Lesson 3

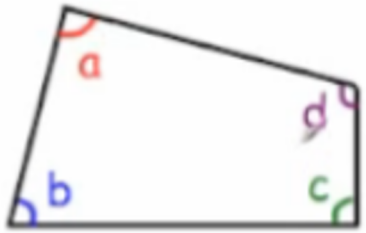
L.O: I am learning to calculate angles in a quadrilateral.

RECAP

The three angles in a triangle always add up to 180°

$a + b + c = 180°$

The four angles in a quadrilateral always add up to 360°



$a + b + c + d = 360°$

REVISION

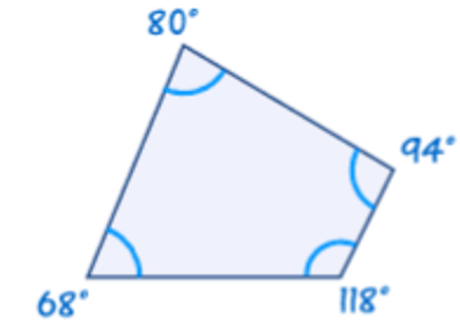
Useful website:https://www.mathsisfun.com/quadrilaterals.html

All angles in any quadrilateral add up to 360°

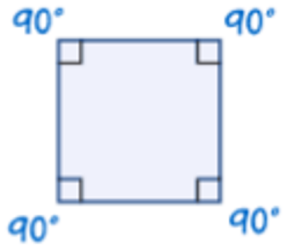
Properties of a Quadrilateral:

- four sides (edges)
- four vertices (corners)
- interior angles that

  add **to 360 degrees**:



68° + 118° + 94° + 80° = 360°



4 x 90° = 360°

Try drawing a quadrilateral, and measure the angles. They should add to **360°**

RECAP-QUADRILATERALS

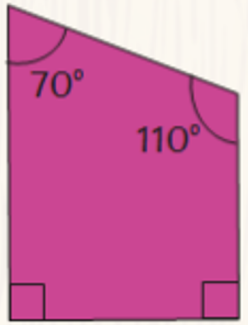
The interior angles in a quadrilateral always total 360°.

This means that if we know 3 angles, we can calculate the fourth.

In some shapes, some of the angles are equal, so we may only need to know 1 or 2 to calculate the others.

Diagonally opposite angles are equal in a parallelogram.

Adjacent angles in a parallelogram add up to 180°.



In this trapezium, the angles at the bottom of the shape are right angles, so the other 2 angles add up to 180°.

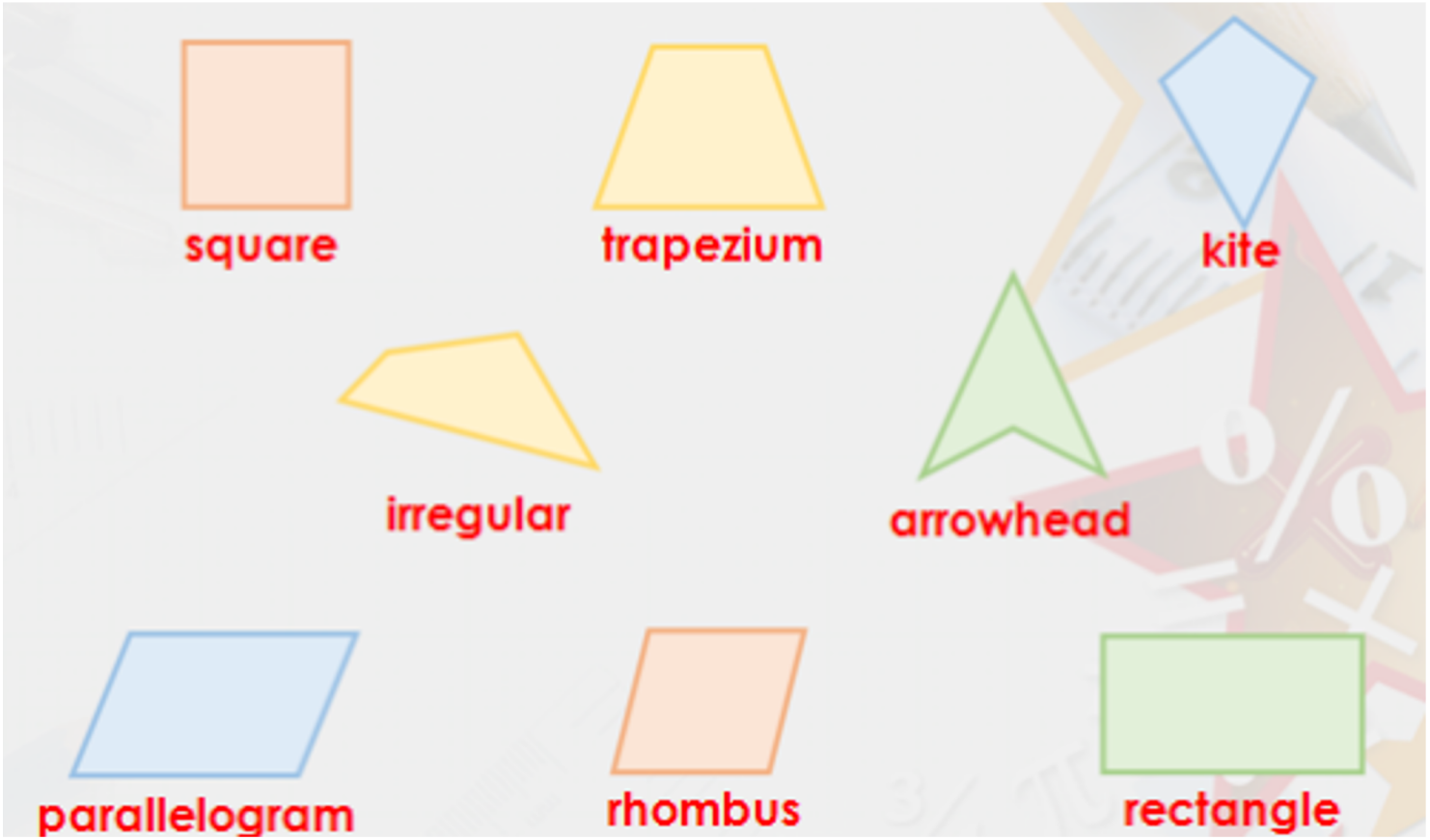
Starter

Name each quadrilateral

- Arrowhead
- Square
- Irregular
- Rhombus
- Kite
- Trapezium
- Rectangle
- Parallelogram

Starter-ANSWERS

Name each quadrilateral



What are the similarities and differences between these quadrilaterals?

REVISION

There are special types of quadrilateral:

Rectangle

All angles 90°
Opposite sides equal

Square

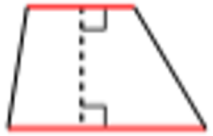
All angles 90°
All sides equal

Rhombus

All sides equal
Opposite sides parallel

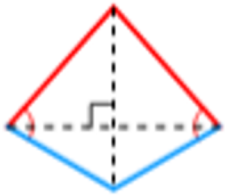
Parallelogram

Opposite sides parallel and equal



Trapezoid (US)
Trapezium (UK)

Two sides parallel



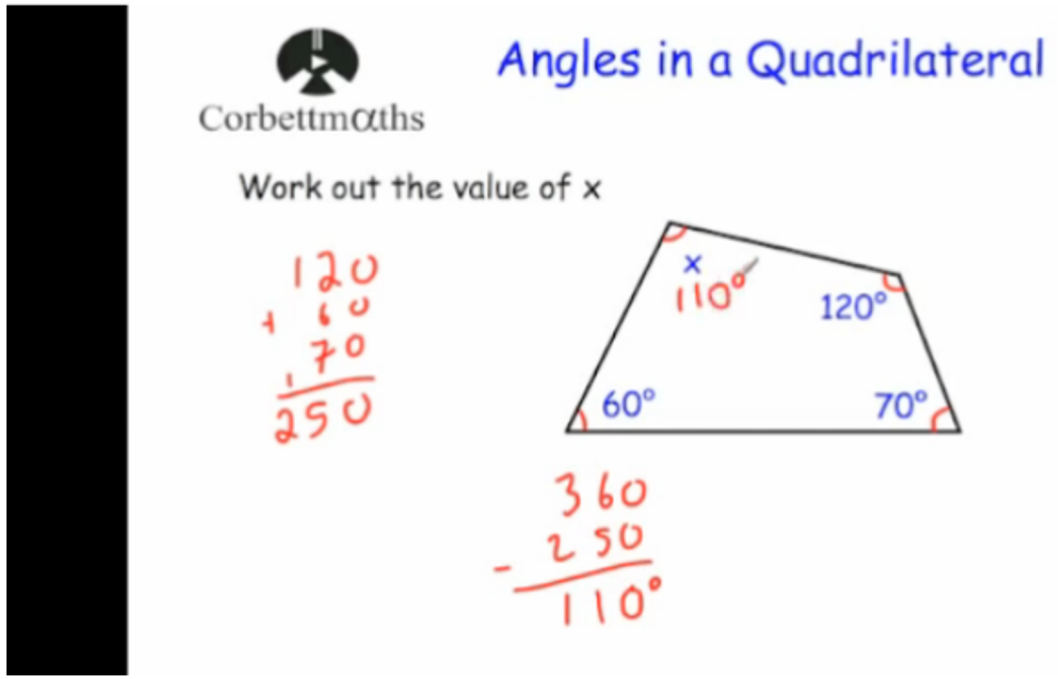
Kite

Adjacent pairs of sides equal

Some types are also included in the definition of other types! For example a **square**, **rhombus** and **rectangle** are also ***parallelograms***.

REVISION

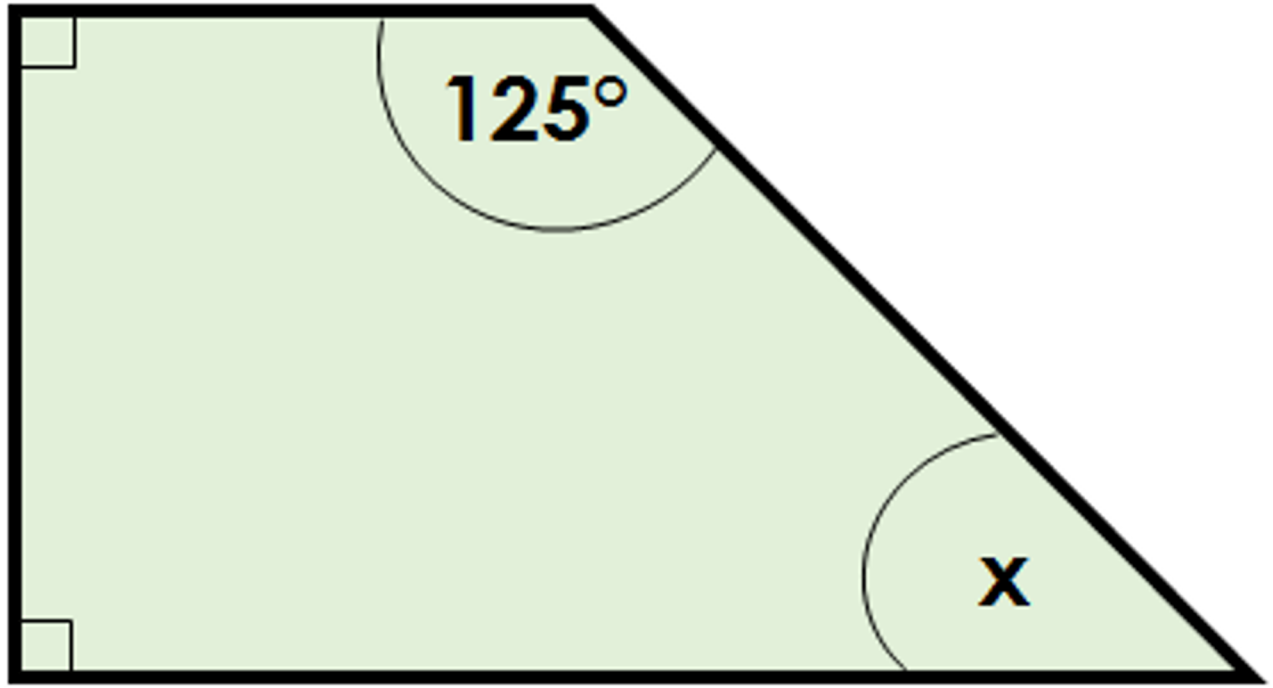
Angles in quadrilaterals Video



Watch and take notes about angles in a quadrilateral shape:
https://corbettmaths.com/2013/03/17/angles-in-quadrilaterals/

TRUE OR FALSE

True or false? Angle x is 50°.



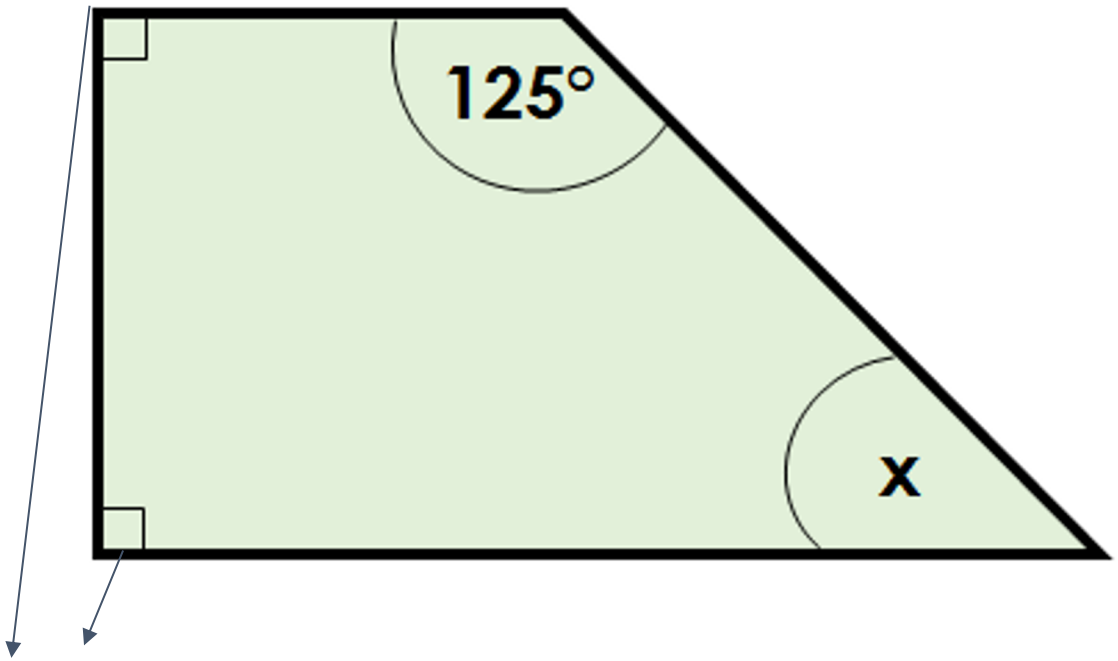
TOP TIPS:

All angles in a quadrilateral add up to 360°

A **right angle** is an **angle** with a measurement of 90°

TRUE OR FALSE

FALSE. Angle x is actually 55°



The two angles (square corners) are 90° each because they are a right angle.

Explanation

Step 1: Add all the angles together.

125° + 90° + 90° = 305°

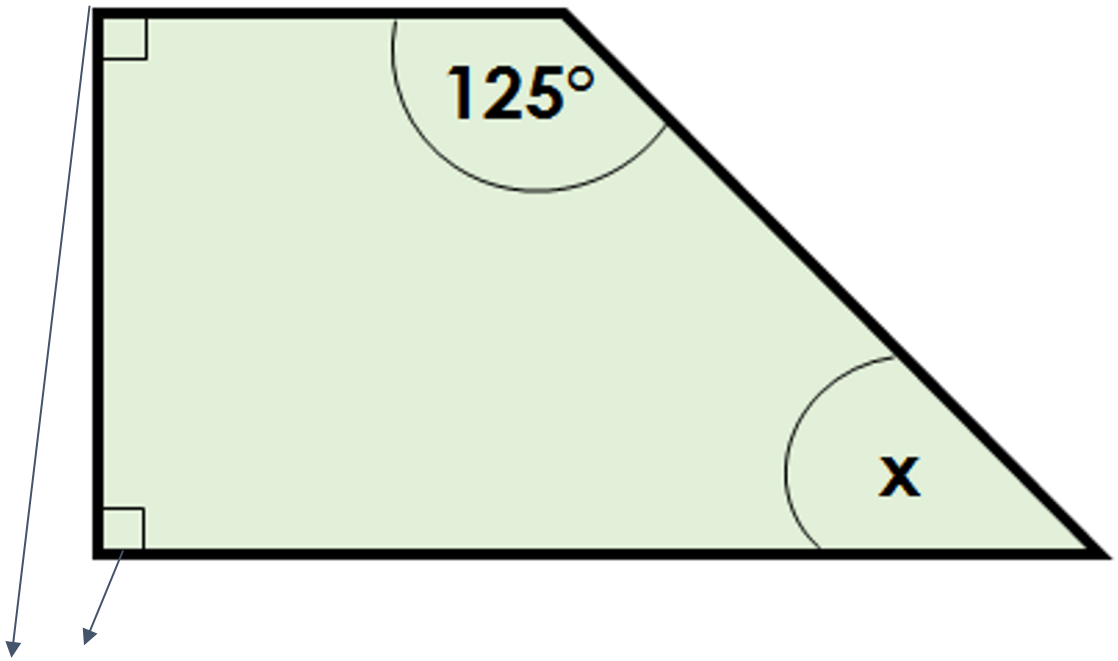
Step 2: Subtract the total from 360°.

360° - 305° = **55°**

ANGLE X = 55° not 50°

TRUE OR FALSE

FALSE. Angle x is actually 55°



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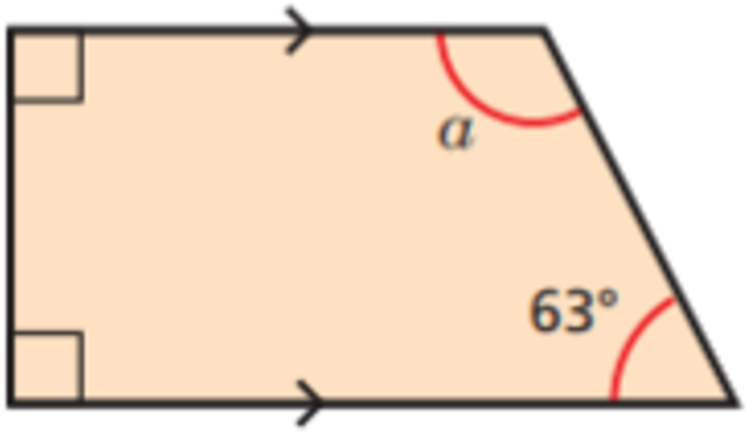
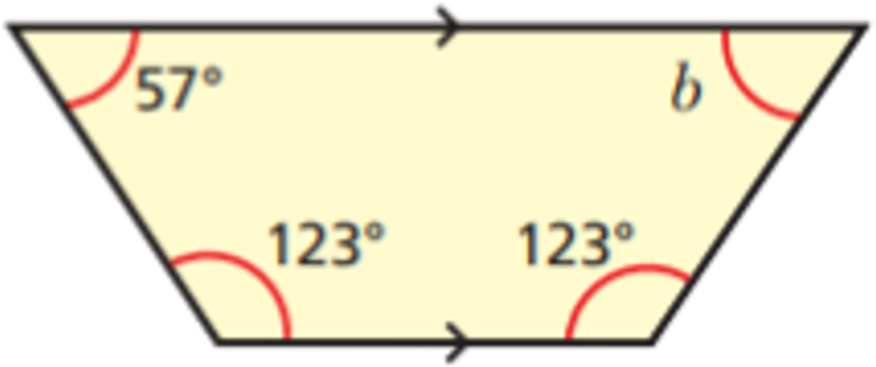
Finding Missing Angles

Work out the size of the unknown angle in each trapezium.

a)



b)



Finding Missing Angles ANSWERS

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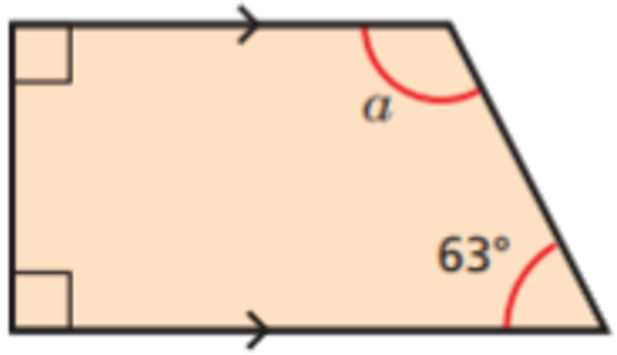
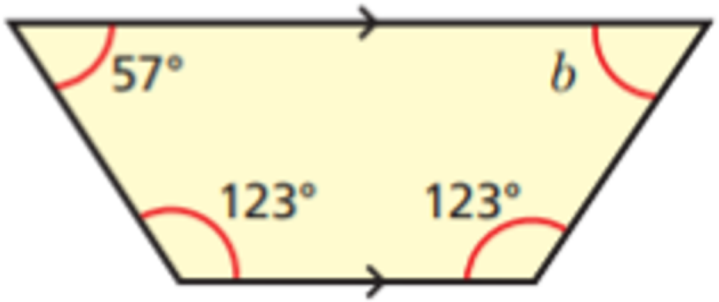


b)



Shape A-Explanation

Step 1: Add all the angles together.

63° + 90° + 90° = 243°

Step 2: Subtract the total from 360°.

360° - 243° = **117°**

Shape B-Explanation

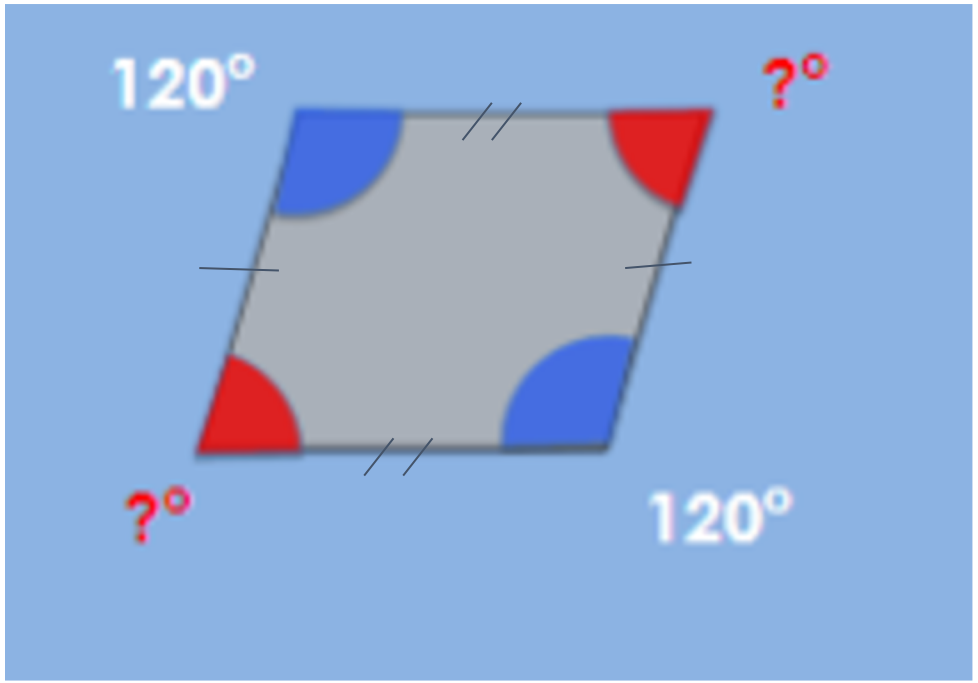
Step 1: Add all the angles together.

57° + 123° + 123° = 303°

Step 2: Subtract the total from 360°.

360° - 303° = **57°**

Angles on a parallelogram

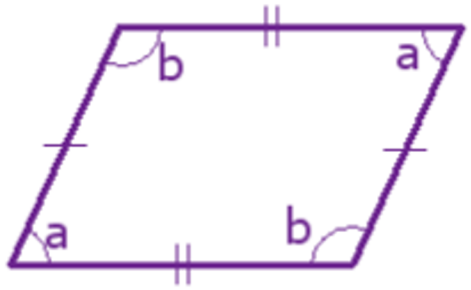


- What do you think the value of the red angle is?
- What do you notice about this angle?

Properties of a parallelagram:

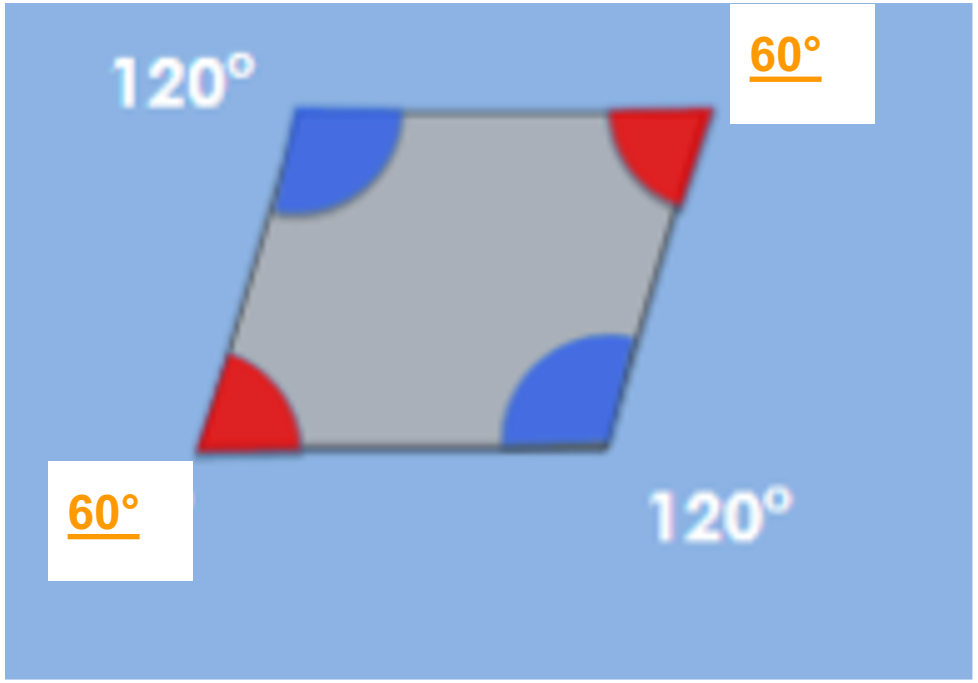
- Opposite sides are parallel
- Opposite sides are equal in length
- Opposite angles are equal (angles "a" are the same, and angles "b" are the same)

A Parallelogram is a flat shape with opposite sides parallel and equal in length.



| and || show equal sides

Angles on a parallelogram ANSWER



What do you think the value of the red angle is?

Step 1: Add all the angles together.
120° + 120° = 240°

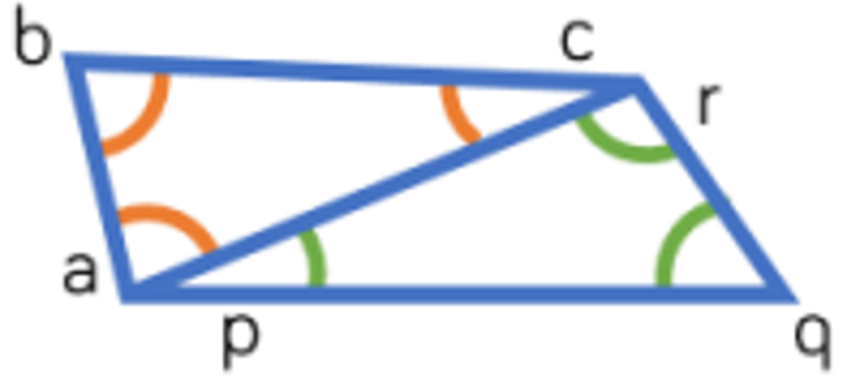
Step 2: Subtract the total from 360°.
360° - 240° = **120°**

Step 3: The TWO red angles are parallel and must total 120°.
120° divided by 2 = **60°**

CHECKING MY ANSWER.
120° + 120° +60° + 60° = 360°

EVALUATION

This quadrilateral is split into two triangles.



Use your knowledge of angles in a triangle to find the sum of angles in a quadrilateral.

Answer

Children should find that angles in all quadrilaterals will always total to 360 degrees.

Task

Once you have finished turn this assignment in on Google Classroom.

All	All of you **must** complete the **fluency** section.
Most	Most of you **will** compete the **fluency** and **reasoning** sections.
Some	Some of you **will** complete the **fluency, reasoning,** and **problem-solving** sections.

Try your best – it is all we can ask for! ☺

This video may help if you are stuck at any point:
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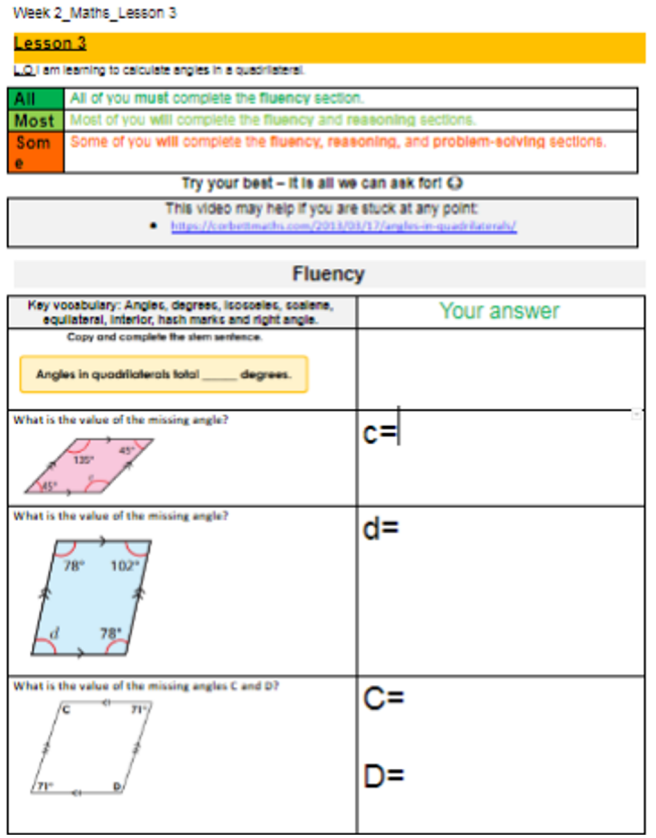

Week 2_Maths_Lesson 3

Lesson 3

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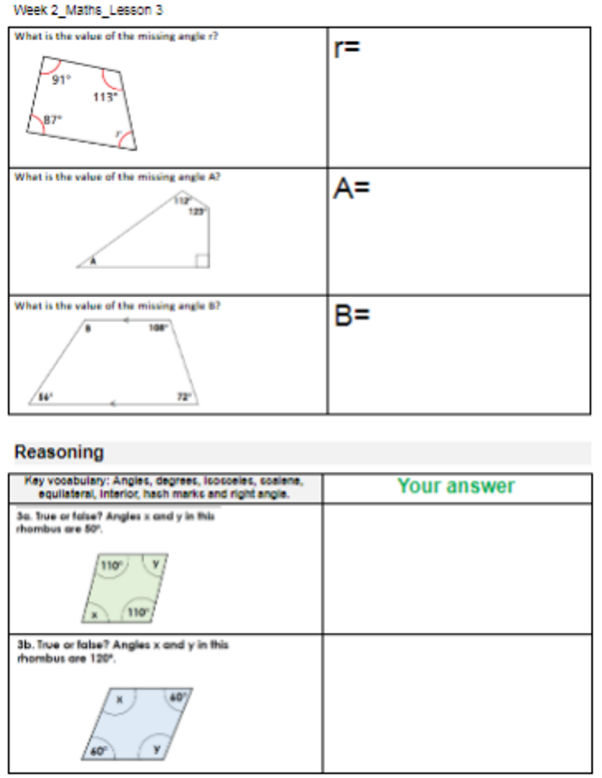
Fluency

Key vocabulary: Angles, degrees, isosceles, scalene, equilateral, interior, hash marks and right angle.	Your answer
Copy and complete the stem sentence. Angles in quadrilaterals total ____ degrees.	
What is the value of the missing angle?	c=
What is the value of the missing angle?	d=
What is the value of the missing angles C and D?	C= D=



Week 2_Maths_Lesson 3

What is the value of the missing angle r?	r=
What is the value of the missing angle A?	A=
What is the value of the missing angle B?	B=

Reasoning

Key vocabulary: Angles, degrees, isosceles, scalene, equilateral, interior, hash marks and right angle.	Your answer
3a. True or false? Angles x and y in this rhombus are 50°.	
3b. True or false? Angles x and y in this rhombus are 120°.	