Assignment

Name _____ Date _____

Quilting and Tessellations
Introduction to Quadrilaterals

List all of the types of quadrilaterals that have the given characteristics.

1. four right angles

2. four congruent sides

3. one pair of opposite sides parallel

4. two pairs of opposite sides parallel

5. opposite angles congruent

6. two pairs of congruent adjacent sides

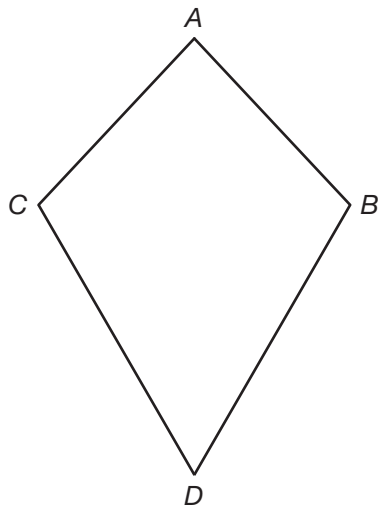**7.** sum of interior angles is 360°

8. four sides

6

6

Assignment

Name _____ Date _____

When Trapezoids Are Kites
Kites and Trapezoids

Quadrilateral *ABDC* is a kite.

1. Draw $\overline{CB}$.

A

C   B

D

2. Name the triangles formed in the kite by $\overline{CB}$.

3. Are the two triangles congruent? Explain your reasoning.

4. Classify each triangle by its side length. Explain your reasoning.

5. What do you know about ∠*ACB* and ∠*ABC*? Explain your reasoning.

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6. What do you know about ∠DCB and ∠DBC? Explain your reasoning.

7. How are ∠ACD and ∠ABD related? Explain your reasoning.

8. How is the sum of $m\angle ACB$ and $m\angle DCB$ related to the sum of $m\angle ABC$ and $m\angle DBC$? Explain your reasoning.
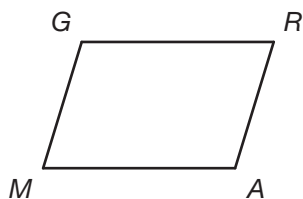
Assignment

Name _____ Date _____

Binocular Stand Design
Parallelograms and Rhombi

In parallelogram GRAM, $\overline{GR} \parallel \overline{MA}$ and $\overline{GM} \parallel \overline{RA}$. Use the figure to complete Questions 1 through 3.

1. Suppose that $m\angle G = 107°$. What is $m\angle A$? Explain your reasoning.

2. Suppose that $m\angle R = 77°$. What is $m\angle G$? Explain your reasoning.

3. Suppose that $GR = 14$ yards What is the length of $\overline{MA}$? Explain your reasoning.

4. Suppose that the measure of one angle of a parallelogram is 57°. Find the measures of the other angles of the parallelogram.

6

5. The measures of two consecutive angles of a parallelogram are given by the expressions ($m + 46°$) and ($3m − 90°$). Find the measure of each angle of the parallelogram in degrees. Show all your work.

In rhombus *MBUS*, $\overline{MB} \parallel \overline{SU}$ and $\overline{MS} \parallel \overline{BU}$. Use the figure to complete Questions 6 through 8.
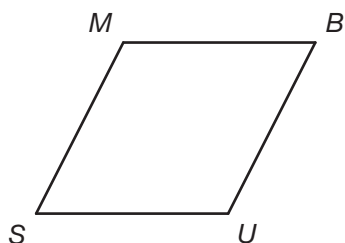
6. Suppose that $m\angle B = 33°$. What is $m\angle U$? Explain your reasoning.

7. Suppose that $m\angle U = 117°$. What is $m\angle M$? Explain your reasoning.

8. Suppose that $MS = 121$ millimeters. What is the length of $\overline{US}$? Explain your reasoning.

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In rhombus *MBUS*, $\overline{MB} \parallel \overline{SU}$, $\overline{MS} \parallel \overline{BU}$, and diagonals $\overline{MU}$ and $\overline{BS}$ intersect at point O. Use the figure to complete Questions 9 through 11.
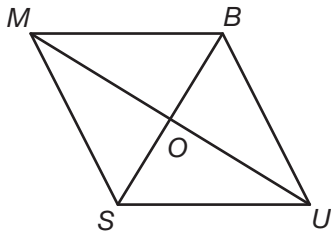
9. Suppose that *MU* = 55 millimeters. What other segment measures do you know in the diagram? Explain your reasoning.

10. Suppose that *BO* = 28 millimeters. What other segment measures do you know in this diagram? Explain your reasoning.
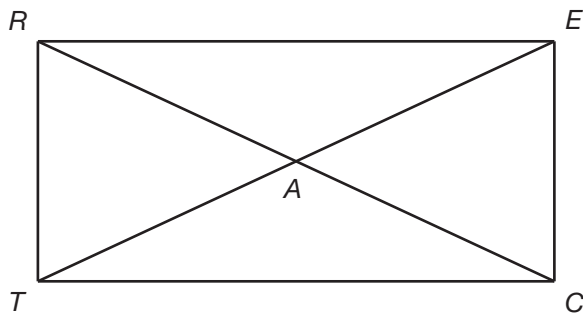
11. What is $m\angle SOU$? Explain your reasoning.

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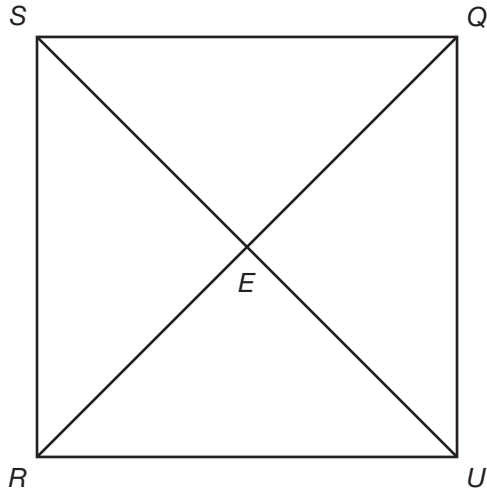
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Assignment

Name _____ Date _____

Positive Reinforcement
Rectangles and Squares

In rectangle *RECT*, $\overline{RE} \parallel \overline{TC}$, $\overline{RT} \parallel \overline{EC}$, $\overline{RC}$ and $\overline{ET}$ are diagonals, and point *A* is the intersection of the diagonals. Use the figure to complete Questions 1 though 4.

1. Is △*REC* congruent to △*TCE*? Explain your reasoning.

2. Is ∠*ERC* congruent to ∠*TCR*? Explain your reasoning.

3. Is ∠*ECR* congruent to ∠*TRC*? Explain your reasoning.

4. Is $\overline{RC}$ congruent to $\overline{TE}$? Explain your reasoning.

6

5. Segment *SU* and segment *QR* bisect each other, are perpendicular, and are congruent to each other. Must quadrilateral *SQUR* be a square? Justify your conclusion.

Assignment

Name _____ Date _____

Stained Glass
Sum of the Interior Angle Measures in a Polygon

1. Find the sum of the interior angles in a nonagon. Show all your work.

2. Suppose that the nonagon from Question 1 is a regular nonagon. Find the measure of each interior angle in the nonagon. Show all your work.

3. Find the sum of the interior angles of 50-gon. Show all your work.

4. Find the measure of each interior angle in a regular pentagon. Show all your work.

6

5. Find the measure of each interior angle in an equiangular hexagon. Show all your work.

6. In your own words, explain how to find the sum of the interior angles in any polygon.

7. In your own words, explain how to find the measure of each interior angle in a regular polygon.

8. Given a regular polygon with n sides, write a formula to determine the measure of each interior angle.

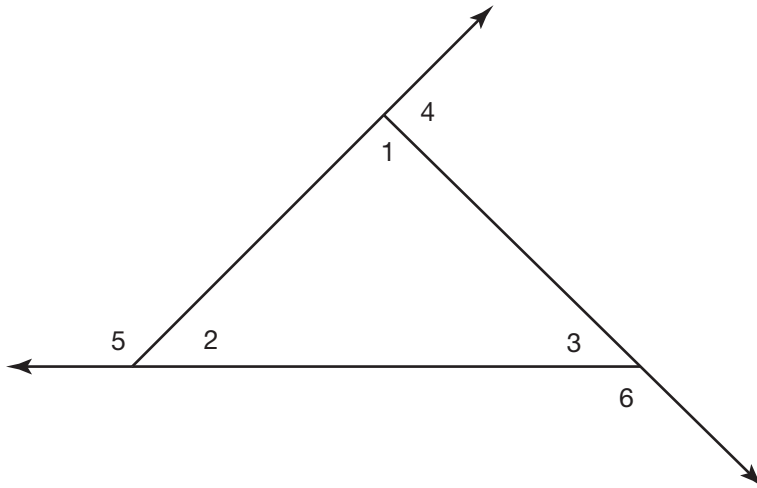© 2009 Carnegie Learning, Inc.

Assignment

Name _____ Date _____

Pinwheels
Sum of the Exterior Angle Measures in a Polygon

Use the triangle below to complete Questions 1 through 6.

1. Find $m\angle 1 + m\angle 4$. Explain how you found your answer.

2. Find $m\angle 2 + m\angle 5$. Explain how you found your answer.

3. Find $m\angle 3 + m\angle 6$. Explain how you found your answer.

6

4. What is the sum of the measures of the angles 1, 2, 3, 4, 5, and 6? Explain how you found your answer.

5. Find $m\angle 1 + m\angle 2 + m\angle 3$. Explain how you found your answer.

6. What is the difference of the sum that you found in Question 4 and the sum that you found in Question 5? What does this demonstrate?