

A3: NO QUIZ TODAY!!

**We will go over any questions from lesson
7.2 and 7.3 and move on to lesson 7.4, so
get ready!!**

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Quadrilateral $ABCD$ is a kite.

1. If $m\angle ABC = 95^\circ$, what is $m\angle ADC$? Explain. 95° , it is one of the opposite angles that are congruent.

2. If $m\angle BCE = 34^\circ$, what is $m\angle EBC$? Explain. 17° , diagonal AC bisects $\angle EBC$.

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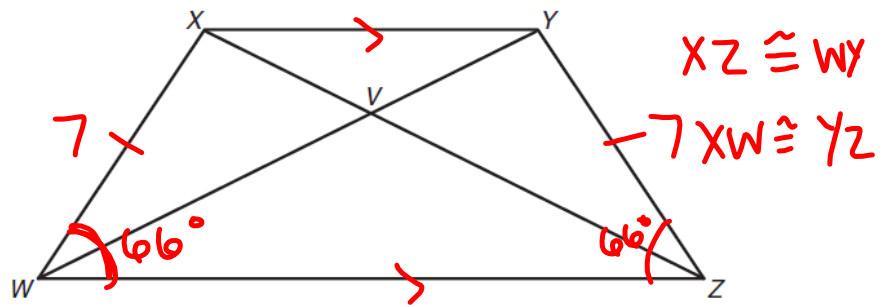
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3. If the length of \overline{AB} is 16 feet, what is AD ? Explain.
 16 ft , $\overline{AB} \cong \overline{AD}$, these sides are one pair of consecutive congruent sides.

4. If the length of \overline{BD} is 25 feet, what is ED ? Explain.
 $ED = 12.5\text{ ft}$ because AC bisects BD .

Chapter 7

Quadrilateral $WXYZ$ is an isosceles trapezoid.



5. If $m\angle XWZ = 66^\circ$, what is $m\angle YZW$? Explain.

66° because base angles are congruent.

6. If the length of \overline{WY} is 10 inches, what is ZX ? Explain.

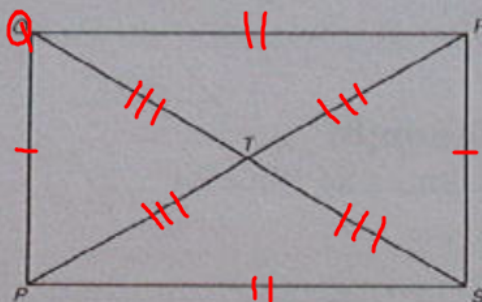
10 inches, diagonals are congruent

7. If the length of \overline{WX} is 7 inches, what is ZY ? Explain.

7 inches, legs of isosceles trapezoids are congruent.

LESSON 7.4 Assignment

Quadrilateral $PQRS$ is a rectangle with diagonals PR and QS .



2. Name all parallel segments.

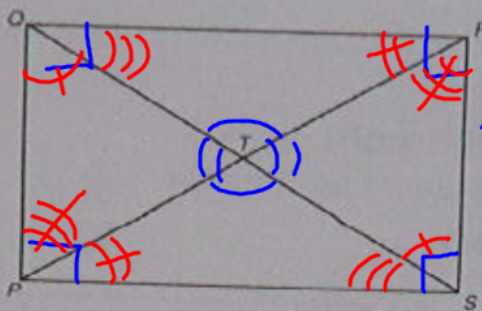
3. Name all congruent segments.

$$QP \cong RS, QR \cong PS, PT \cong TR \cong QT \cong TS$$
$$QS \cong PR$$

LESSON **7.4** Assignment

Quadrilateral $PQRS$ is a rectangle with diagonals PR and QS .

$\angle RQS \cong \angle QSP$
 $\angle PQS \cong \angle RSQ$
 $\angle QPR \cong \angle PRS$
 $\angle SPR \cong \angle QRP$



⑤ $\angle QRS \cong$
 $\angle RSP \cong \angle SPQ$
 $\cong \angle PQR;$
 $\angle QTR \cong \angle PTS;$
 $\angle QTP \cong \angle RTS;$

2. Name all parallel segments.

3. Name all congruent segments.

4. Name all right angles.

A5: NO QUIZ TODAY!!

**Work on the bright green worksheet
(lesson 7.3 Assignment) as soon as the bell
rings, we will turn it in shortly!**

Interior Angles of a Polygon

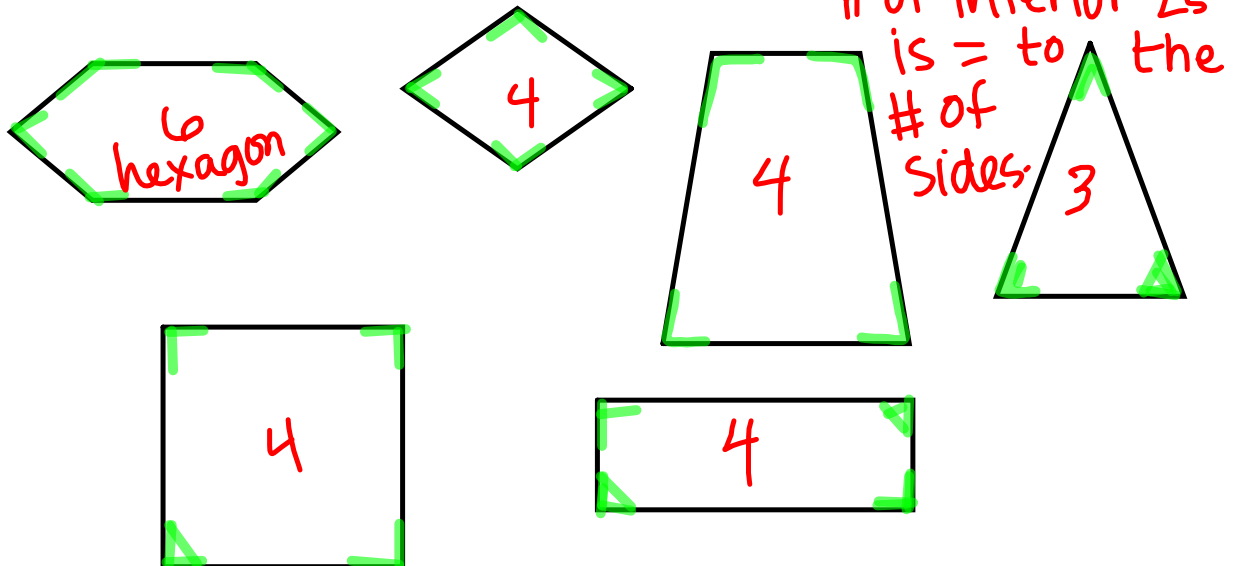
7.4

Sum of the Interior Angle Measures of a Polygon

PG.527-28 IN YOUR BOOK

An interior angle of a polygon faces the inside of a polygon and is formed by consecutive sides of the polygon.

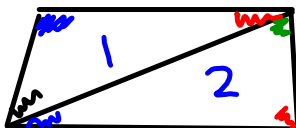
Draw two of the following polygons in your notes and highlight their interior angles.



PG.529 IN YOUR BOOK

The Triangle Sum Theorem states that the sum of the three interior angles of any triangle is equal to 180° . You can use this information to calculate the sum of the interior angles of other polygons.

1. Calculate the sum of the interior angle measures of a quadrilateral by completing each step.
 - a. Draw a quadrilateral. Draw a diagonal using only one vertex of the quadrilateral.



- b. How many triangles are formed when the diagonal divides the quadrilateral?

2

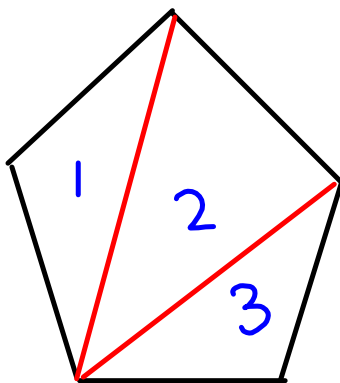
- c. If the sum of the interior angle measures of each triangle is 180° , what is the sum of all the interior angle measures of the triangles formed by the diagonal?

$$2(180) = \underline{\underline{\underline{360^\circ}}}$$

PG.530 IN YOUR BOOK

2. Calculate the sum of the interior angle measures of a pentagon by completing each step.

a. Draw a pentagon. Draw all possible diagonals using only one vertex of the pentagon.



b. How many triangles are formed when the diagonal(s) divide the pentagon?

3

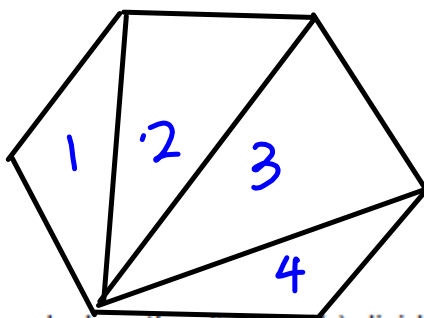
c. If the sum of the interior angle measures of each triangle is 180° , what is the sum of all the interior angle measures of the triangles formed by the diagonal(s)?

$$3(180) = \underline{\underline{540^\circ}}$$

PG.530 IN YOUR BOOK

3. Calculate the sum of the interior angle measures of a hexagon by completing each step.

- a. Draw a hexagon. Draw all possible diagonals using one vertex of the hexagon.



- b. How many triangles are formed when the diagonal(s) divide the hexagon?

4

- c. If the sum of the interior angle measures of each triangle is 180° , what is the sum of all the interior angle measures of the triangles formed by the diagonal(s)?

$$4(180) = \underline{\underline{720^\circ}}$$

PG.531 IN YOUR BOOK

4. Complete the table shown.



Number of Sides of the Polygon	3	4	5	6
Number of Diagonals Drawn	0	1	2	3
Number of Triangles Formed	1	2	3	4
Sum of the Measures of the Interior Angles	180	360	540	720

5. What pattern do you notice between the number of possible diagonals drawn from one vertex of the polygon, and the number of triangles formed by those diagonals?

One more Δ than the # of diagonals.

6. Compare the number of sides of the polygon to the number of possible diagonals drawn from one vertex. What do you notice?

of sides is 3 more than # of diagonals.

7. Compare the number of sides of the polygon to the number of triangles formed by drawing all possible diagonals from one vertex. What do you notice?

of sides is 2 more than # of triangles.

8. What pattern do you notice about the sum of the interior angle measures of a polygon as the number of sides of each polygon increases by 1?
9. Predict the number of possible diagonals drawn from one vertex and the number of triangles formed for a seven-sided polygon using the table you completed.
10. Predict the sum of all the interior angle measures of a seven-sided polygon using the table you completed.

PG.532 IN YOUR BOOK

11. Continue the pattern to complete the table.

Number of Sides of the Polygon	7	8	9	16
Number of Diagonals Drawn				
Number of Triangles Formed				
Sum of the Measures of the Interior Angles				

Finish pgs. ~~532-538~~ in ^{PG 533} your book13-gon
99-gon
n-gon

page 532 #16:

Formula for Sum of the Interior
Angles of a Polygon .

$$180(n-2)$$

where n is the # of sides

PG.533 #4

$$\frac{180(n-2)}{n}$$

the measure of each
interior angle in a
regular polygon.

#6:

$$n \cdot 150 = \frac{180(n-2)}{n} \cdot n$$

$$150n = 180(n-2)$$

$$150n = 180n - 360$$

$$-180n \quad -180n$$

$$-30n = -360$$

$$\frac{-30n}{-30} = \frac{-360}{-30}$$

$$n = 12 \text{ sides}$$

NOT IN YOUR BOOK

Determine the measure of an interior angle of the given regular polygon.

1. regular nonagon

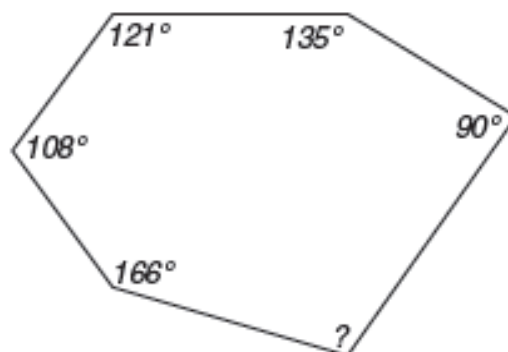
2. regular decagon

3. regular 15-gon

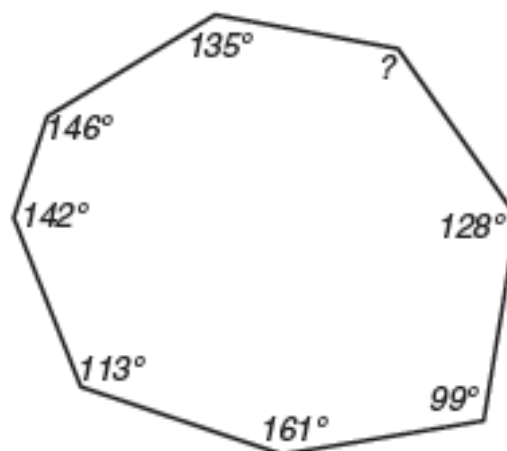
4. regular 47-gon

Determine the measure of the missing angle in each figure.

5.

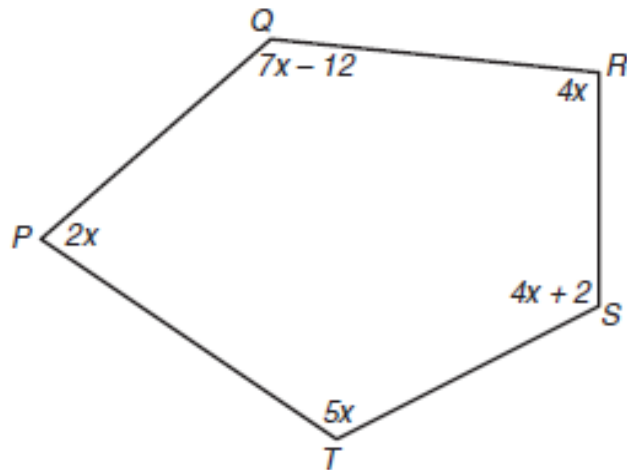


6.



NOT IN YOUR BOOK

7. Use the figure to answer each question.



- What is the sum of the measures of the interior angles of the polygon?
 - What is the value of x ?
 - What is the measure of $\angle PTS$?
 - What is the measure of angle $\angle RQP$?
8. Suppose that the sum of the measures of the interior angles of a regular polygon is 157.5° . What type of polygon is it? Show your work and explain how you got your answer.
9. Suppose that the degree measure of each angle of a regular 12-gon can be represented by the expression $2x + 5$. Calculate the value of x .

Homework

Finish Lesson 7.4