Name: _____ **Class:** _____ **Date:** _____ **ID: A**

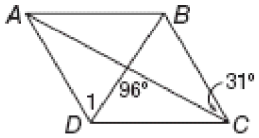
Geo Unit 5 Study Guide

1. The sum of the interior angles of an animal pen is 900°. How many sides does the pen have?

2. A convex hexagon has interior angles with measures $x°$, $(5x – 103)°$, $(2x + 60)°$, $(7x – 31)°$, $(6x – 6)°$, and $(9x – 100)°$. Find the value of x.

3. Find the measure of each exterior angle of a regular $2x$-gon.

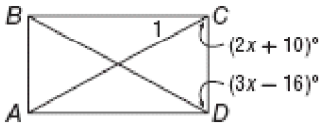
4. For parallelogram $ABCD$, find $m\angle 1$.



5. $ABCD$ is a parallelogram with diagonals that intersect each other at E. If $AE = x^2$ and $EC = 6x – 8$, find all possible values of AC.

6. For quadrilateral $ABCD$, the slope of $\overline{AB}$ is $\frac{2}{3}$ and the slope of $\overline{BC}$ is –2. Find the slopes of $\overline{CD}$ and $\overline{DA}$ so that $ABCD$ will be a parallelogram.

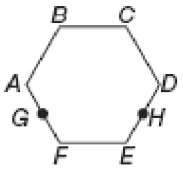
7. In rectangle $ABCD$, find $m\angle 1$.



8. The diagonals of rhombus $ABCD$ intersect at E. If $m\angle BAE = \frac{2}{3}(m\angle ABE)$, find $m\angle BCD$.

9. The diagonals of square $ABCD$ intersect at E. If $AE = 2$, find the perimeter of $ABCD$.

10. Points G and H are midpoints of $\overline{AF}$ and $\overline{DE}$ in regular hexagon $ABCDEF$. If $AB = 6$ find GH.



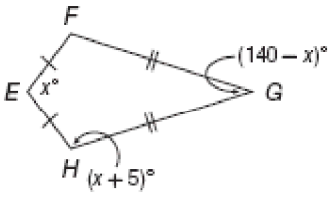
11. The vertices of trapezoid ABCD are $A(10, –1)$, $B(6, 6)$, $C(–2, 6)$, and $D(–8, –1)$. Find the length of the median.

12. Determine whether the quadrilateral $ABCD$ with vertices $A(0, –1)$, $B(–4, –3)$, $C(–5, 1)$, $D(1, 7)$ is a kite. Justify your answer.

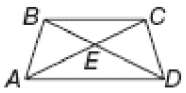
13. Determine whether the quadrilateral $ABCD$ with vertices $A(6, 2)$, $B(2, 10)$, $C(–6, 6)$, and $D(–2, –2)$ is a rectangle. Justify your answer.

14. Determine whether quadrilateral $ABCD$ with vertices $A(1, 6)$, $B(7, 6)$, $C(2, –3)$, and $D(–4, –3)$ is a parallelogram. Use the distance formula.

15. Find the value of x in kite $EFGH$.

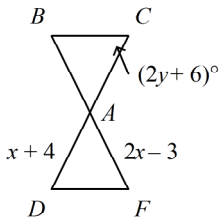


16. In isosceles trapezoid $ABCD$, $AE = 2x + 5$, $EC = 3x – 12$, and $BD = 4x + 20$. Find the value of x.



17. Find the measure of the sides of ΔABC with vertices at $A(1, 4)$, $B(-4, 0)$, and $C(3, -6)$. Classify the triangle by its sides.

18. Triangles ABC and AFD are vertical congruent equilateral triangles. Find x and y.

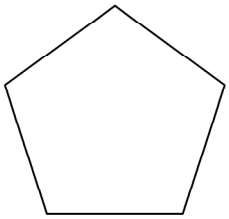


19. The measures of two complementary angles are $12q - 9$ and $8q + 14$. Find the measures of the angles.

20. Find $m\angle Y$ if $m\angle Y$ is six more than three times its complement.

Name each polygon by its number of sides.

21.



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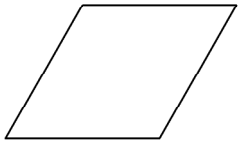

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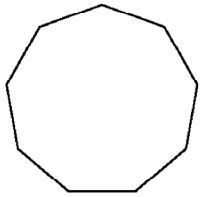
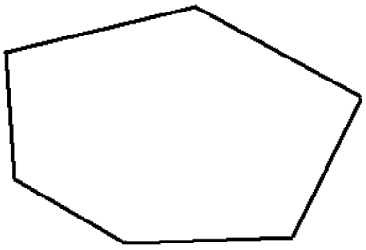


Name each polygon by its number of sides. Then classify it as convex *or* concave *and* regular *or* irregular.

24.



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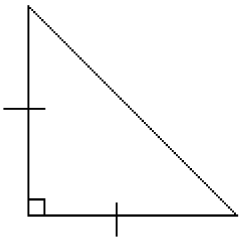

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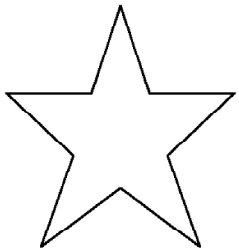
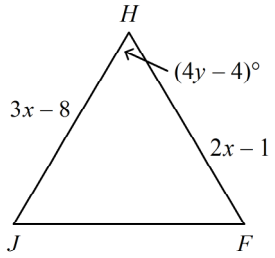


27. Triangle *FJH* is an equilateral triangle. Find *x* and *y*.



a. $x = \frac{7}{5}$, $y = 16$
b. $x = 7$, $y = 16$
c. $x = \frac{7}{5}$, $y = 14$
d. $x = 7$, $y = 14$

Solve the equation.

28. $x^2 - 3x - 28 = 0$

29. $2x^2 + 3x = 0$

Solve for x.

30. $x^2 - 8x = 20$

Solve.

31. $4x^2 - 13x + 9 = 0$

32. $7x^2 + 5x - 18 = 0$

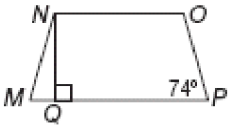
33. Bruce is building a tabletop in the shape of an octagon. Find the sum of the external angles of the tabletop.

34. If the measure of each interior angle of a regular polygon is 176 find the number of sides in the polygon.

35. Find the measure of each exterior angle of a regular 100-gon.

36. In parallelogram *ABCD*, $m\angle A = 63$. Find $m\angle B$.

37. For isosceles trapezoid *MNOP*, find $m\angle MNQ$.



Write *true* or *false*.

38. A parallelogram always has four right angles.

39. The diagonals of a rhombus always bisect the angles.

40. A rhombus is always a square.

41. A rectangle is always a square.

42. The diagonals of an isosceles trapezoid are always congruent.

43. The median of a trapezoid always bisects the angles.

44. The diagonals of a kite are always perpendicular.