Edgenuity

Warm-Up | Parallelograms

Lesson Question

Lesson Goals

Prove theorems about _____ .

Apply theorems about parallelograms to _____ problems.

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

_____ bisect

_____ consecutive angles

_____ parallelogram

_____ supplementary angles

A. two angles whose measures have a sum of 180 degrees

B. a quadrilateral in which both pairs of opposite sides are parallel

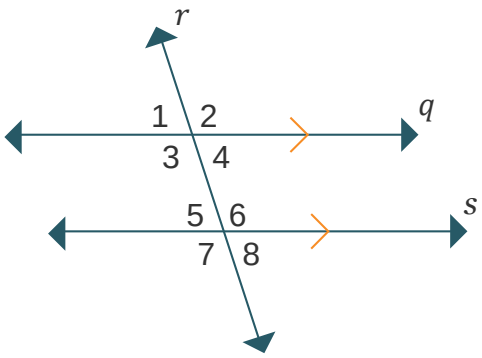
C. in a polygon, two angles that share a side

D. to divide into two congruent parts

Warm-Up | Parallelograms

Parallel Lines Cut by a Transversal

Angles	Relationship
Corresponding	Congruent
Alternate interior	
Alternate exterior	Congruent
Same-side interior	



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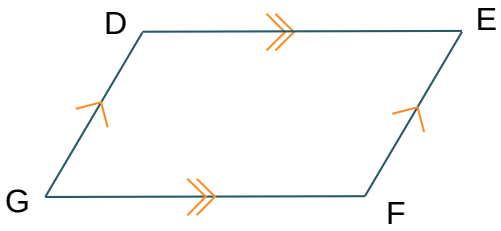
Slide 2

The Parallelogram Angle Theorem

Parallelogram angle theorem:

Opposite angles in a **parallelogram** are [ ] .

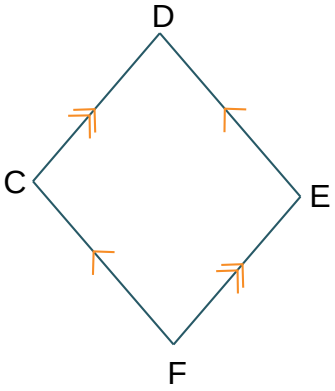
Mark the congruent angles on the parallelogram.



Slide 4

The Supplementary Consecutive Angles Theorem

Supplementary consecutive angles theorem: Consecutive angles in a [ ] are **supplementary angles.**



$m\angle C + m\angle D =$ [ ]

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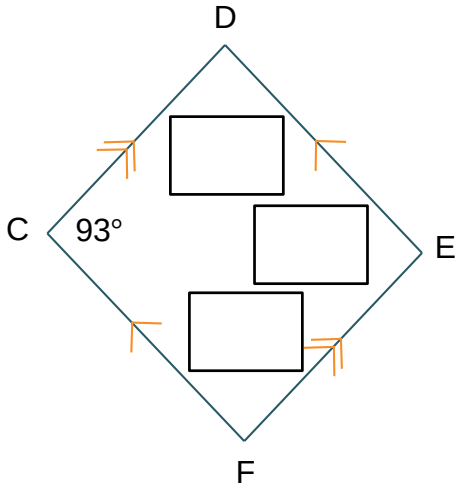
Applying Theorems

- Parallelogram angle theorem: [ ] angles in a parallelogram are congruent.
- Supplementary consecutive angles theorem: Consecutive angles in a parallelogram are [ ] angles.

$180° - 93° =$ [ ]

Label the remaining angles.



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Using the Parallelogram Angle Theorem

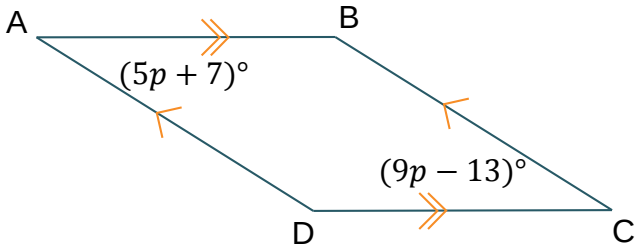
What are the measures of the angles of parallelogram ABCD?

$5p + 7 = 9p - 13$

$5p + 20 = 9p$

$20 = 4p$

[ ] $= p$



Find $m\angle A$.

$5(5) + 7 = 25 + 7 =$ [ ]

$m\angle A = m\angle C = 32°$

$180° - 32° =$ [ ]

$m\angle D = m\angle B = 148°$

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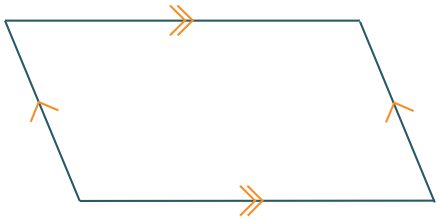
The Parallelogram Side Theorem

Parallelogram side theorem:

[ ] sides of a parallelogram are [ ].



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Using the Parallelogram Side Theorem

What is the length of side MN of parallelogram LMNO?

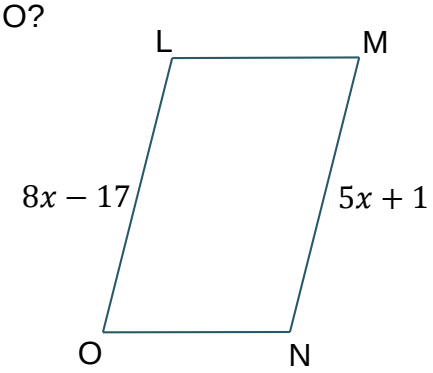
$8x - 17 = 5x + 1$

$8x = 5x + 18$

$3x = 18$

$x =$ [ ]

$5(6) + 1 = 30 + 1 =$ [ ]



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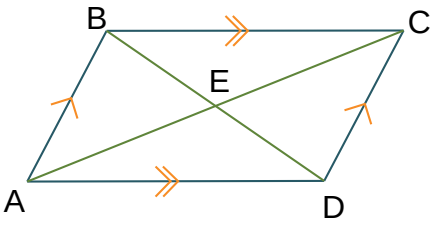
The Parallelogram Diagonal Theorem

Parallelogram diagonal theorem: The [ ] of a parallelogram **bisect** each other.



If $\overline{BD} = 22$, then $\overline{BE} = 11$ and $\overline{ED} =$ [ ].

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Using the Parallelogram Diagonal Theorem

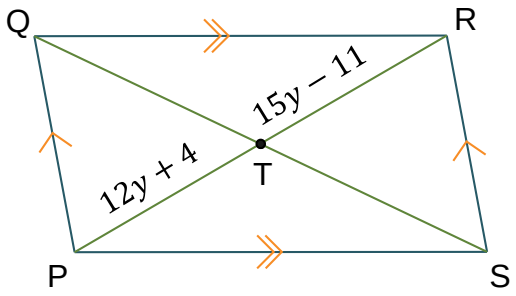
What is the length of segment PR?

$$12y + 4 = 15y - 11$$

$$12y + 15 = 15y$$

$$15 = 3y$$

$$\square = y$$



Find PT.

$12(5) + 4 = 60 + 4 =$ ☐

That means that the length of TR is also 64. Add the lengths of PT and TR to find PR.

$64 + 64 =$ ☐

Summary | Parallelograms

Lesson Question

What properties do all parallelograms possess?

Answer

Slide 2

Review: Key Concepts

The parallelogram angle theorem

- Opposite angles are [ ] .

The supplementary consecutive angles theorem

- Consecutive angles are [ ] .

The parallelogram side theorem

- [ ] sides are congruent.

The parallelogram diagonal theorem

- Diagonals [ ] each other.

Summary | Parallelograms

Use this space to write any questions or thoughts about this lesson.