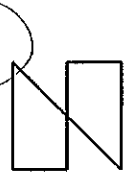
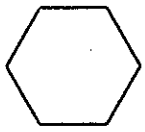
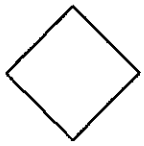
KEY

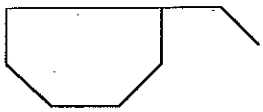
Name: _____ Date: _____

HOMEWORK: Geometry Review Sheet for 6.1 - 6.3

1. Which figure below is NOT a polygon?

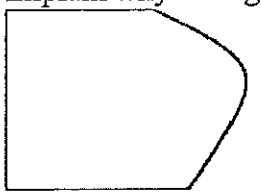
[A]  [B]  [C]  [D] 

2. Explain why the figure shown does not satisfy the definition of a polygon.



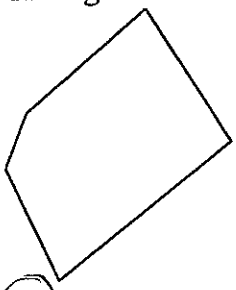
It is not closed

3. Explain why the figure shown does not satisfy the definition of a polygon.



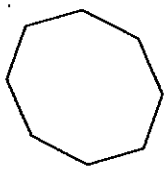
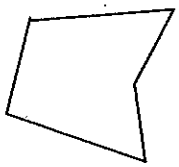
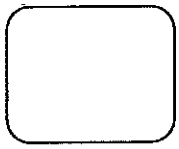
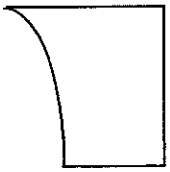
Not all are line segments

4. The figure shown below _____.

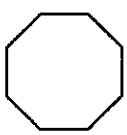
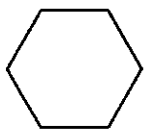
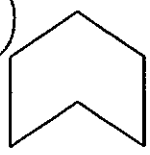
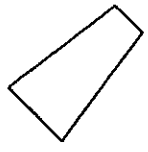


[A] is a pentagon [B] is a quadrilateral [C] is a hexagon [D] is a heptagon

5. Identify the convex polygon.

[A]  [B]  [C]  [D] 

6. Which figure below is NOT a convex polygon?

[A]  [B]  [C]  [D] 

7. Name a polygon with 3 sides. triangle

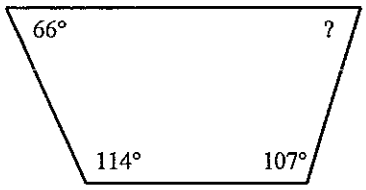
8. Which one of the statements below is FALSE?

[A] A circle is NOT a polygon. [B] A pentagon has 5 sides.

[C] A decagon has 8 angles. [D] A quadrilateral has 4 sides.

9. How many diagonals does a convex pentagon have? 5

10. Find the measure of the missing angle.

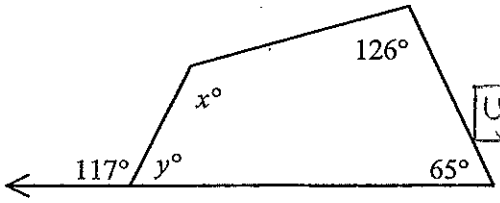


66 + 114 + 107 = 287

360 − 287 = 73

73°

11. Find x and y.



180 − 117 = 63

$y = 63$

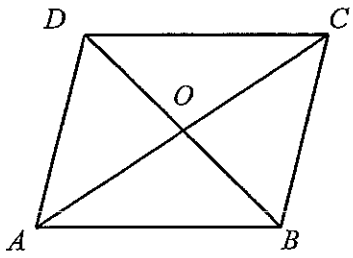
$63 + 126 + 65 + x = 360$

$254 - 360 = 106$

$x = 106°$

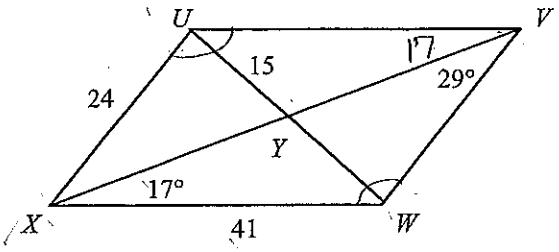
12. Complete the statement about parallelogram $ABCD$. Then state a definition or theorem as the reason.

$\overline{AO} \cong \overline{OC}$



Diagonals bisect each other.

13. Refer to the figure below.



17 + 29 = 46

180 − 46 = 134

Given: $UVWX$ is a parallelogram, $m\angle WXV = 17°$, $m\angle WVX = 29°$, $XW = 41$, $UX = 24$, $UY = 15$

A. Find $m\angle WVU$. 46°

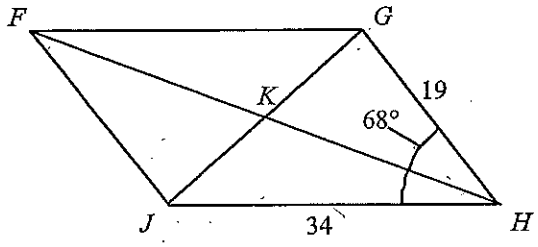
B. Find WV. 24°

C. Find $m\angle XUV$. 134°

D. Find UW. 30

29 + 17 = 46

14. Use the figure below.



Given: $FGHJ$ is a parallelogram, $m\angle JHG = 68°$, $JH = 34$, $GH = 19$

A. Find $m\angle FJH$. 112° 180 − 68 =

B. Find JF. 19°

C. Find $m\angle GFJ$. 68°

D. Find FG. 34°

15. Consecutive angles in a parallelogram are always _____.

[A] congruent angles

[B] vertical angles

[C] supplementary angles

[D] complementary angles

16. Choose the statement that is NOT ALWAYS true.
For any parallelogram _____.

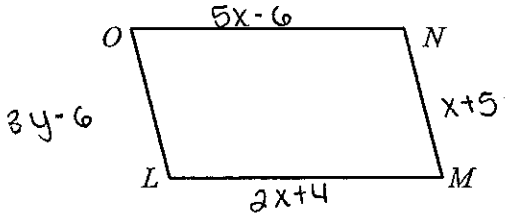
[A] opposite sides are congruent

[B] the diagonals bisect each other

[C] the diagonals are perpendicular

[D] opposite angles are congruent

17. If $ON = 5x - 6$, $LM = 2x + 4$, $NM = x + 5$, and $OL = 3y - 6$, find the values of x and y given that $LMNO$ is a parallelogram.



$5x-6=2x+4$
$+6 \quad +6$
$5x=2x+10$
$-2x \quad -2x$
$\frac{3x}{3}=\frac{10}{3}$ $x=3\frac{1}{3}$

$3\frac{1}{3}+5=8\frac{1}{3}$

$3y-6=8\frac{1}{3}$
$+6 \quad +6$
$\frac{3y}{3}=\frac{14\frac{1}{3}}{3}$ $y=4\frac{7}{9}$

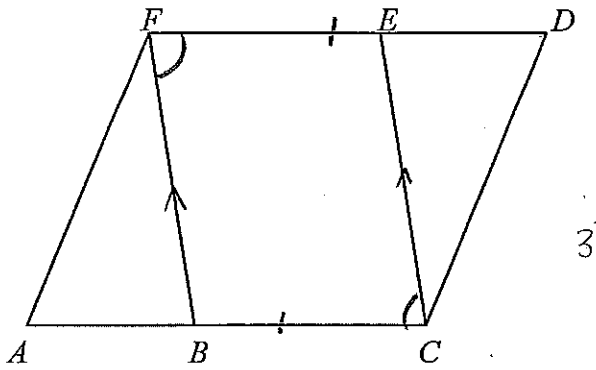
[A] $x = -\frac{2}{3}; y = \frac{31}{9}$

[B] $x = \frac{3}{2}; y = -\frac{9}{43}$

[C] $x = \frac{10}{3}; y = -\frac{9}{43}$

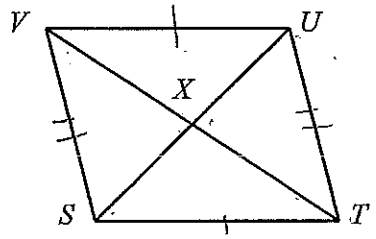
[D] $x = \frac{10}{3}; y = \frac{43}{9}$

18. Given: $ACDF$ is a parallelogram and $\overline{FB} \parallel \overline{EC}$
Prove: $BCEF$ is a parallelogram



S	R
1) $ACDF$ is $\square$, $\overline{FB} \parallel \overline{EC}$	1) Given
2) $\overline{FD} \cong \overline{AC}$	2) Opposite sides are congruent
3) $BCEF$ is $\square$	3) If opposite sides are $\cong$, then $\square$

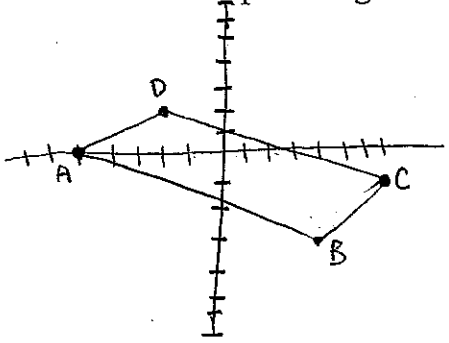
19. Given: $\overline{VU} \cong \overline{ST}$ and $\overline{SV} \cong \overline{TU}$
Prove: $VX = XT$



S	R
1) $\overline{VU} \cong \overline{ST}$, $\overline{SV} \cong \overline{TU}$	1) Given
2) $VUTS$ is $\square$	2) If one pair of sides are $\cong$ and $\parallel$, then $\square$.
3) $VX \cong XT$, $SX \cong XU$	3) Diagonals bisect each other

20. Draw a figure in the coordinate plane and write a two-column coordinate proof.
~~Given~~: Quadrilateral $ABCD$ with $A(-5, 0)$, $B(4, -3)$, $C(7, -1)$, $D(-2, 2)$
~~Prove~~: $ABCD$ is a parallelogram

$\frac{y_2-y_1}{x_2-x_1}$ = slope

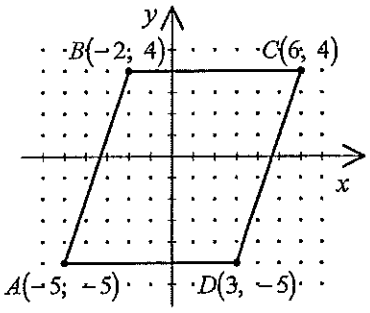


$AD \rightarrow \frac{2-0}{-2+5} \rightarrow \boxed{\frac{2}{3}}$

$BC \rightarrow \frac{-1+3}{7-4} \rightarrow \boxed{\frac{2}{3}}$ } same

21. Use the distance formula to determine whether $ABCD$ below is a parallelogram.

$$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$



$BC \rightarrow \sqrt{(6+2)^2+(4-4)^2}$

$8^2+0^2 \rightarrow \sqrt{64} \rightarrow \boxed{8}$

$AD \rightarrow \sqrt{(3+5)^2+(-5+5)^2}$

$8^2+0^2 \rightarrow \sqrt{64} \rightarrow \boxed{8}$

} same

$BA \rightarrow \sqrt{(-5+2)^2+(-5-4)^2}$

$-3^2+-9^2 \rightarrow 9+81 \rightarrow \sqrt{90} \rightarrow \sqrt{9}\sqrt{10} \rightarrow \boxed{3\sqrt{10}}$

$CD \rightarrow \sqrt{(3-6)^2+(-5-4)^2}$

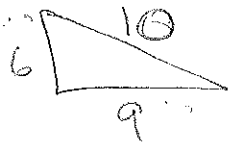
$-3^2+-9^2 \rightarrow 9+81 \rightarrow \sqrt{90} \rightarrow \sqrt{9}\sqrt{10} \rightarrow \boxed{3\sqrt{10}}$

} same

parallelogram

key

CLOSURE QUESTION
Describe how to classify a triangle with side lengths 6, 9, and 10.



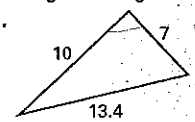
$36+81 \quad 100$

$117 > 100$

acute

EXAMPLE 1
The triangles below appear to be right triangles. Tell whether they are right triangles.

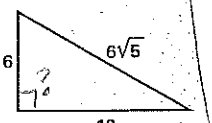
a.



No! $149 + 100$

$149 \neq 179.56$

b.



$36 + 144 = 6\sqrt{5} \cdot 6\sqrt{5}$

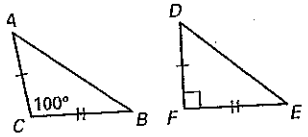
$180 = 36.5$

$180 = 180$

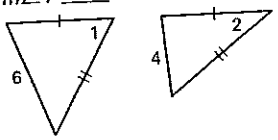
yes!

Exercises 1–4, complete with <, >, or =.

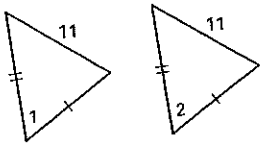
1. $AB \geq DE$



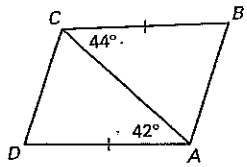
2. $m\angle 1 \geq m\angle 2$



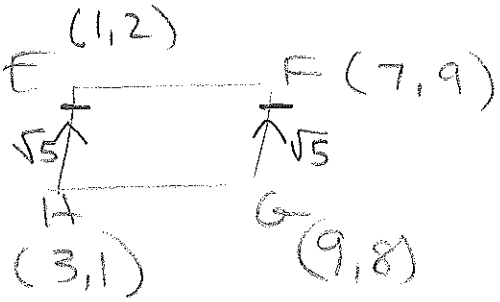
3. $m\angle 1 = m\angle 2$



4. $AB \geq CD$



2. Prove that *EFGH* is a parallelogram by showing that a pair of opposite sides are both congruent and parallel. Use *E*(1, 2), *F*(7, 9), *G*(9, 8), and *H*(3, 1).



Slope EH $\frac{-1}{2}$

Slope FG $= \frac{-1}{2}$

EH $\sqrt{(2)^2+(1)^2}$

$\sqrt{5}$

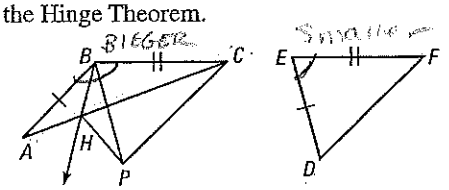
$FG = \sqrt{(2)^2+(1)^2}$

$FG \sqrt{5}$

31. **PROOF** Prove Theorem 5.14, the Hinge Theorem.

GIVEN ▶ $\overline{AB} \cong \overline{DE}, \overline{BC} \cong \overline{EF}$, $m\angle ABC > m\angle DEF$

PROVE ▶ $AC > DF$



Explain:

Because $\angle B$ is > than $\angle E$,

AC must be > than DE