

Name _____

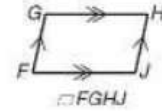
Date _____

Period _____

Notes 6-2: Properties of Parallelograms

- Objectives: 1. Prove and apply properties of parallelograms.
2. Use properties of parallelograms to solve problems.

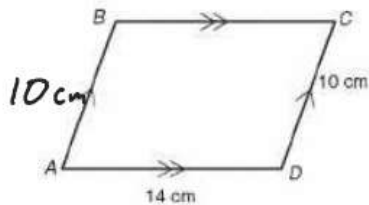
A parallelogram is a quadrilateral with 2 pairs of Parallel sides.
All parallelograms, such as $\square FGHI$, have the following properties.



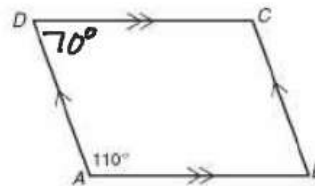
Properties of Parallelograms	
$\overline{FG} \cong \overline{HI}$ $\overline{GH} \cong \overline{FI}$	$\angle F \cong \angle H$ $\angle G \cong \angle I$
Opposite sides are <u>Congruent</u> .	Opposite <u>Angles</u> are congruent.
$m\angle F + m\angle G = 180^\circ$ $m\angle G + m\angle H = 180^\circ$ $m\angle H + m\angle I = 180^\circ$ $m\angle I + m\angle F = 180^\circ$	$\overline{FP} \cong \overline{HP}$ $\overline{GP} \cong \overline{IP}$
Consecutive angles are <u>Supplementary</u> .	The diagonals <u>Bisect</u> each other.

Find each measure.

1. AB



2. $m\angle D$



Find each measure in $\square LMNP$.

3. ML

12 m

4. LP

10 m

5. $m\angle LPM$

62°

6. LN

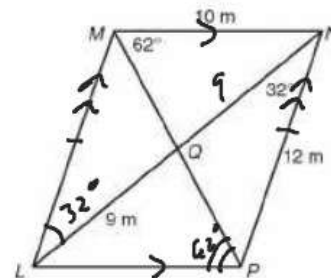
18 m

7. $m\angle MLN$

32°

8. QN

9 m



CDEF is a parallelogram. Find each measure.

9. CD

36

10. EF

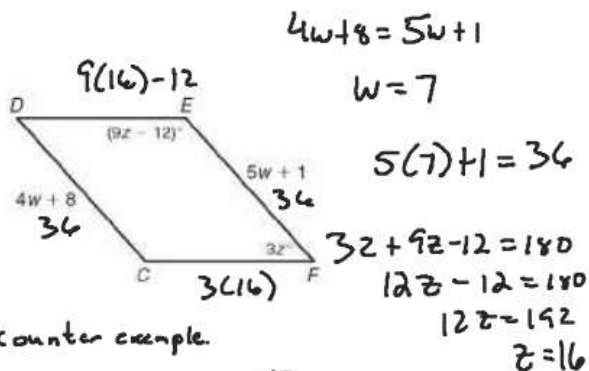
36

11. $m\angle F$

48

12. $m\angle E$

132



Classify each statement as true or false. If false give a counter example.

13. Every parallelogram is a quadrilateral.

True

14. Every quadrilateral is a parallelogram.

trapezoid kite

False

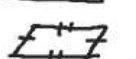
15. All angles of a parallelogram are congruent.



opposite \angle 's \cong

False

16. All sides of a parallelogram are congruent.



opposite sides \cong

False

17. In $\square RSTU$, $\overline{RS} \parallel \overline{TU}$.

True

18. In $\square ABCD$, if $m\angle A = 50^\circ$, then $m\angle C = 130^\circ$.

opposite \angle 's \cong

False

19. In $\square XWYZ$, $\overline{XY} \cong \overline{WZ}$.

Diagonals are not \cong

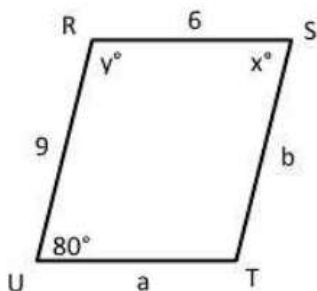
False

20. In $\square ABCD$, \overline{AC} and \overline{BD} bisect each other.

True

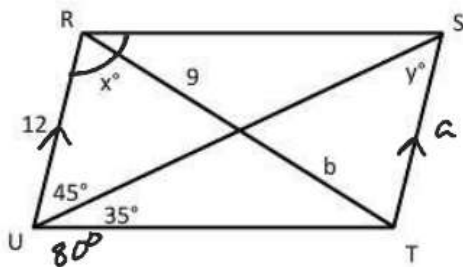
In Exercises 21 and 22, quad RSTU is a parallelogram. Find the values of x, y, a, and b.

21.



$a = 6$
 $b = 9$
 $x = 80^\circ$
 $y = 100^\circ$

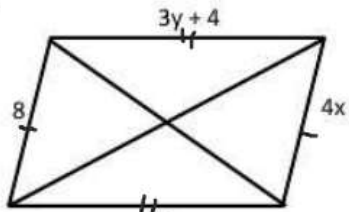
22.



$a = 12$
 $b = 9$
 $x = 100^\circ$
 $y = 45^\circ$

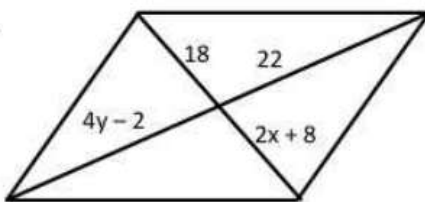
Each figure in Exs. 23 and 24 is a parallelogram with its diagonals drawn. Find the values of x and y.

23.



$4x = 8$
 $x = 2$
 $3y + 4 = 13$
 $y = 3$

24.



$2x + 8 = 18$
 $x = 5$
 $4y - 2 = 22$
 $4y = 24$
 $y = 6$

