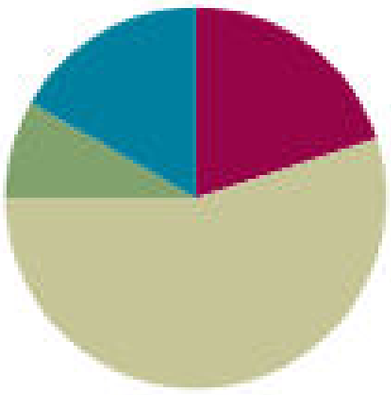
Small Group Time

Lesson 15

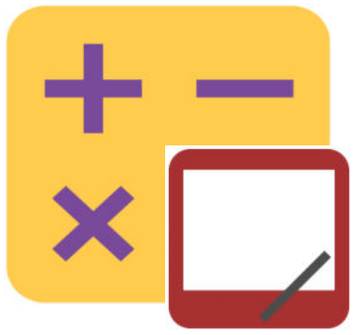
Objective: Classify quadrilaterals based on parallel and perpendicular lines and the presence or absence of angles of a specified size.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(33 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



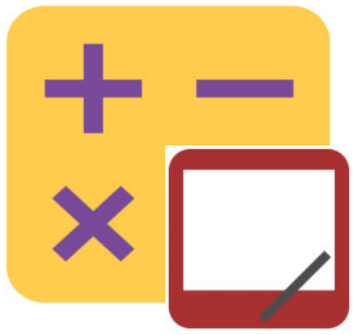
I can classify quadrilaterals based on parallel and perpendicular lines and the presence or absence of angles of a specified size.



Fluency Practice

Add and Subtract

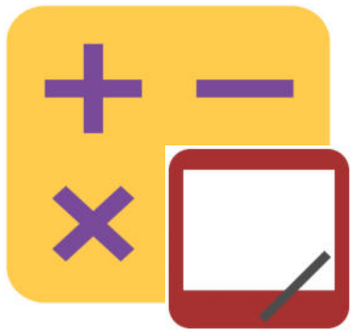
Write 543 thousands 178 ones



Fluency Practice

Add and Subtract

Write 134 thousands 153 ones

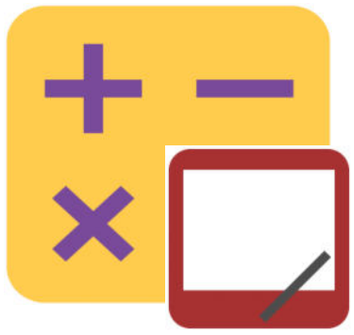


Fluency Practice

Add and Subtract

543,178 and 134,153

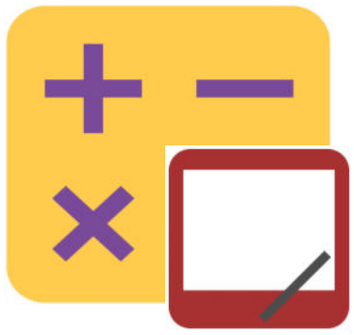
Find the sum standard algorithm.



Fluency Practice

Add and Subtract

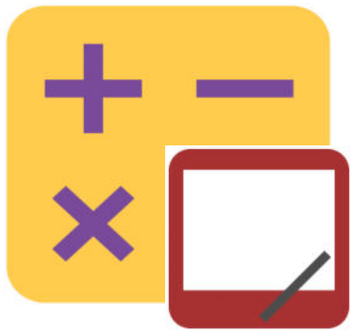
Write 817 thousands 560 ones



Fluency Practice

Add and Subtract

Write 426 thousands 145 ones

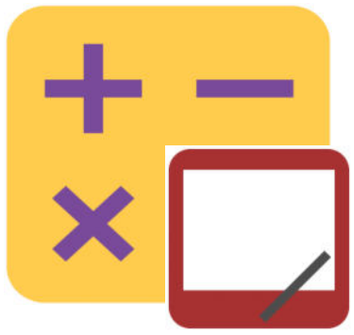


Fluency Practice

Add and Subtract

817,560 and 426,145

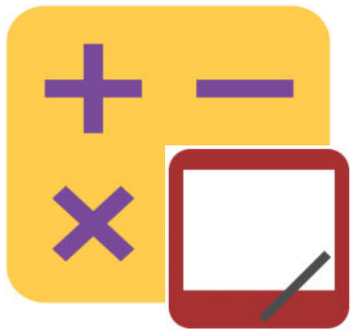
Find the difference standard algorithm.



Fluency Practice

Add and Subtract

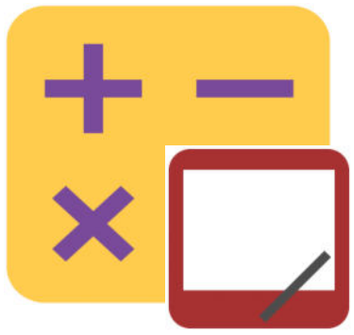
Write 543 thousands 178 ones



Fluency Practice

Add and Subtract

Write 134 thousands 153 ones

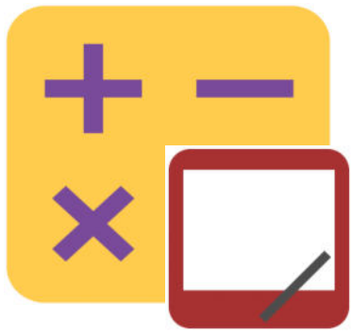


Fluency Practice

Add and Subtract

481,737 and 253,675

Find the sum standard algorithm.



Fluency Practice

Add and Subtract

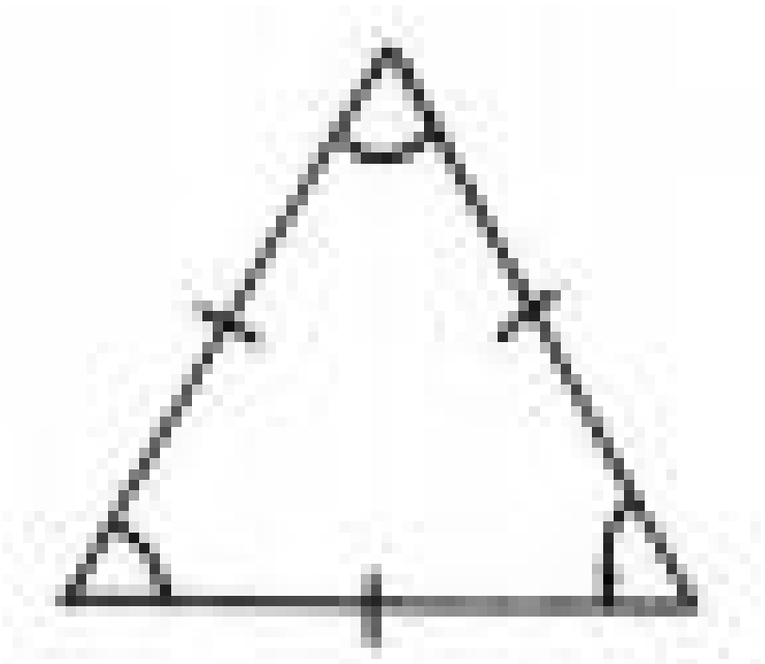
600,000 and 426,521

Find the difference
standard algorithm.

Fluency Practice

Classify the Triangle

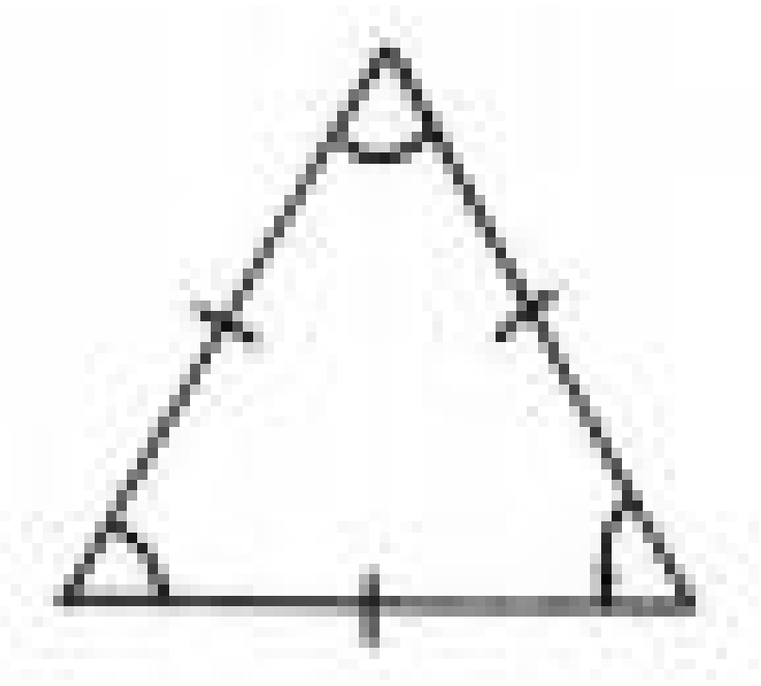
Is the triangle equilateral, scalene, or isosceles?



Fluency Practice

Classify the Triangle

Is the triangle equilateral, scalene, or isosceles?



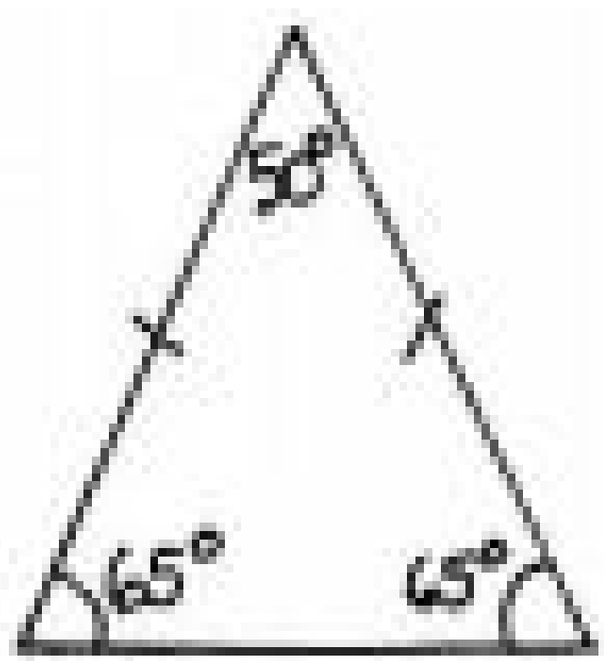
EQUILATERAL

because all the sides are the same length.

Fluency Practice

Classify the Triangle

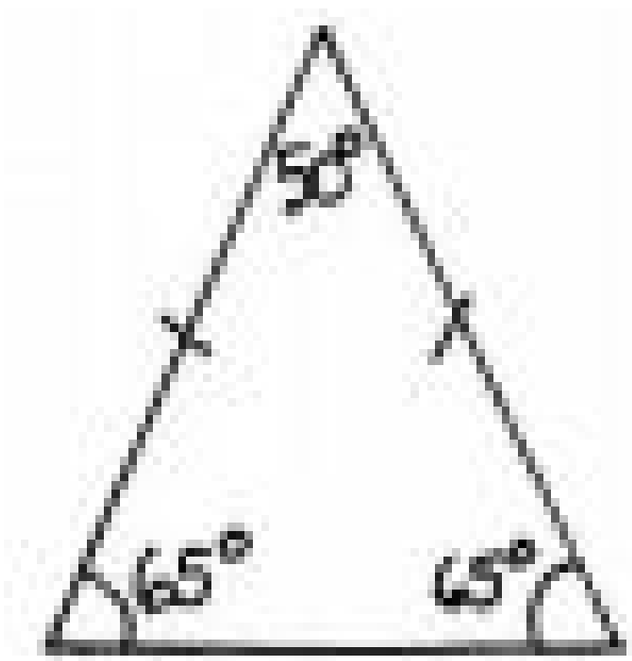
Is the triangle acute, right, or obtuse?



Fluency Practice

Classify the Triangle

Is the triangle acute, right, or obtuse?



ACUTE

because ALL the angles are less than 90°

Fluency Practice

Classify the Triangle

What is the measurement of the largest angle?

Fluency Practice

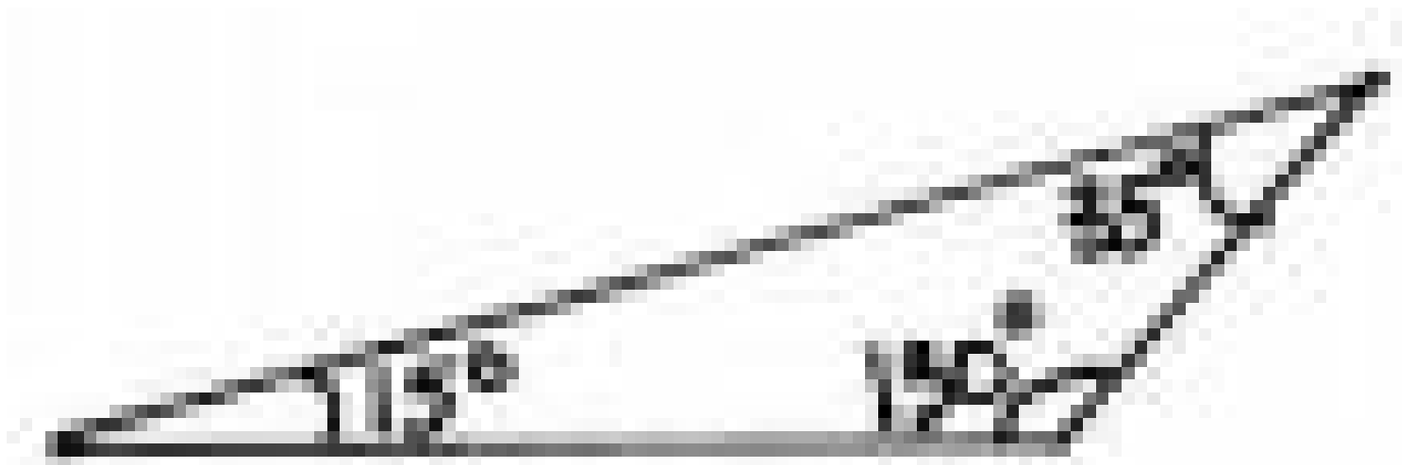
Classify the Triangle

Is the triangle equilateral, scalene, or isosceles?

Fluency Practice

Classify the Triangle

Is the triangle equilateral, scalene, or isosceles?



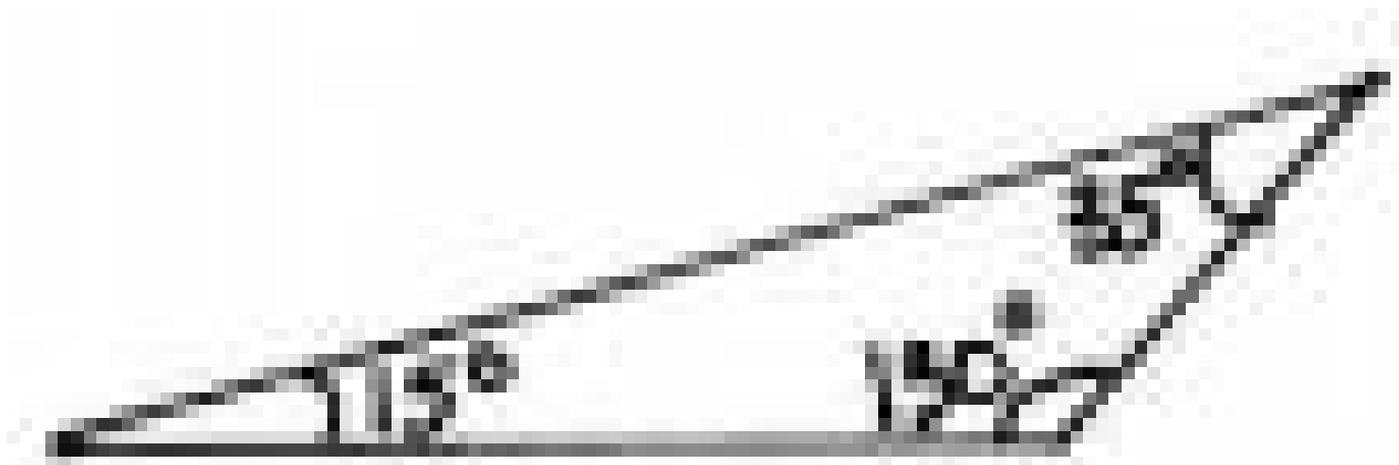
SCALENE

because all sides are different

Fluency Practice

Classify the Triangle

Is the triangle acute, right, or obtuse?



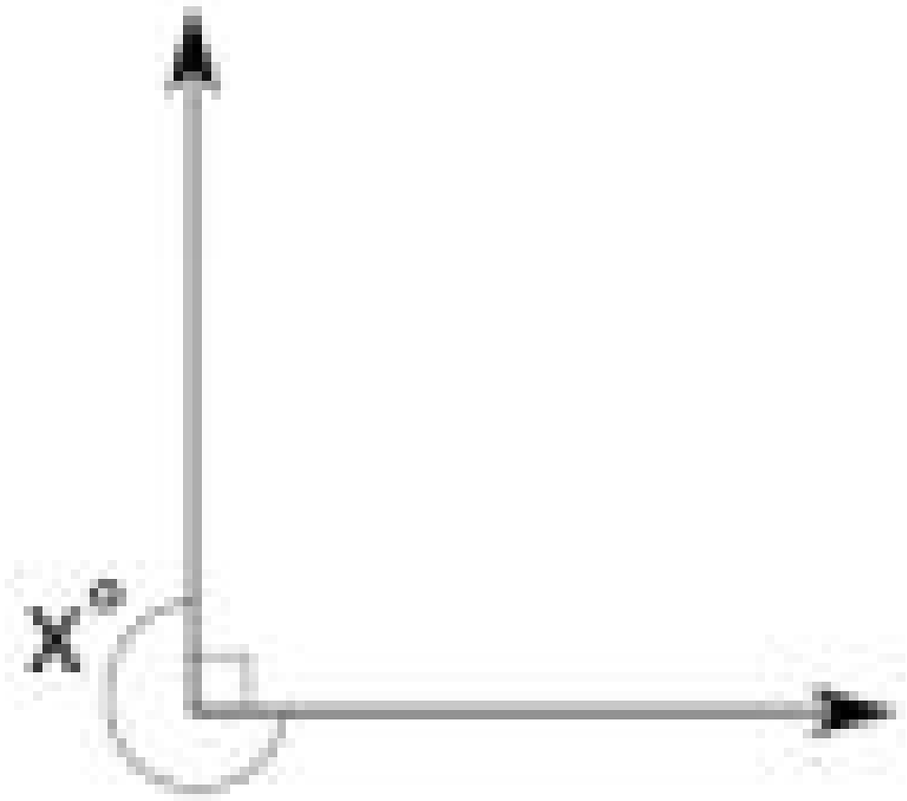
OBTUSE

because it has an angle greater than 90°

Fluency Practice

Find the Unknown Angle

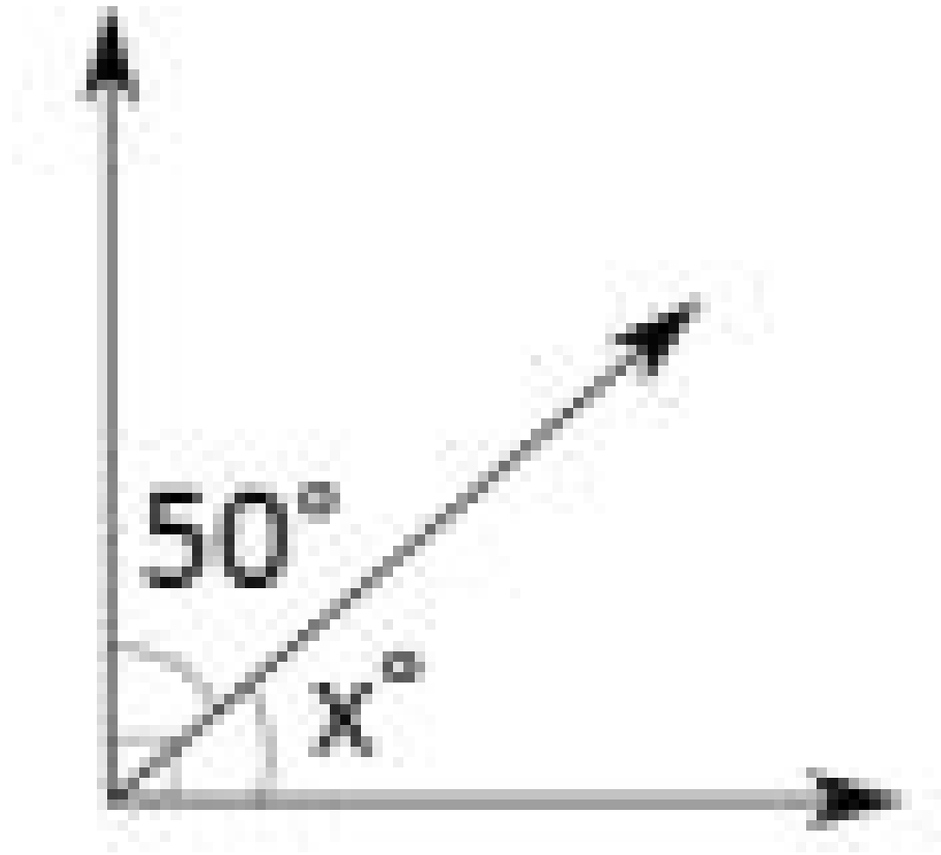
This is a right angle.



Fluency Practice

Find the Unknown Angle

On your white board, write a number sentence to find the measure of ∠x°

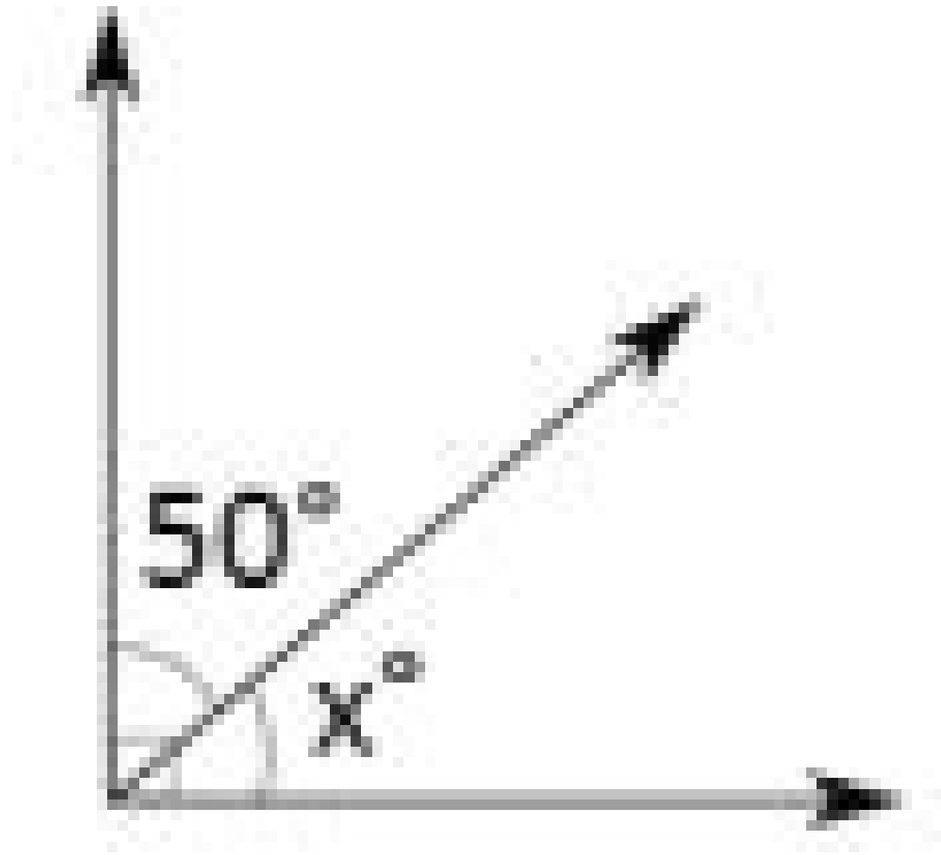


Fluency Practice

Find the Unknown Angle

$$90° - 50° = x°$$

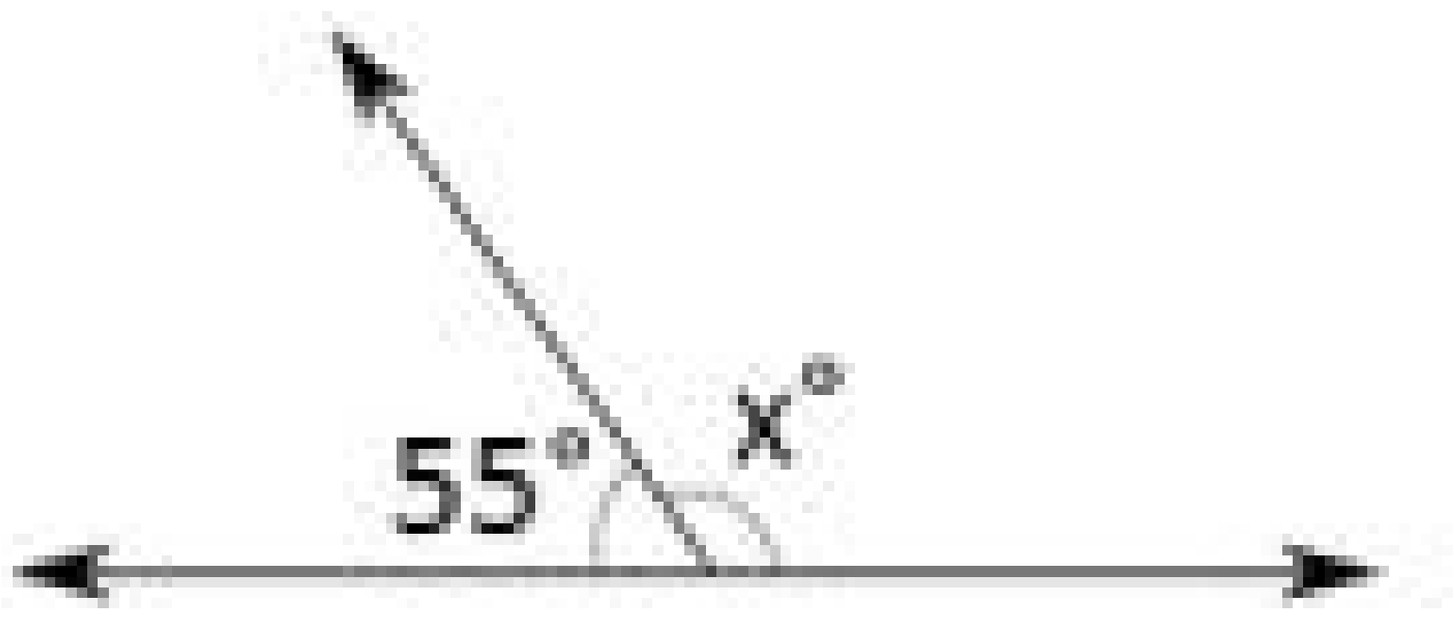
$$\angle x° = 40°$$



Fluency Practice

Find the Unknown Angle

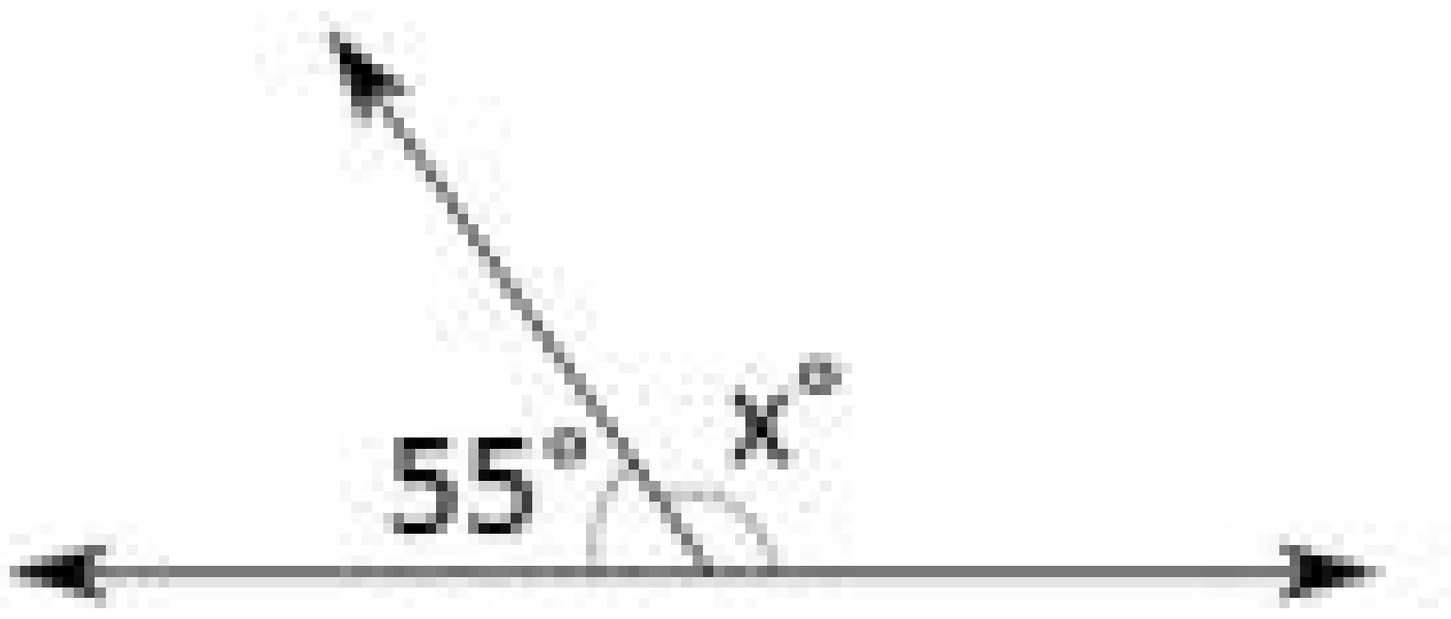
Write a number sentence to find ∠x°



Fluency Practice

Find the Unknown Angle

Write a number sentence to find ∠x°

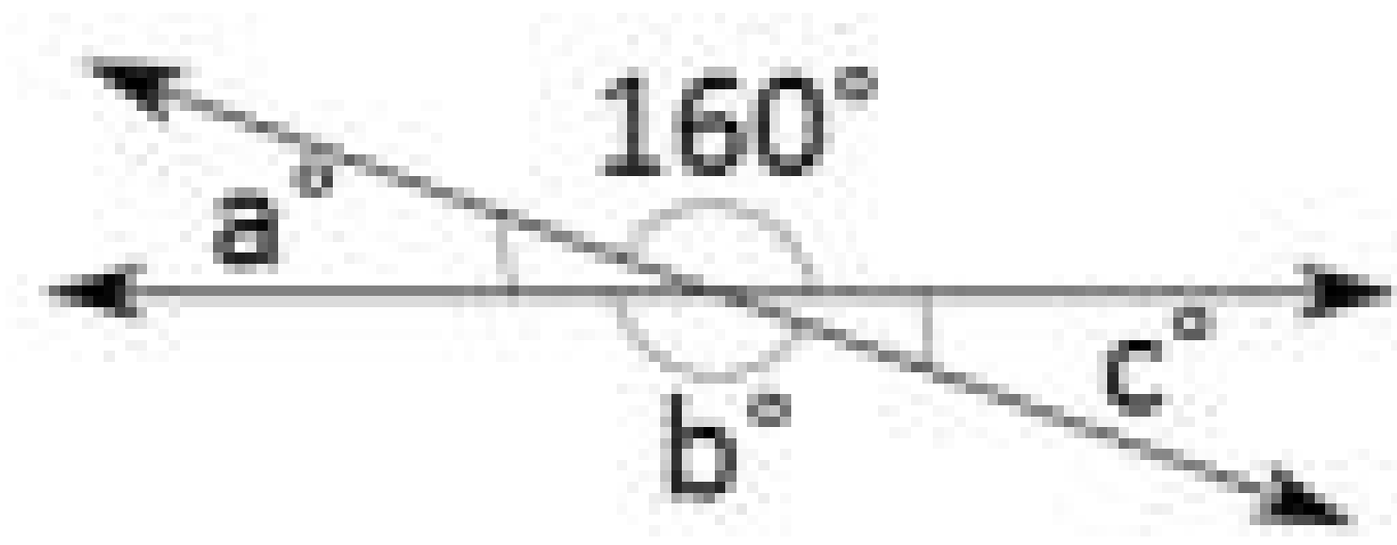


180° - 55° = 125°

Fluency Practice

Find the Unknown Angle

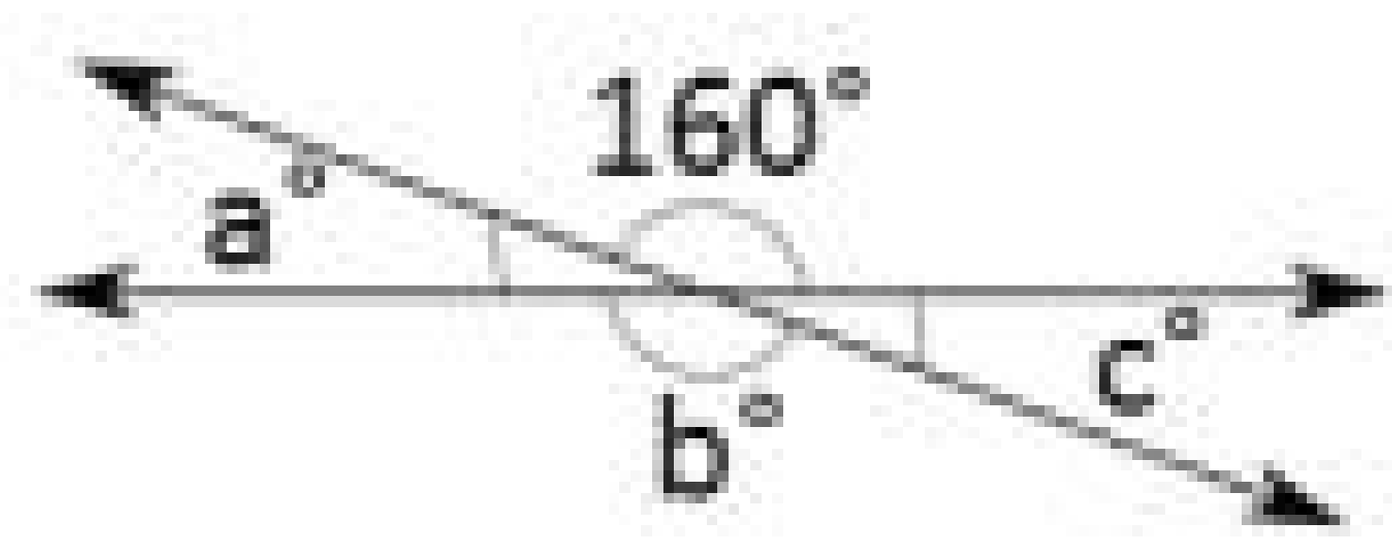
Write a number sentence to find ∠x°



Fluency Practice

Find the Unknown Angle

Write a number sentence to find ∠x°

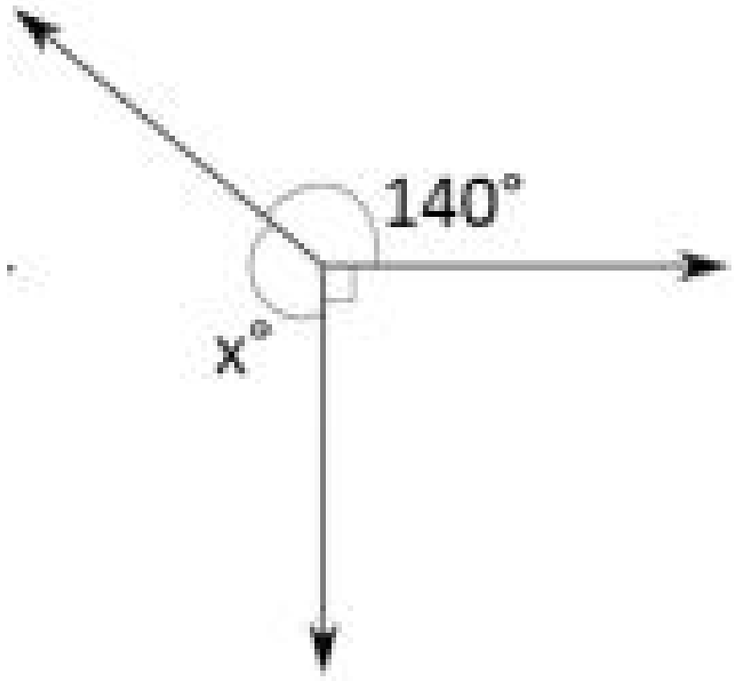


(a)180° - 160° = 20°

Fluency Practice

Find the Unknown Angle

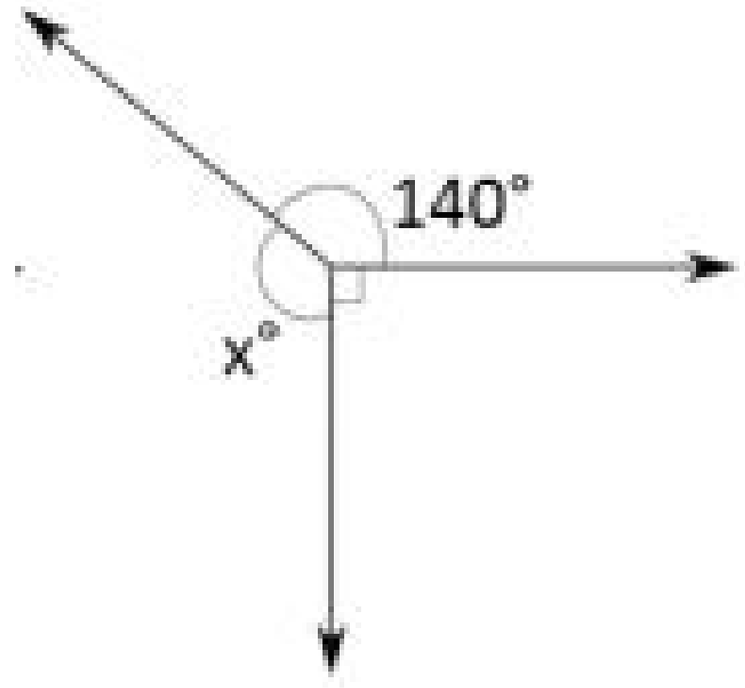
Write a number sentence to find ∠x°



Fluency Practice

Find the Unknown Angle

Write a number sentence to find ∠x°

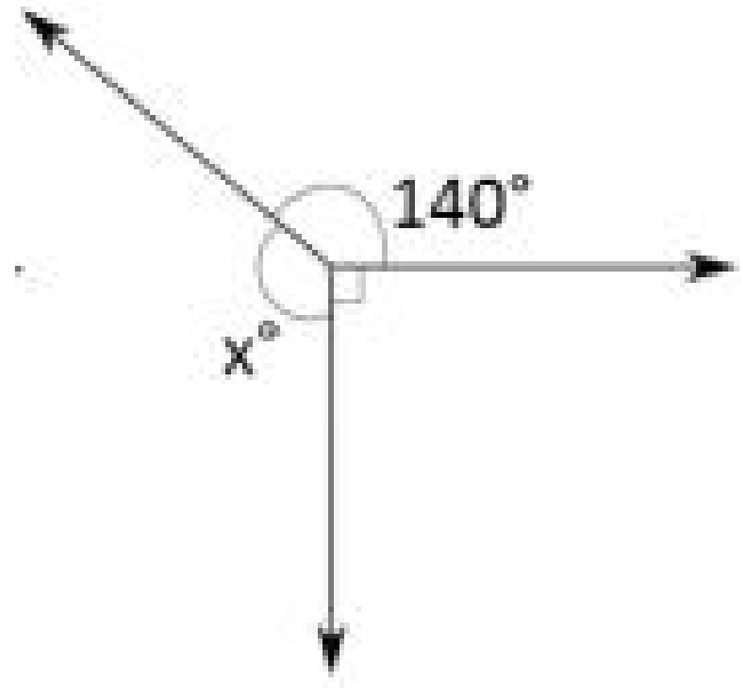


140° + 90° = 230°

Fluency Practice

Find the Unknown Angle

Write a number sentence to find ∠x°



140° + 90° = 230°

360° - 230° = 130°

Application Problem

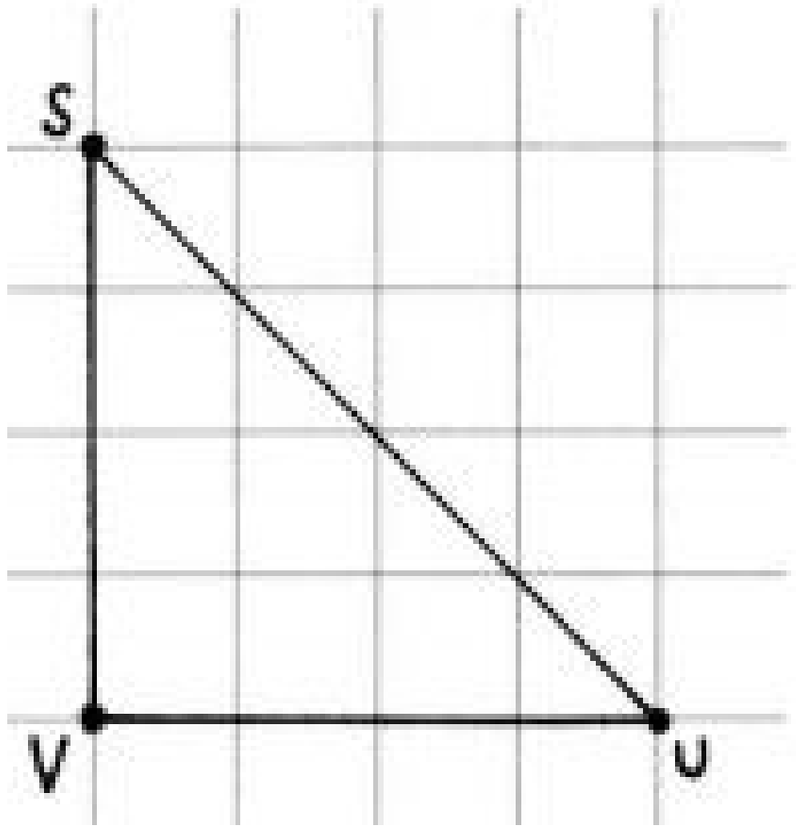
On grid paper, draw two perpendicular line segments, each measuring 4 units, which extend from a point V.

Identify the segments as SV and UV. Draw SU.

What shape did you construct? Classify it.

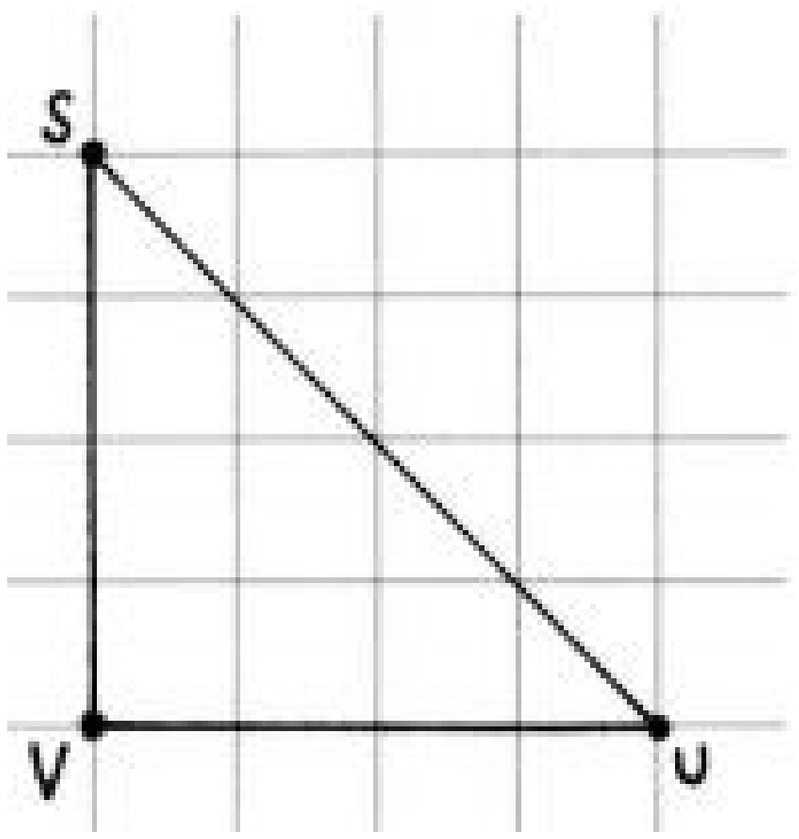
Application Problem

I constructed a triangle.
It is a right and isosceles triangle.
SUV



Application Problem

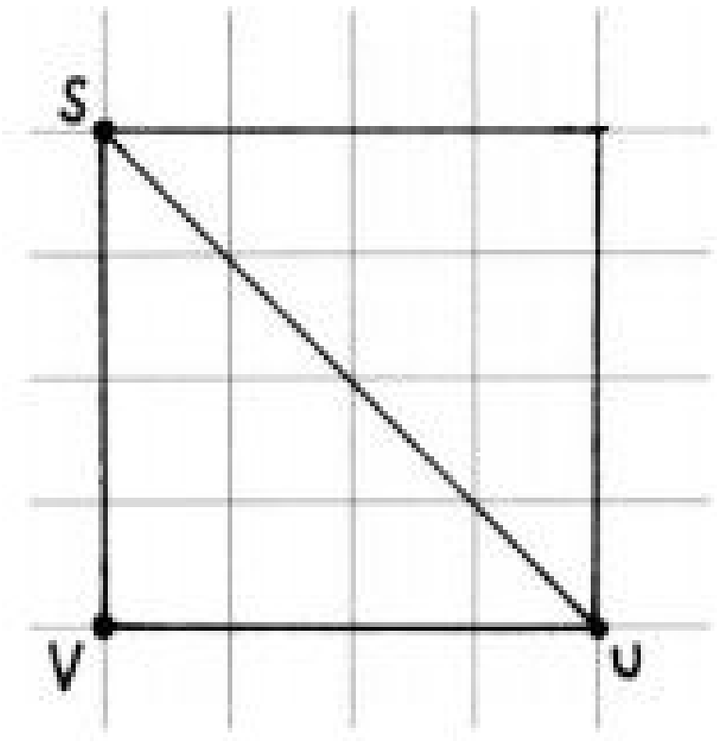
Imagine SU is a line of symmetry.
Construct the other half of the figure.



What figure did you construct?

Application Problem

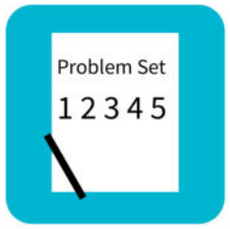
This is a square.
I know because each side is 4 units long and it has 4 right angles.



Concept Development

Materials

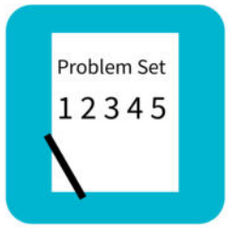
(T/S) Problem set, ruler, right angle template



Concept Development

Classify and Construct Quadrilaterals

What do you know about quadrilaterals?

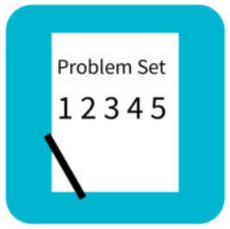


Concept Development

Classify and Construct Quadrilaterals

What do you know about quadrilaterals?

Use problem 1 on the Problem Set to construct a quadrilateral with at least one set of parallel sides.



Concept Development

Classify and Construct Quadrilaterals

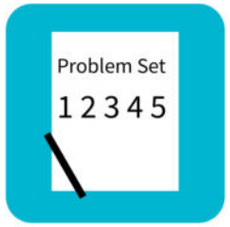
Construct a quadrilateral

Step 1. Draw a straight, horizontal segment.

Step 2. Use your right angle template and ruler to draw a segment parallel to that segment.

Step 3. Draw a third segment that crosses both.

Step 4. Draw a fourth different segment that crosses both, but does not cross the third segment.



Concept Development

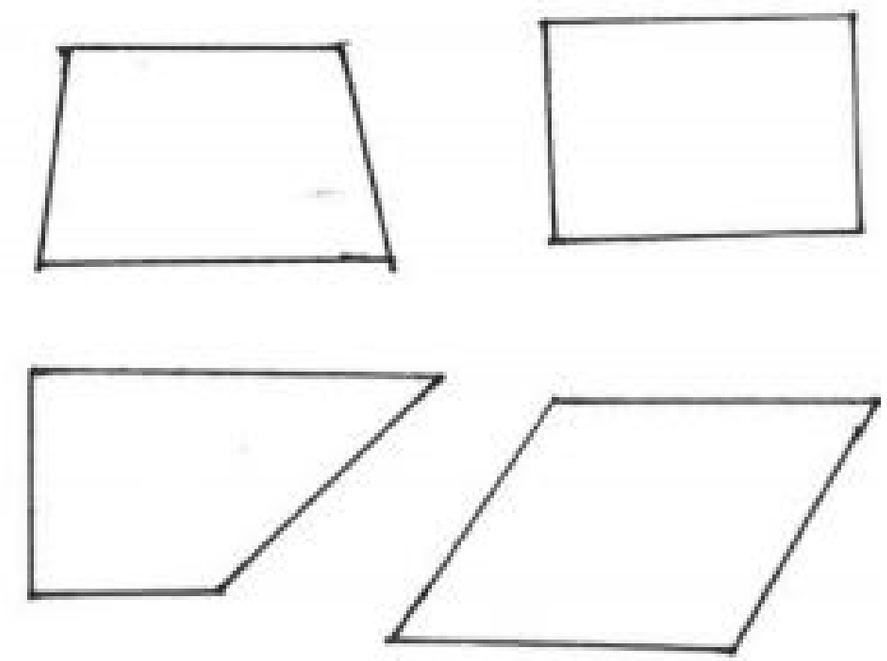
Classify and Construct Quadrilaterals

Compare your quadrilateral with those of your group, looking at angle size and side length.

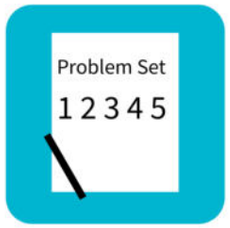
Concept Development

Classify and Construct Quadrilaterals

All of our quadrilaterals have at least one set of parallel sides, which means all of our quadrilaterals are trapezoids. However, some of your trapezoids might have other familiar names, like rectangle.



Other possible trapezoids

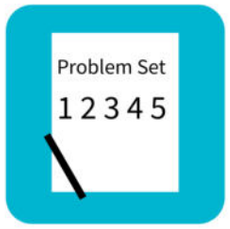


Concept Development

Classify and Construct Quadrilaterals

Construct two more trapezoids for Problem 1.

Ask your partners for suggestions on how they constructed their trapezoids as you construct a new one.



Concept Development

Classify and Construct Quadrilaterals

Under Problem 2, let's construct a quadrilateral with two sets of parallel sides. Start by drawing one set of parallel segments, the same way you did in Problem 1.

1. Draw a straight, horizontal segment.

2. Use your right angle template and ruler to draw a segment parallel to that segment.

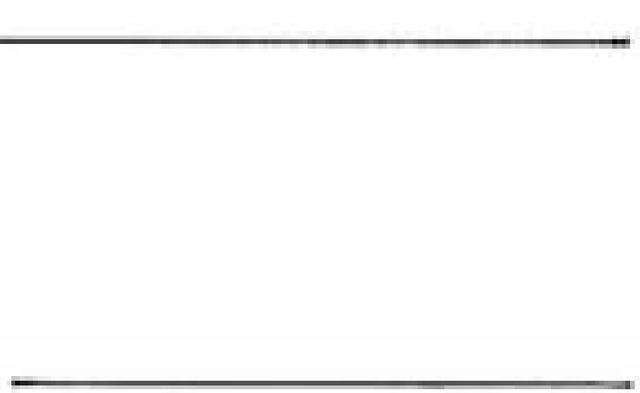
3. Draw a third segment that crosses both.

4. Using your ruler and right angle template, draw a fourth different segment that crosses the first two segments and that is parallel to the third segment.

Problem Set
1 2 3 4 5

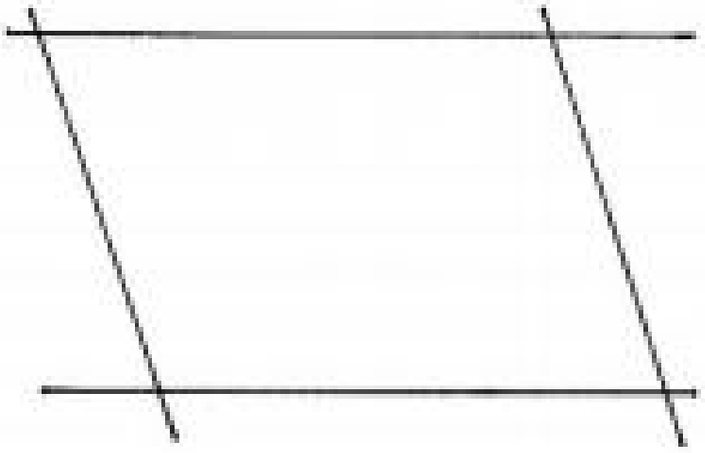
Concept Development

Classify and Construct Quadrilaterals



Steps 1 and 2

Step 3



Step 4

Concept Development

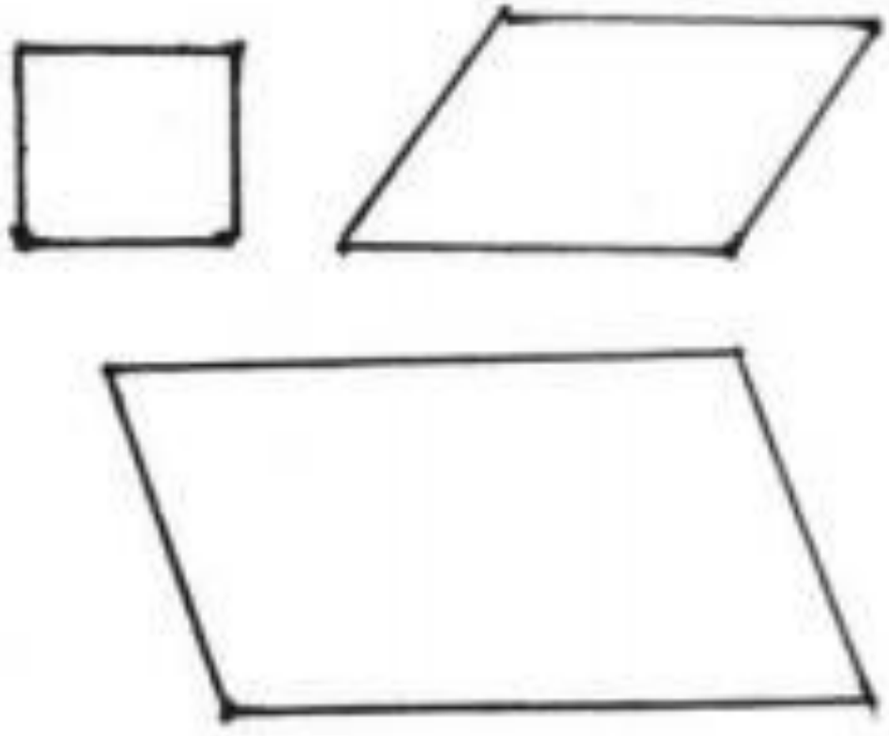
Classify and Construct Quadrilaterals

All of the trapezoids we constructed for Problem 2 have two sets of parallel sides.
We call quadrilaterals with two pairs of parallel sides parallelograms.
Again, I see some figures that I might give another name to, but all of the shapes we've constructed are parallelograms.
Record the word parallelogram for Problem 2.
Construct two more parallelograms for Problem 2.
Ask your partners for suggestions on how they constructed their parallelograms, or construct a new one.

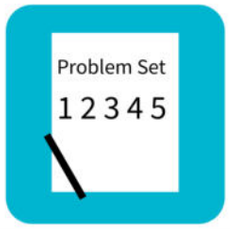
Problem Set
1 2 3 4 5

Concept Development

Classify and Construct Quadrilaterals



Other possible parallelograms



Concept Development

Classify and Construct Quadrilaterals

A trapezoid must have at least one set of parallel sides.

A parallelogram is a special trapezoid. It has two sets of parallel sides.

To be specific, we call the quadrilaterals in Problem 2 parallelograms.

Concept Development

Classify and Construct Quadrilaterals

For Problem 3, we need to make a parallelogram with four right angles.

What do we call two lines that intersect at a right angle?

Concept Development

Classify and Construct Quadrilaterals

Step 1. Draw a straight, horizontal segment.

Step 2. Use your right angle template and ruler to draw a segment parallel to that segment.

Step 3. Draw a third segment with a right angle, perpendicular to the base line.

Step 4. Draw a fourth segment that is also perpendicular to the first segment.

Concept Development

Classify and Construct Quadrilaterals

These quadrilaterals all have two sets of parallel sides, so they are parallelograms and trapezoids. However, our figures have another special attribute– four right angles, so they are also rectangles.

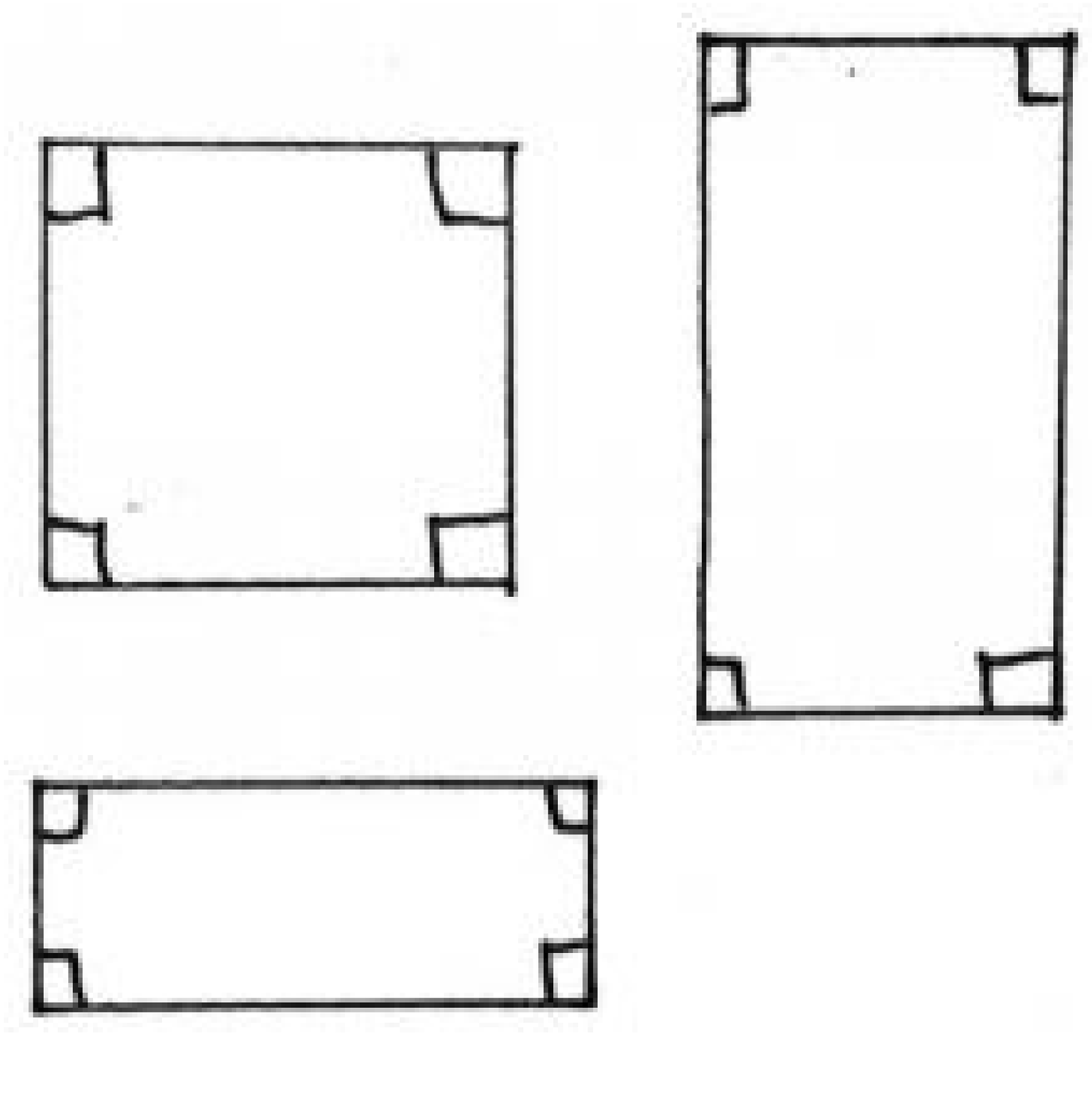
Construct two more rectangles for Problem 3.

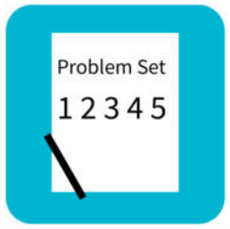
***A square is a special rectangle, so at least one should be evidenced in the examples.**

Problem Set
1 2 3 4 5

Concept Development

Classify and Construct Quadrilaterals



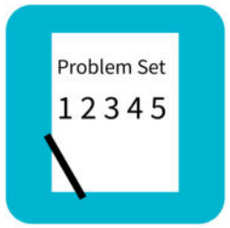


Concept Development

Classify and Construct Quadrilaterals

Problem 4 requires us to draw a rectangle with sides that are all the same length.

Discuss with your group how you might do that.



Concept Development

Classify and Construct Quadrilaterals

1. Draw a straight, horizontal segment.

2. Use your right angle template and ruler to draw a segment parallel to that segment.

3. Draw a third segment with a right angle, perpendicular to the base line.

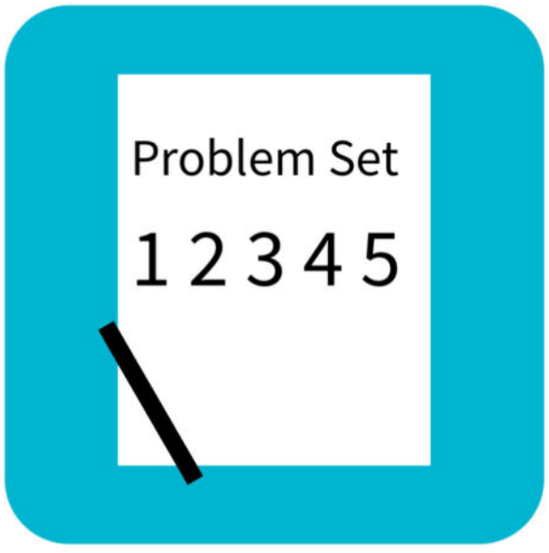
4. Measure the length of the third side, and mark the same length on both of the first segments. Start the measurement at the third side.

5. Draw a fourth segment perpendicular to the first segment through those marks.

Concept Development

Classify and Construct Quadrilaterals

A square is a special rectangle and has all sides the same length.



Problem Set

Name _____ Date _____

Construct the figures with the given attributes. Name the shape you created. Be as specific as possible. Use extra blank paper as needed.

1. Construct quadrilaterals with at least one set of parallel sides.

Debrief

For Problem 6, what makes a square different from a rectangle? Why is it important to define a square as a rectangle with four equal length sides and not as a quadrilateral with four equal length sides?

What are some attributes that every square has in common? How is a square a special case of a rectangle, a parallelogram, and a trapezoid?

If your teacher asked you to draw a trapezoid, and you drew a parallelogram, explain to your teacher why a parallelogram is also a trapezoid. Can a trapezoid be defined as a square? What attributes of a square are not present in a trapezoid? Why does it only work in the reverse: a square is also a trapezoid? What attributes of a trapezoid are present in a square?

Debrief

We have seen today that a figure can belong to different categories. That is often true in life. For example, consider the following words: woman, mother, sister, and aunt. A woman can be a mother, but only is a mother if she has children. A woman isn't a sister unless she has a sister or a brother. Each classification has a defining attribute. A mother, sister, and aunt are all women just as a parallelogram, rectangle, and square are all trapezoids and, ultimately, all quadrilaterals. Talk to your partner about the following set of words: clothes, pants, and jeans.

Exit Ticket

Name _____ Date _____

1. In the space below, draw a parallelogram.