GEOMETRY

Exam 8

Based on Chapter 8 (pages 504 - 567) in your textbook.

Student's Name _____ **Student Number** _____

Street _____ **City** _____ **State** _____ **Zip Code** _____

BE SURE YOU FULLY UNDERSTAND ALL CHECKPOINT PROBLEMS FROM THIS CHAPTER **BEFORE** YOU COMPLETE THIS EXAM. **SHOW** AS MUCH **WORK** AS POSSIBLE.

1. Find the measure of one interior angle of a regular hexagon.

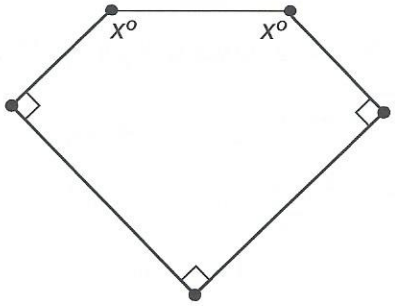
   _____

2. The measure of an exterior angle of a regular n-gon is 72°. Classify the polygon by number of sides.

   _____

3. Solve for x.

   $x =$ _____



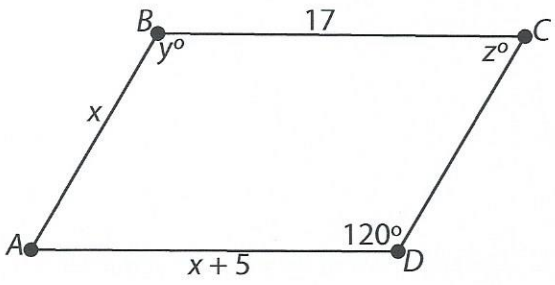
4. The measure of an interior angle of a regular n-gon is 140°. How many sides are in the regular polygon?

   _____

5. If the sum of the measures of the interior angles of a convex n-gon is equal to the sum of the measures of the exterior angles, how many sides does the n-gon have?

_____

6. Given the parallelogram $ABCD$, solve for x, y, z, and the perimeter of $ABCD$.



$x =$ _____

$y =$ _____

$z =$ _____

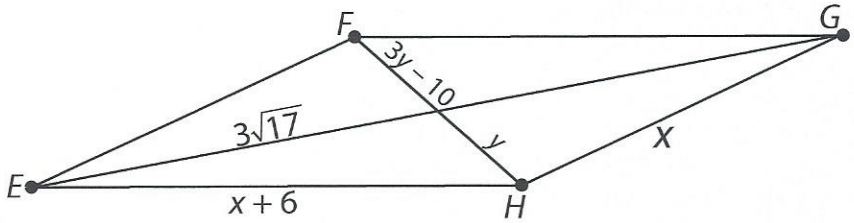
Perimeter = _____

7. Given parallelogram $EFGH$ with perimeter 52, solve for FG, EG, and y.

$FG =$ _____

$EG =$ _____

$y =$ _____



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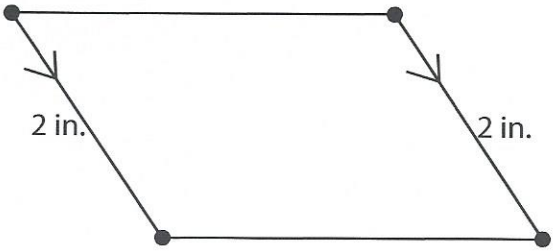
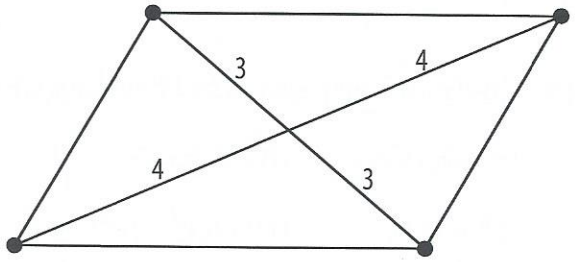
Items 8-13: Indicate, by circling yes or no, whether each quadrilateral is a parallelogram. If yes, write the theorem number or definition that justifies your answer.

8.



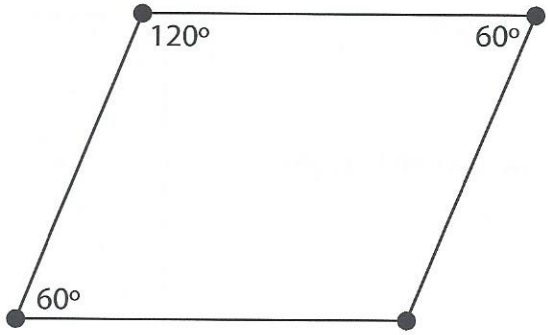
No *Yes* by _____

9.



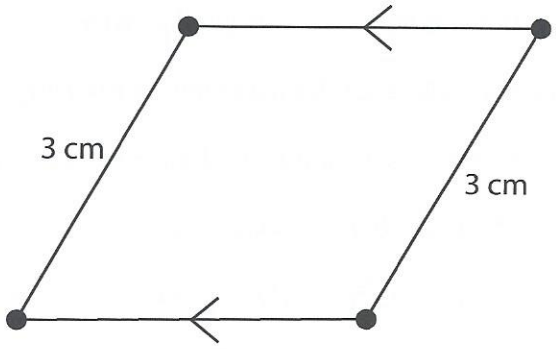
No *Yes* by _____

10.



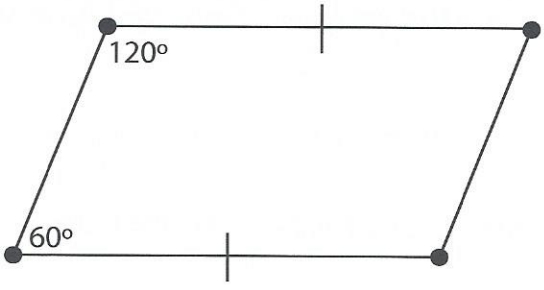
No *Yes* by _____

11.



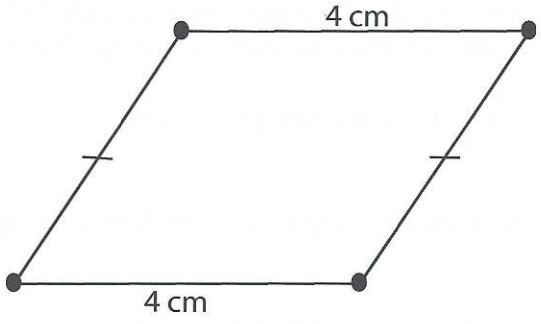
No *Yes* by _____

12.



No *Yes* by _____

13.



No *Yes* by _____

(over)

14. Circle the shape that is NOT equilateral.

(A) rhombus (B) rectangle

(C) square (D) regular polygon

15. Circle the shape that is NOT equiangular.

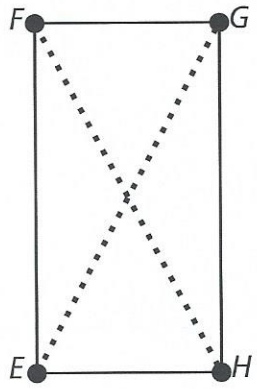
(A) rhombus (B) rectangle

(C) square (D) regular polygon

16. If all four sides of a quadrilateral measure the same length, and one corner angle measures 90°, circle that shape the quadrilateral can be classified as.

(A) rhombus (B) rectangle

(C) square (D) parallelogram (E) All of these



Items 17-18: Use the diagram to the right.

17. For any rectangle *EFGH*, circle the statement that does NOT apply.

(A) $\overline{EG} \cong \overline{FH}$ (B) $\angle E \cong \angle F$

(C) $\overline{EG} \perp \overline{FH}$ (D) $\overline{EF} \cong \overline{GH}$

18. A carpenter must ensure that a large window frame is a rectangle. If the corners are labeled *E*, *F*, *G*, and *H*, the carpenter knows that $EF = 51$ inches, $FG = 68$ inches, $GH = 51$ inches, and $EH = 68$ inches. The carpenter could measure the diagonals $\overline{EG}$ and $\overline{FH}$ and verify that they are the same length, but chooses another approach. After verifying that angle *E* is a right angle the carpenter insists that *EFGH* must be a true rectangle. Finish the reasoning outlined below to justify the carpenter's logic.

EFGH is a parallelogram since _____.

Consecutive angles are supplementary by Theorem _____, so angles *F*, *G*, and *H* are also

right angles. Therefore, by the _____ Corollary, *EFGH* is a _____.

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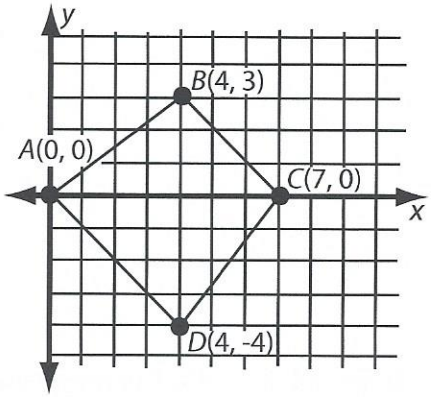
Items 19-22: Use the diagram to the right.



19. Prove that *ABCD* is an isosceles trapezoid.

Slope of $\overline{AB}$ = _____ , Slope of $\overline{BC}$ = _____

Slope of $\overline{CD}$ = _____ , Slope of $\overline{AD}$= _____

Length *AB* = _____

Length *CD* = _____

Explain: _____

_____

_____

20. Based on lengths *AB* and *CD*, explain why *ABCD* does not fit the definition of a kite.

21. Diagonal $\overline{AC}$ is horizontal and $\overline{BD}$ is vertical, so $\overline{AC} \perp \overline{BD}$, but *ABCD* is not a kite. Using this information, explain why Theorem 8.18 is not written as biconditional.

Theorem 8.18 is a conditional statement. The information shows the _____ of Theorem 8.18 is false by counterexample. Thus, Theorem 8.18 cannot be written as biconditional.

22. $m\angle A = 82°$ (to the nearest degree). Find $m\angle B$, $m\angle C$, and $m\angle D$ to the nearest degree.

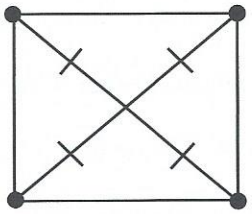
$m\angle B$ = _____

$m\angle C$ = _____

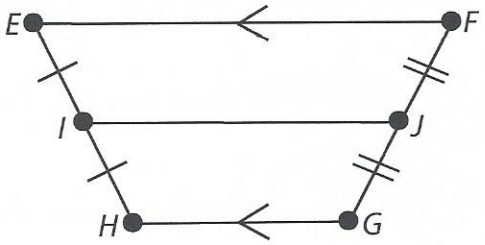
$m\angle D$ = _____

(more)

23. Classify the quadrilateral shown on the right. Explain your reasoning.



Items 24-25: Use the diagram at the right.



24. $\overline{IJ}$ is the midsegment of trapezoid $EFGH$.
Circle the following item which is always true.

(A) $\angle E \cong \angle F$ (B) $HG + IJ = EF$
(C) $\overline{IJ} \parallel \overline{HG}$ (D) $HF = EG$

25. If $EF = 12$, $IJ = 3x - 4$, and $HG = x$, find lengths IJ and HG.

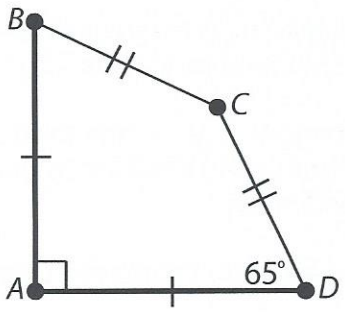
$IJ =$ _____

$HG =$ _____

26. Find $m\angle B$ and $m\angle C$.

$m\angle B =$ _____

$m\angle C =$ _____



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27. Circle the following quadrilateral that does NOT have at least one pair of consecutive sides congruent.

(A) rhombus (B) kite (C) isosceles trapezoid (D) square

28. Circle the following quadrilateral that may or may not have exactly one pair of consecutive sides congruent.

(A) rhombus (B) kite (C) trapezoid (D) square

29. Circle the following quadrilateral whose diagonals need not be congruent.

(A) rectangle (B) isosceles trapezoid (C) square (D) rhombus

30. Circle the following quadrilateral whose diagonals bisect each other.

(A) rhombus (B) trapezoid (C) kite (D) isosceles trapezoid

31. Circle the following quadrilateral whose diagonals need not be perpendicular.

(A) kite (B) rhombus (C) square (D) parallelogram

32. Circle the following quadrilateral which needs not have at least one pair of consecutive angles supplementary.

(A) trapezoid (B) kite (C) rhombus (D) parallelogram

33. Circle the following quadrilateral which must have exactly one pair of congruent angles.

(A) isosceles trapezoid (B) parallelogram (C) kite (D) rhombus

FILL IN YOUR NAME AND THE OTHER REQUIRED INFORMATION ON EACH PAGE OF THE EXAM AND MAIL THE EXAM TO AMERICAN SCHOOL.