Module 5 - Lesson 2:

Classify trapezoids based on their properties.

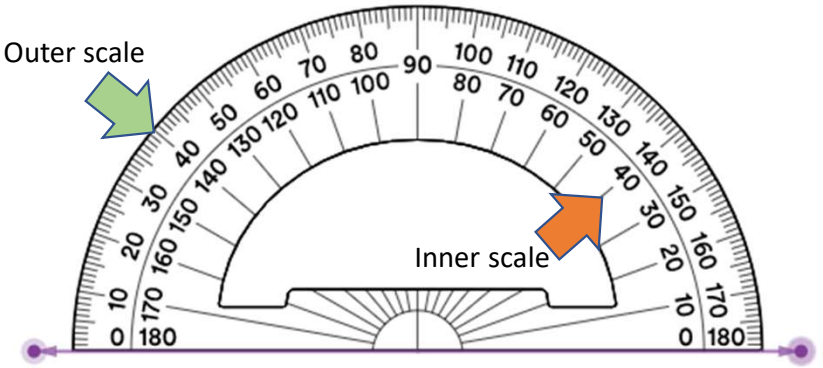
CCSS Standard – 5.G.B.3 / 5.G.B.4

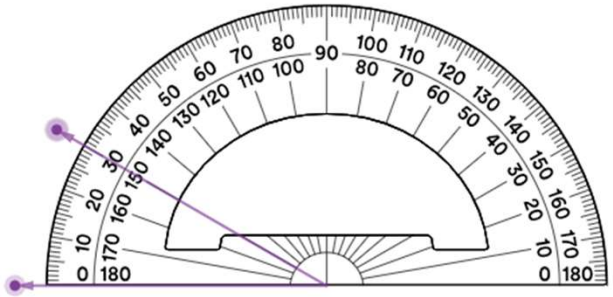
FLUENCY (10-min)

Counting on the Protractor

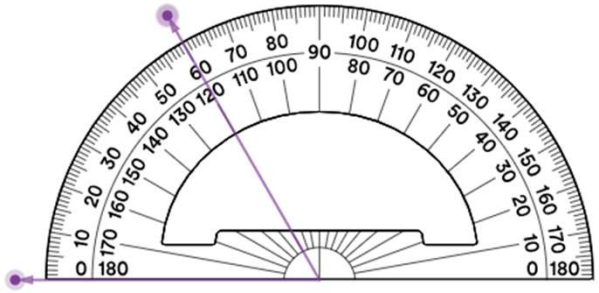
Use interactive protractor on Digital Great Minds.

Look at the outer scale of the protractor.
Let's count by 30 degrees up to 180 degrees.
Each time say which scale you are reading from.

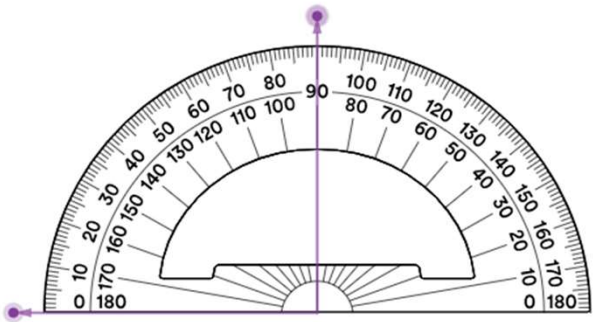




Outer scale
ACUTE ANGLE
30^0



Outer scale
ACUTE ANGLE
60^0



RIGHT ANGLE
90^0

FLUENCY (10-min)

Counting on the Protractor

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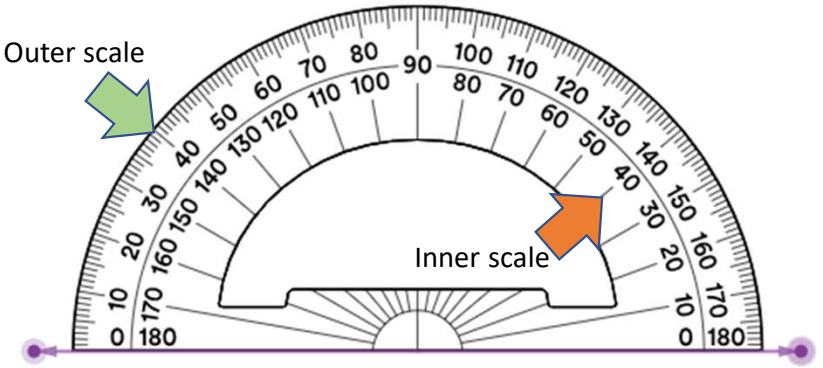
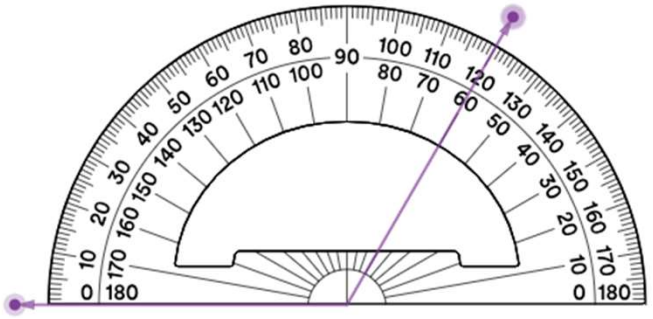
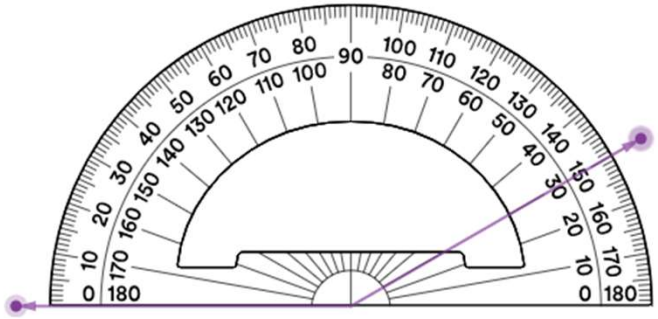
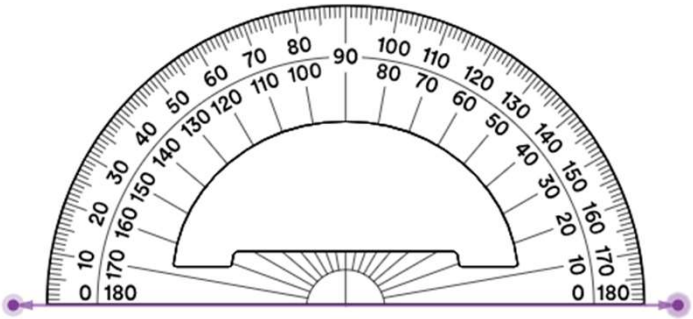




Outer scale
OBTUSE ANGLE
120^0



Outer scale
OBTUSE ANGLE
150^0



Outer scale
STRAIGHT ANGLE
180^0

FLUENCY (10-min)

Counting on the Protractor

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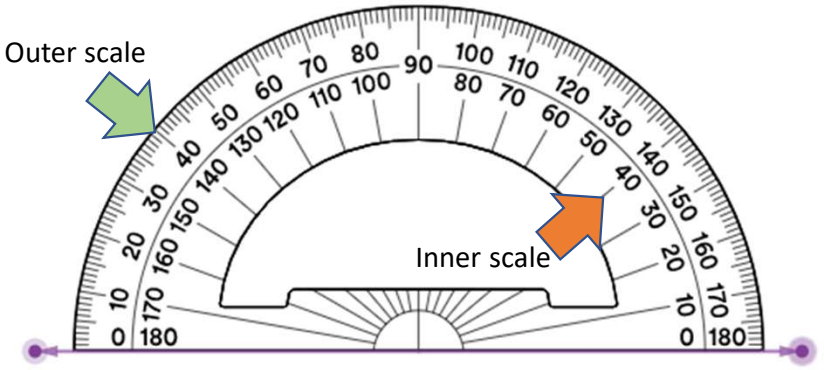
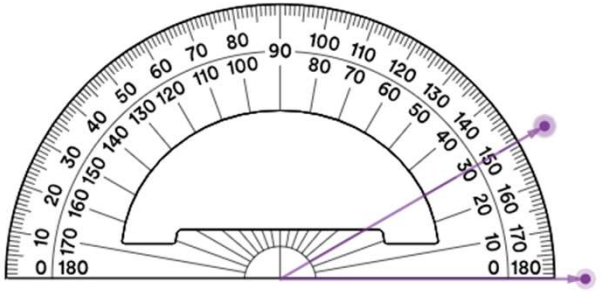
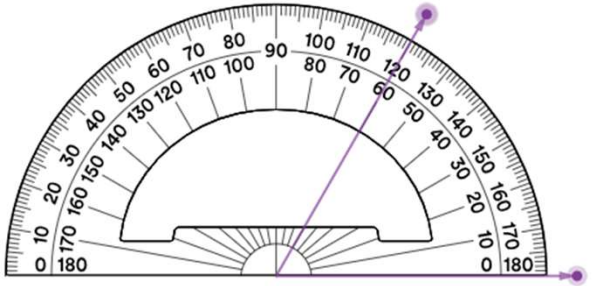
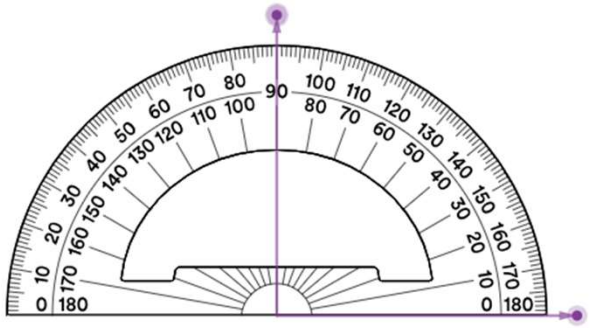




Inner scale
ACUTE ANGLE
30^0



Inner scale
ACUTE ANGLE
60^0



RIGHT ANGLE
90^0

FLUENCY (10-min)

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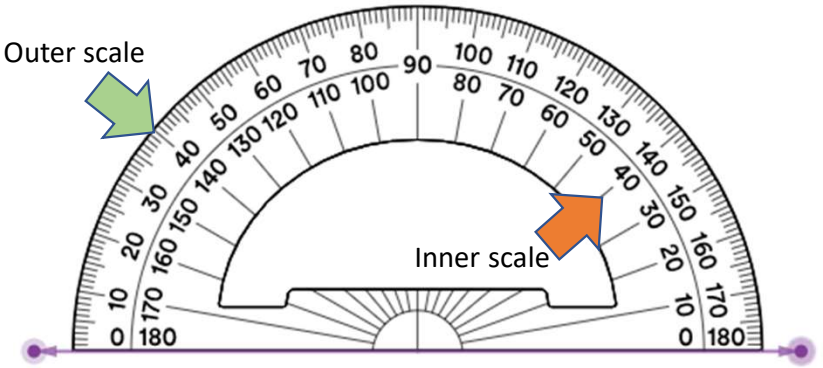
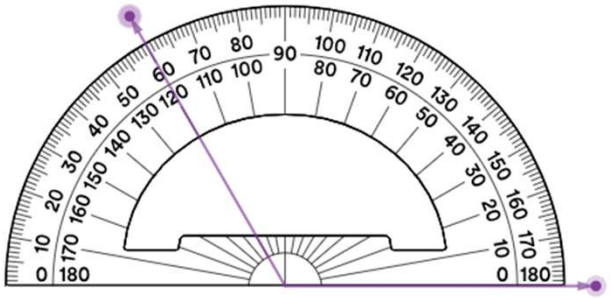
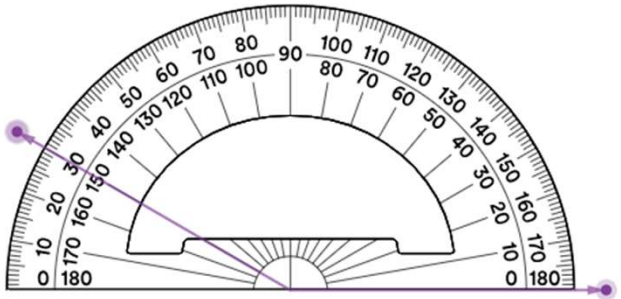
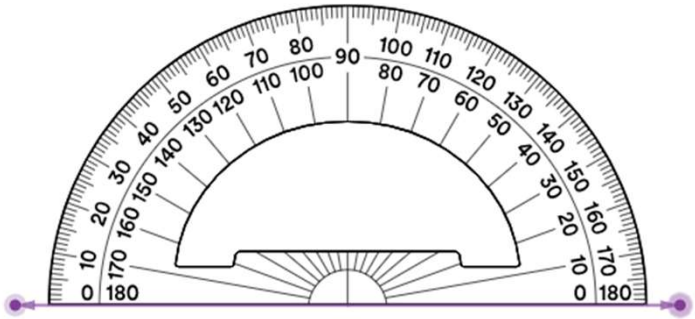




Inner scale
OBTUSE ANGLE
120^0



Inner scale
OBTUSE ANGLE
150^0

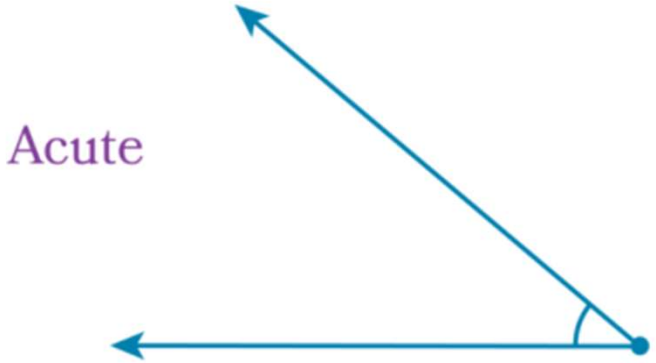


Inner scale
STRAIGHT ANGLE
180^0

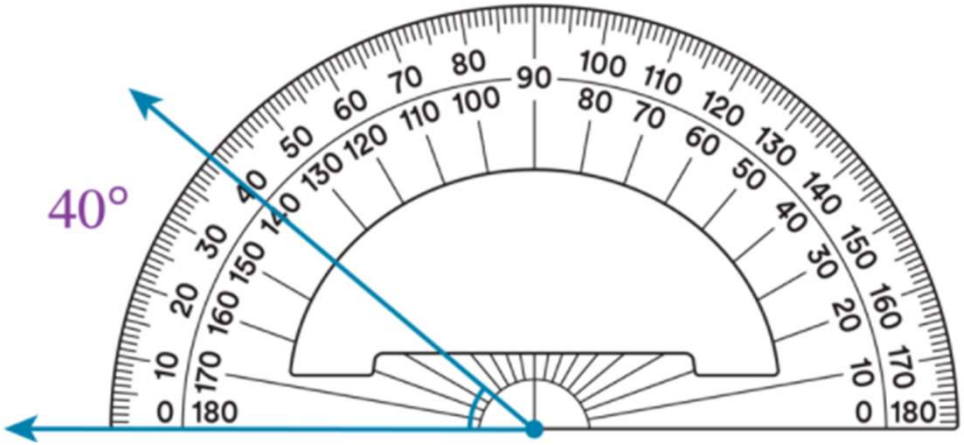
FLUENCY (10-min) **Choral Response: Classify and Measure Angles.**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

How would you classify this angle?



Estimate the angle measure.
What is the angle measure?



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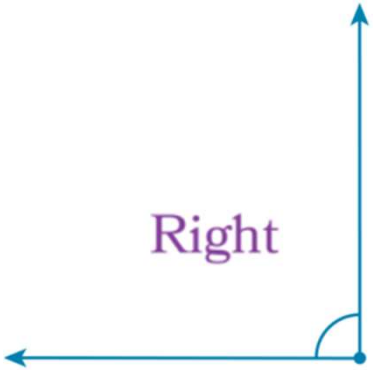

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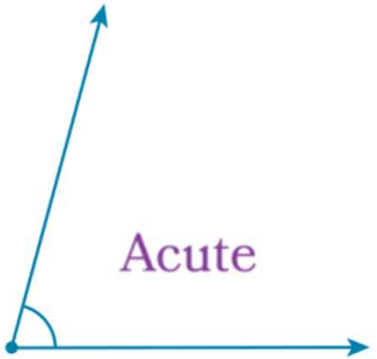

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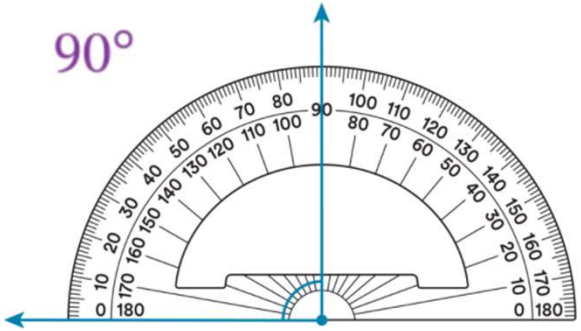

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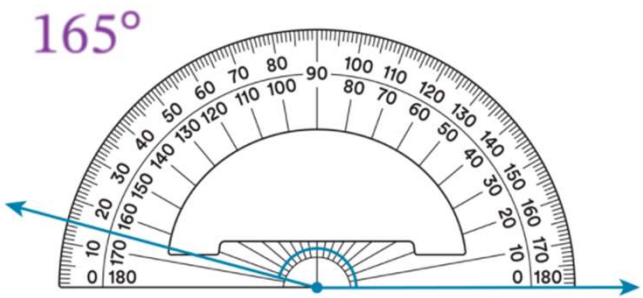

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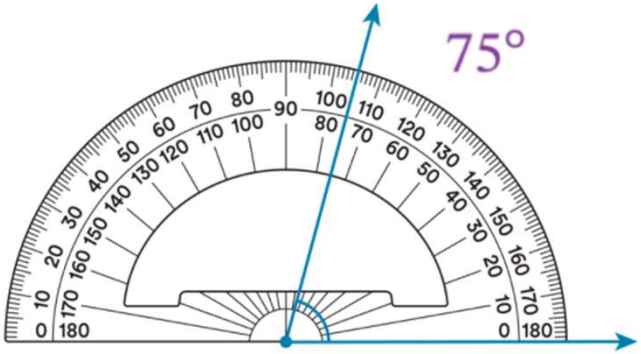

FLUENCY (10-min) **Choral Response: Classify and Measure Angles.**

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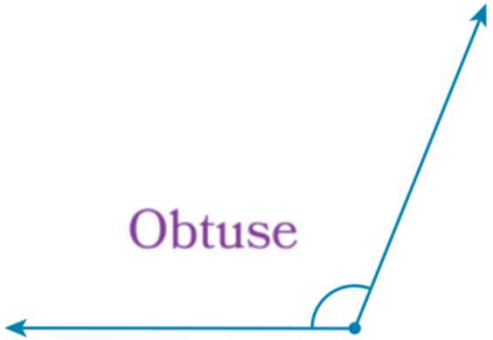

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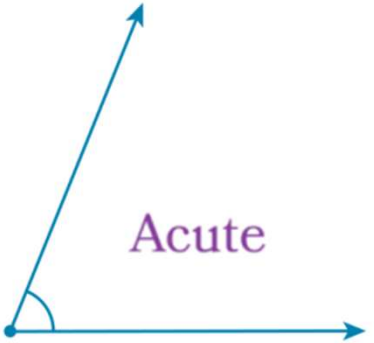

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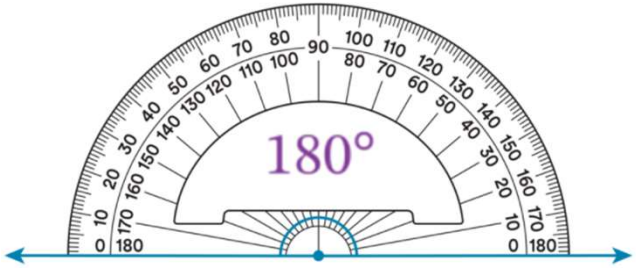

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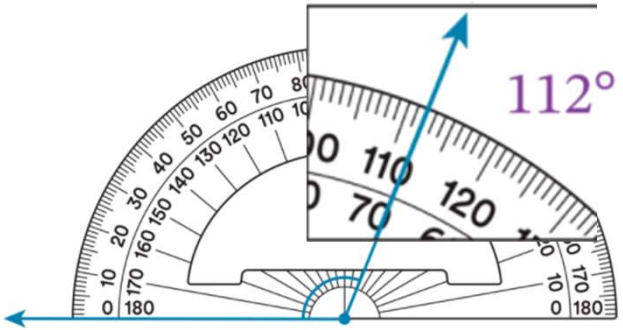

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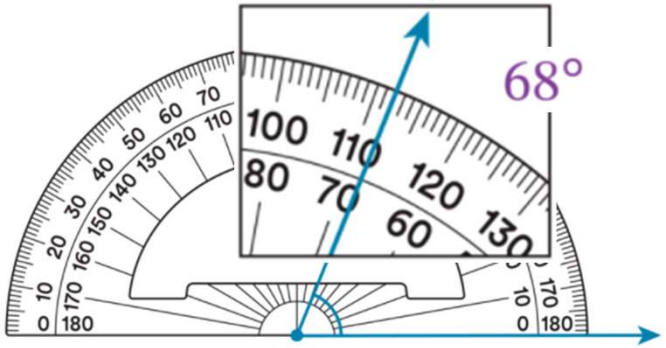
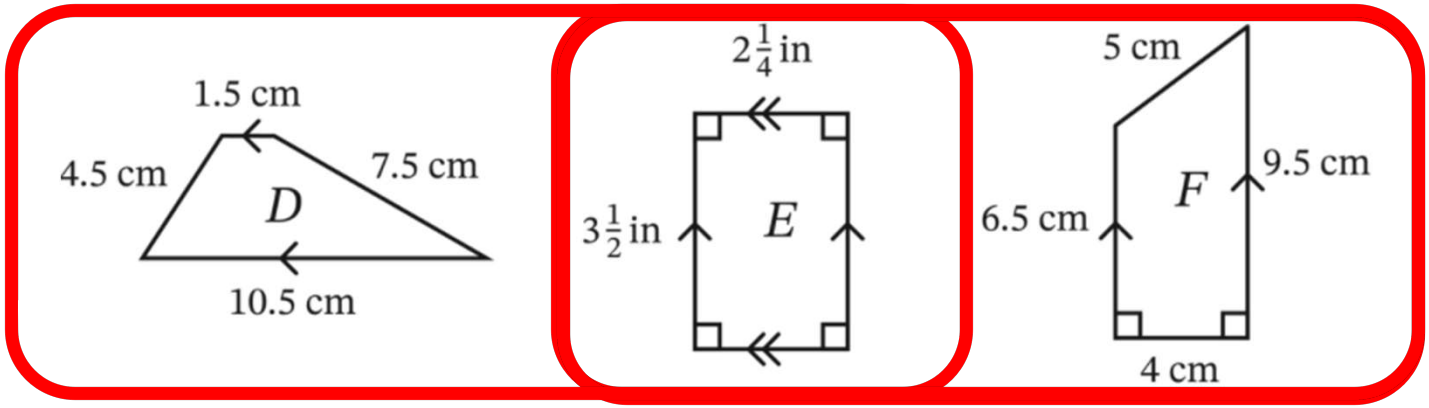


FLUENCY (10-min) **Choral Response: Properties of Polygons**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

Properties: 4 sides, 4 vertices, and 4 angles

What is the name of the polygon with 4 sides, 4 vertices, and 4 angles? quadrilateral



Which quadrilaterals have at least 2 sides of equal length?

Which quadrilaterals have at least 1 right angle?

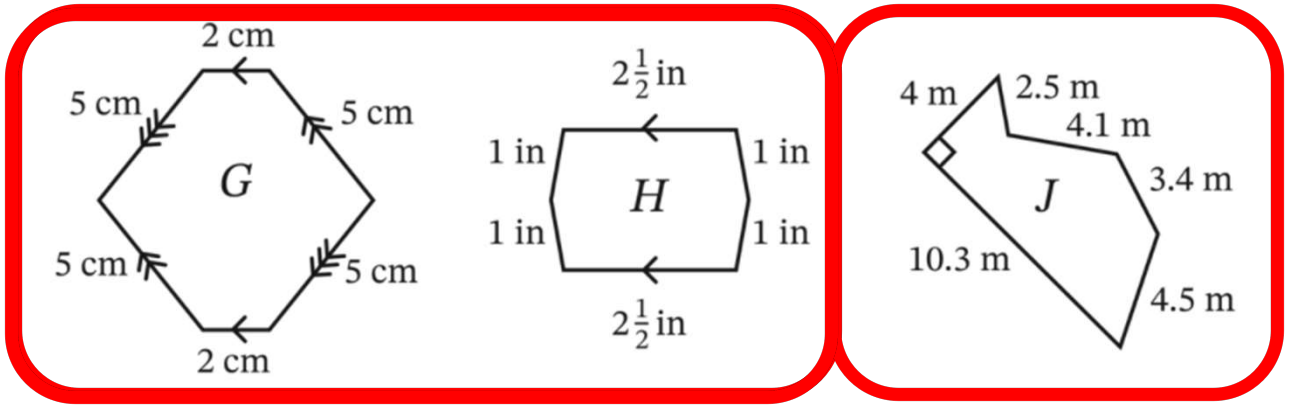
Which quadrilaterals have at least 1 pair of parallel sides?

FLUENCY (10-min) **Choral Response: Properties of Polygons**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

Properties: 6 sides, 6 vertices, and 6 angles

What is the name of the polygon with 6 sides, 6 vertices, and 6 angles? hexagon



Which hexagons have at least 2 sides of equal length?

Which hexagons have at least 1 right angle?

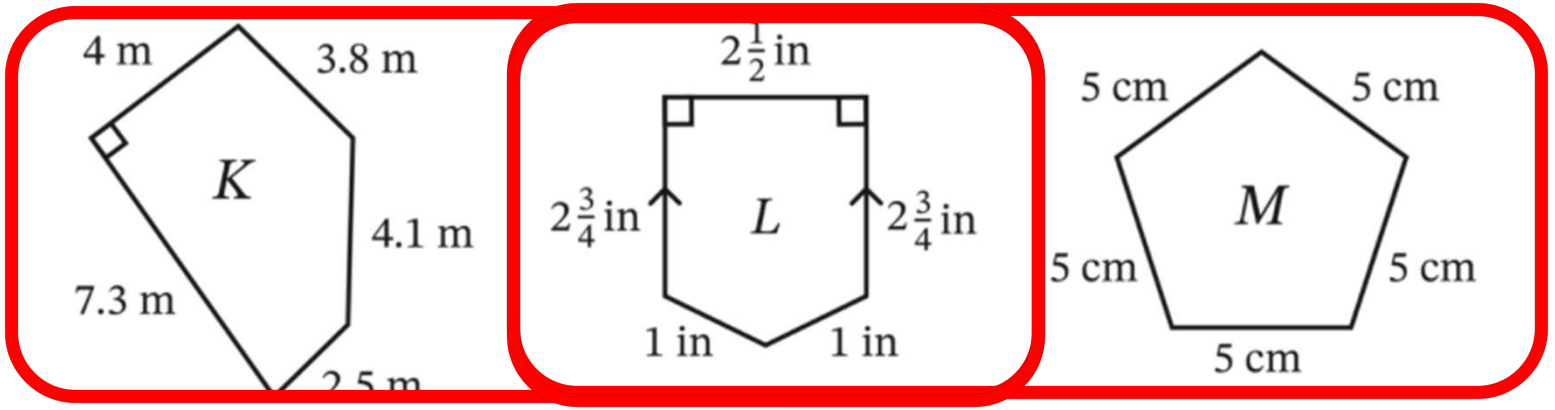
Which hexagons have at least 1 pair of parallel sides?

FLUENCY (10-min) **Choral Response: Properties of Polygons**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

Properties: 5 sides, 5 vertices, and 5 angles

What is the name of the polygon with 5 sides, 5 vertices, and 5 angles? pentagon



Which pentagons have at least 2 sides of equal length?

Which pentagons have at least 1 right angle?

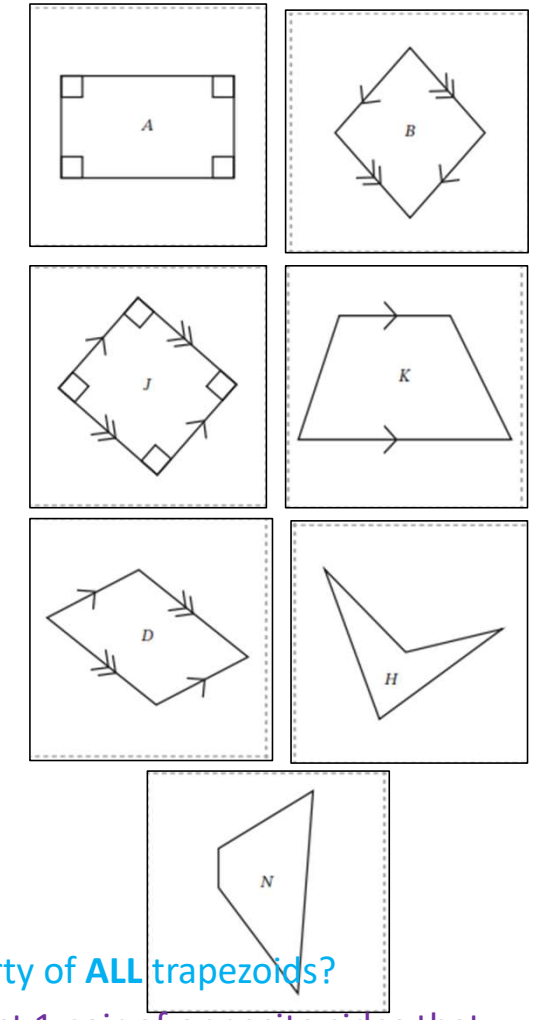
Which pentagons have at least 1 pair of parallel sides?

LAUNCH (10-min) **Sort Quadrilaterals**

Use the quadrilateral shapes from our previous lesson (LEARN book page 5) .

Sort the quadrilaterals into figures that are trapezoids and figures that are not trapezoids.
What makes a trapezoid different from other quadrilaterals?

Trapezoids have at LEAST 1 PAIR OF PARALLEL SIDES.
Quadrilaterals that are not trapezoids do not have any parallel sides.



Trapezoids

Not Trapezoids

What is a property of **ALL** trapezoids?

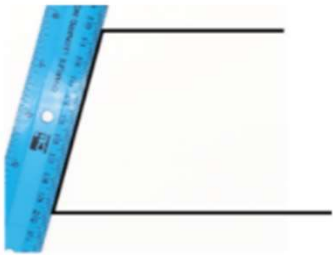
They have at least 1 pair of opposite sides that are parallel.

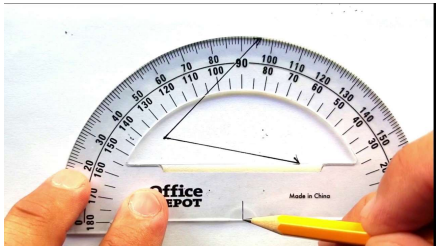
LEARN (30-min) **Construct a Trapezoid**

Let's construct trapezoids to identify properties of trapezoids.
What must a trapezoid include?

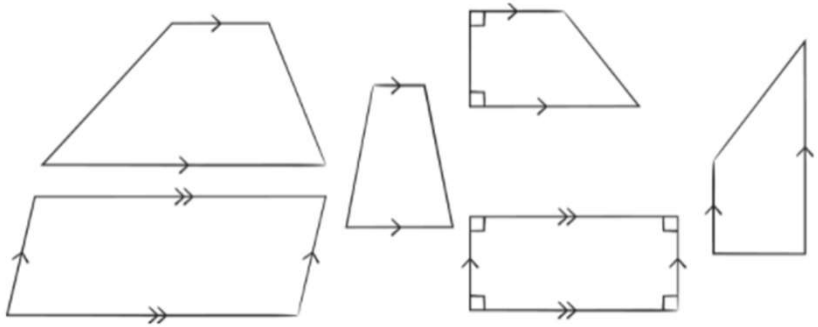
It must have **4 sides** because **all quadrilaterals have 4 sides**.
It must have **at least 1 pair of parallel sides** because that's the definition of a trapezoid.

What tools can we use to help us draw straight and parallel sides?





Everyone hold up your trapezoid.
Let's compare what we constructed.



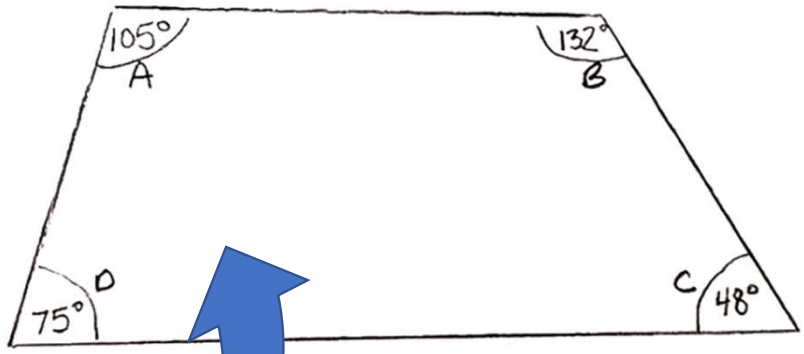
LEARN (30-min) **Explore Angle Measure**

Let's look more closely at the angles of our trapezoids. What do we know about the sum of the measures of the angles inside our trapezoids?

The angles in every quadrilateral always add up to 360 degrees. This is a property of quadrilaterals.

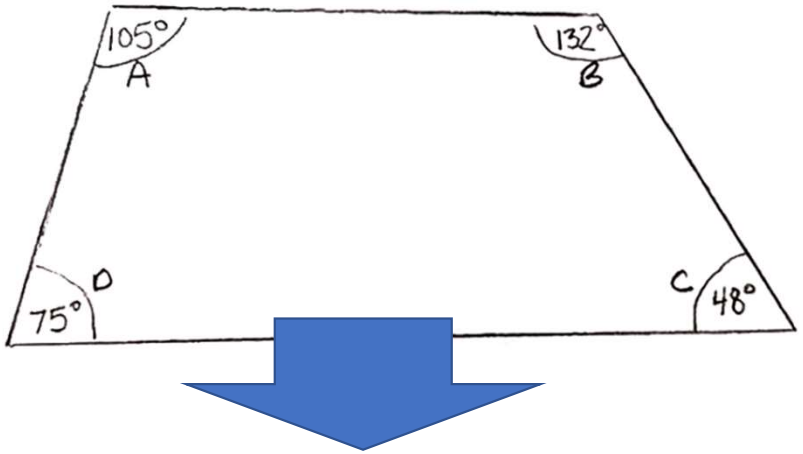
Your next task:

- Label each vertex (angle) of your trapezoid A, B, C, D.
- Use a protractor to measure each angle and write the angle measure next to the angle.
- We are going to watch a quick video to remind ourselves how to use a protractor correctly.



https://www.youtube.com/watch?v=ABgR-QaMrSU

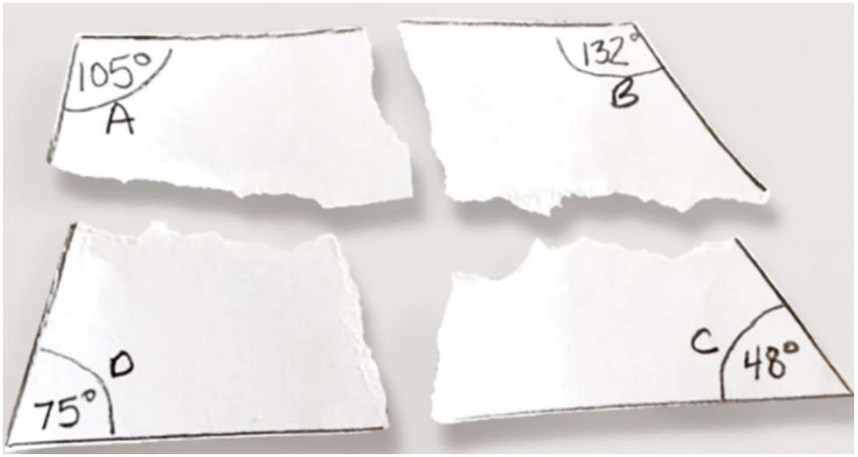
LEARN (30-min) **Explore Angle Measure**



OK, now that we have our trapezoid angles labeled and measured, let's tear the trapezoid into 4 pieces so that each piece has only one labeled angle.

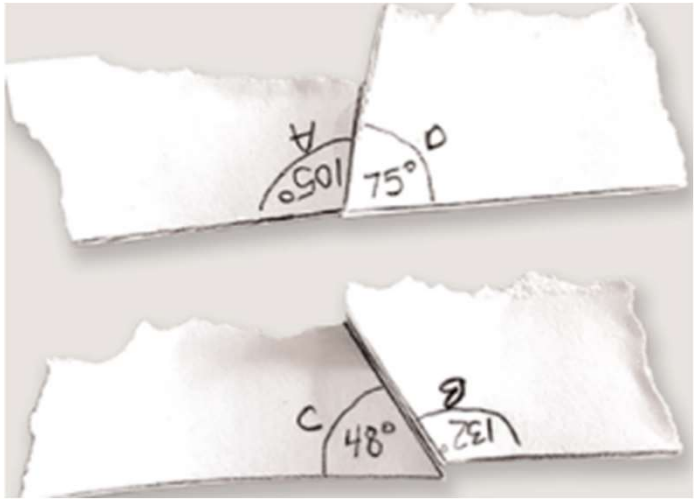
Supplementary angles sum to 180 degrees.
Supplementary angles create a straight angle.

Angles A & D in this trapezoid are supplementary angles; they add up to 180 degrees.



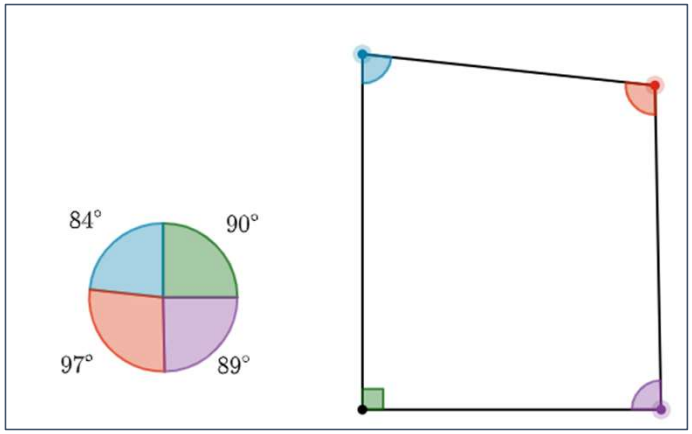
Angles B & C in this trapezoid are supplementary angles; they add up to 180 degrees.

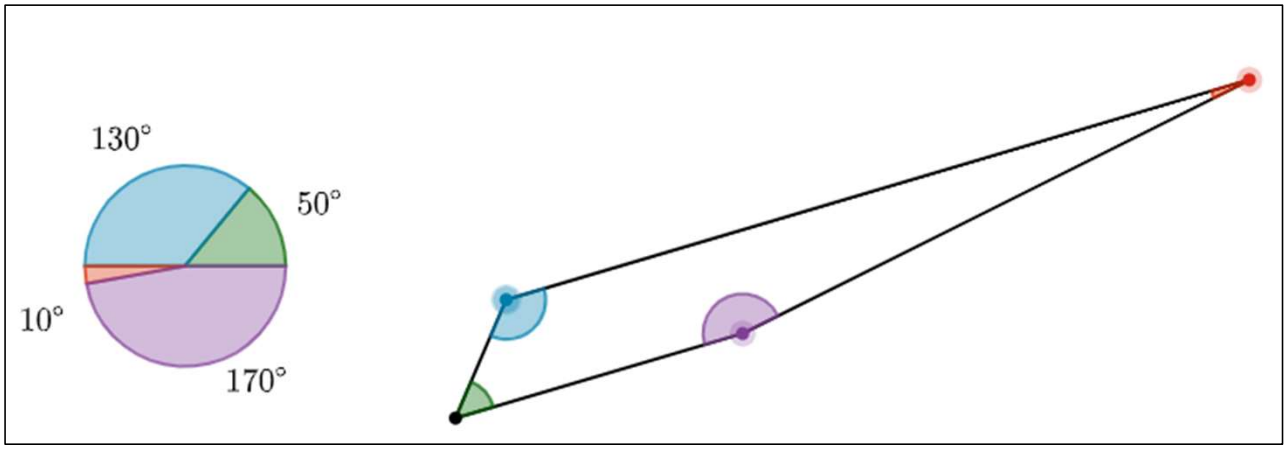
Notice that we created **TWO** pairs of supplementary angles.
Also notice the location of those angles – **opposite angles are supplementary**.

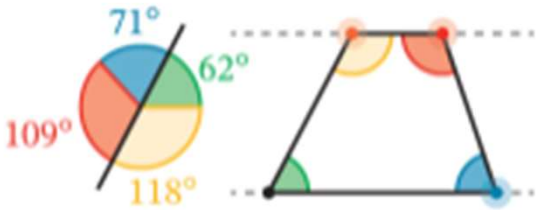


LEARN (30-min) **Geometry World: Angle Explorer Digital Interactive**

TAKE-AWAY:
There are always 2 pairs of supplementary angles in a trapezoid.
The two pairs of supplementary angles form straight lines.
This happens in all trapezoids, therefore this is a PROPERTY of trapezoids.





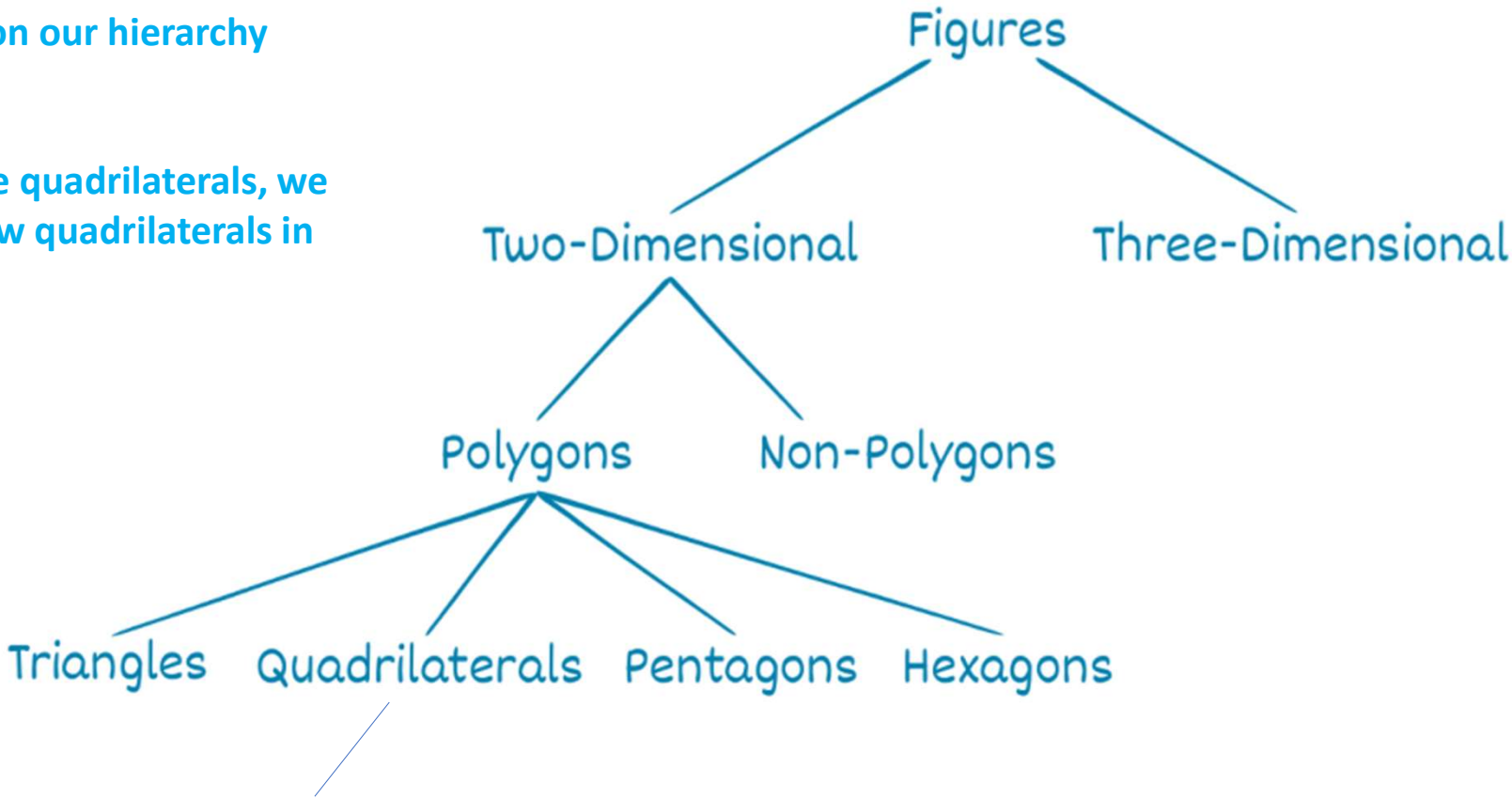


Use interactive Geometry World on Digital Great Minds.

LEARN (30-min) **Hierarchy of Quadrilaterals**

Now we can EXPAND on our hierarchy from the last lesson.

Because trapezoids are quadrilaterals, we can classify them below quadrilaterals in the hierarchy.



Trapezoids

Properties:

At least 1 pair of parallel sides.

At least 2 pairs of supplementary angles.

LEARN (35-min) **TRUE OR FALSE**

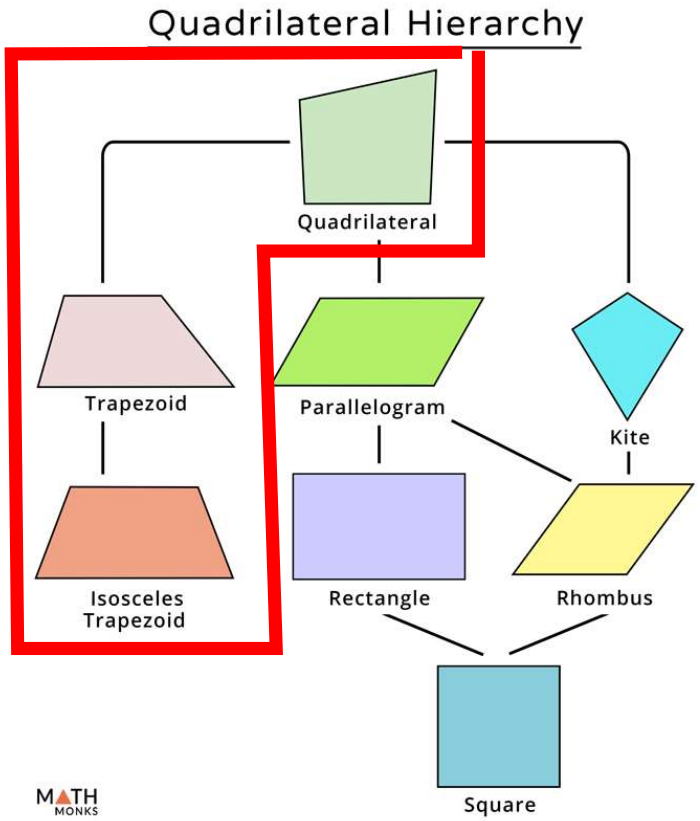
Let's use our figures sort to create a hierarchy.

All trapezoids are quadrilaterals. **TRUE**

All quadrilaterals can be classified as trapezoids. **FALSE**

All trapezoids have exactly 1 pair of parallel sides. **FALSE**

All quadrilaterals have at least 2 pairs of supplementary angles. **FALSE**



LAND (10-min) **Exit Ticket**

Name _____ Date _____

2

1. Sketch a trapezoid that has exactly 1 pair of parallel sides. Label the parallel sides.

2. Name a property of trapezoids.

Exit Ticket – PAGE 17

Small Group Time:
Problem Set Pages 13 - 15

Homework:
Page 17 APPLY BOOK