

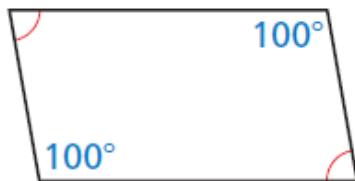
**Proving Parallelograms**

1. A quadrilateral has four congruent sides. Is the quadrilateral a parallelogram?  
Justify your answer

For #2 - 7, state which theorem you can use to show that the quadrilateral is a parallelogram.

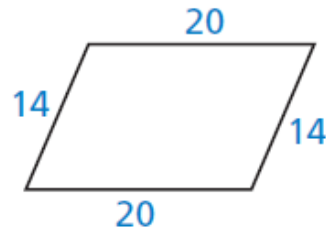
2. Theorem: \_\_\_\_\_

\_\_\_\_\_



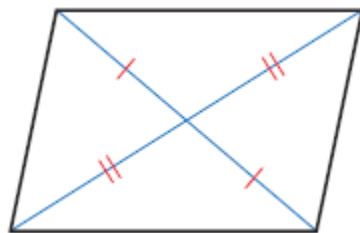
3. Theorem: \_\_\_\_\_

\_\_\_\_\_



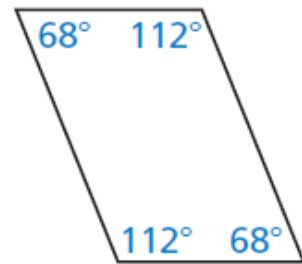
4. Theorem: \_\_\_\_\_

\_\_\_\_\_



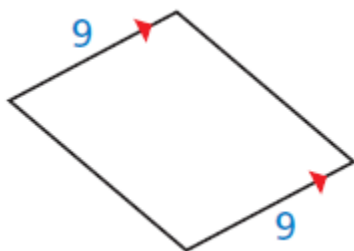
5. Theorem: \_\_\_\_\_

\_\_\_\_\_



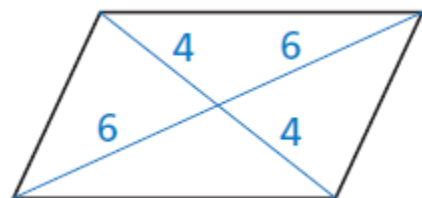
6. Theorem: \_\_\_\_\_

\_\_\_\_\_



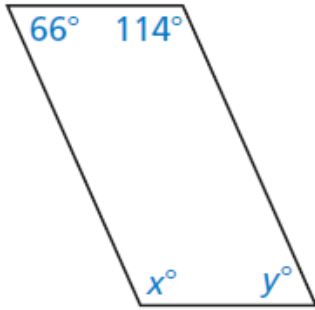
7. Theorem: \_\_\_\_\_

\_\_\_\_\_

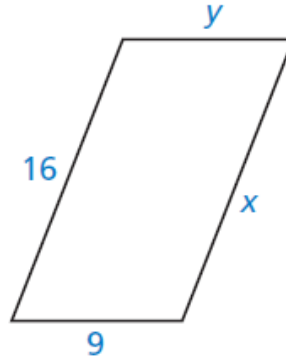


For #8 - 11, find the values of  $x$  and  $y$  that make the quadrilateral a parallelogram. Show all work.

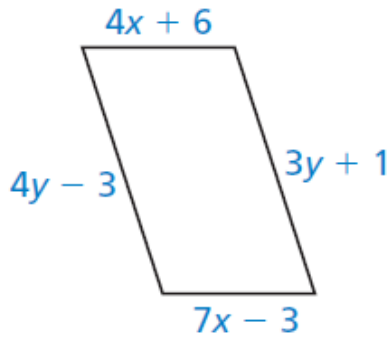
8.  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_



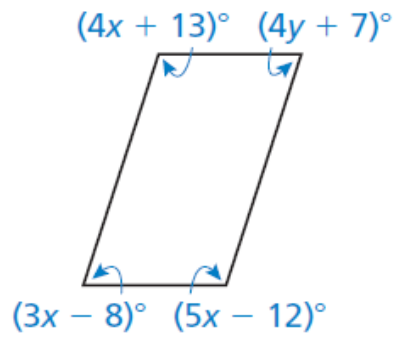
9.  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_



10.  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

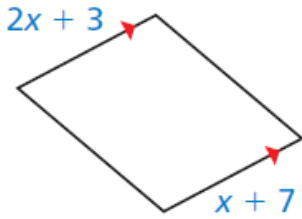


11.  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

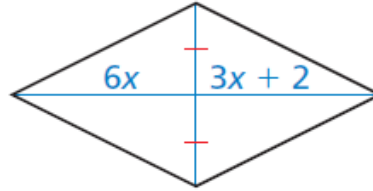


For #12 - 13, find the value of  $x$  that makes the quadrilateral a parallelogram. Show all work.

12.  $x =$  \_\_\_\_\_



13.  $x =$  \_\_\_\_\_



14. Prove that the quadrilateral is a parallelogram. Show work to justify your answer

$A(0, 1)$     $B(4, 4)$     $C(12, 4)$     $D(8, 1)$

Parallelogram? Yes/No

Slope<sub>AB</sub> = \_\_\_\_\_

Slope<sub>BC</sub> = \_\_\_\_\_

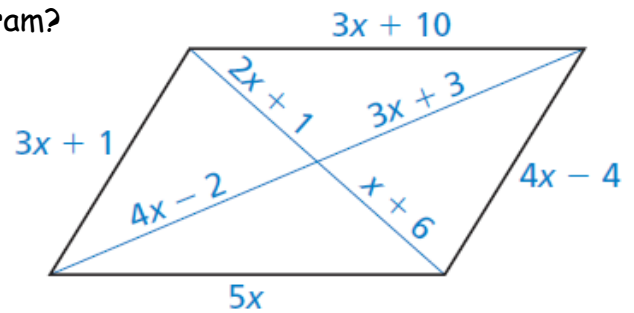
Slope<sub>CD</sub> = \_\_\_\_\_

Slope<sub>AD</sub> = \_\_\_\_\_

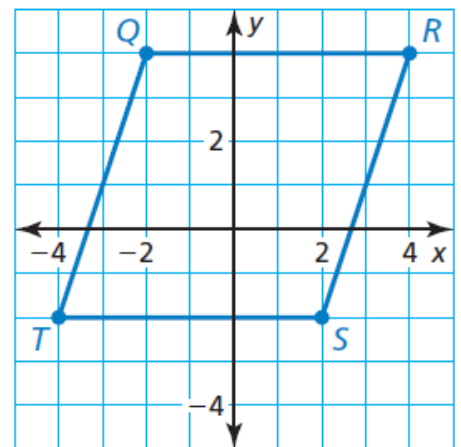
Reasoning:

15. What value of  $x$  makes the quadrilateral a parallelogram?  
 Explain your reasoning. Show all work.

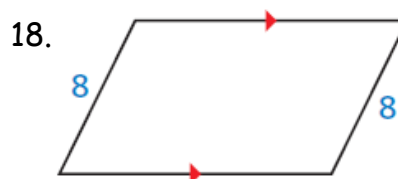
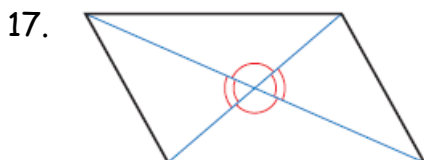
$x =$  \_\_\_\_\_



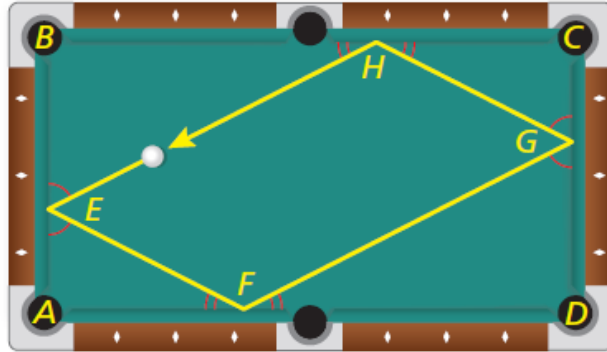
16. Your brother says to show that quadrilateral  $QRST$  is a parallelogram, you must show that  $\overline{QR} \parallel \overline{TS}$  and  $\overline{QT} \parallel \overline{RS}$ . Your sister says that you must show that  $\overline{QR} \cong \overline{TS}$  and  $\overline{QT} \cong \overline{RS}$ . Who is correct? Explain your reasoning.



For #17 - 18, your classmate incorrectly claims that the marked information can be used to show that the figure is a parallelogram. Draw a quadrilateral with the same marked properties that is clearly *not* a parallelogram.



19. You shoot a pool ball, and it rolls back to where it started, as shown in the diagram. The ball bounces off each wall at the same angle at which it hits the wall.



The ball hits the first wall at an angle of  $63^\circ$ . So  $m\angle AEF = m\angle BEH = 63^\circ$ .

a.  $m\angle AFE =$  \_\_\_\_\_

b. Explain why  $m\angle FGD = 63^\circ$ .

c.  $m\angle GHC =$  \_\_\_\_\_

d.  $m\angle EHB =$  \_\_\_\_\_

e. Is quadrilateral EFGH a parallelogram? Explain your reasoning.

Date Due \_\_\_\_\_

Period \_\_\_\_\_

20. Three interior angle measures of a quadrilateral are  $67^\circ$ ,  $67^\circ$ , and  $113^\circ$ . Is this enough information to conclude that the quadrilateral is a parallelogram? Explain your reasoning

Yes/No

21. Prove that the quadrilateral is a parallelogram. Show work to justify your answer

$E(-3, 0)$     $F(-3, 4)$     $G(3, -1)$     $H(3, -5)$    Parallelogram? Yes/No

Slope<sub>EF</sub> = \_\_\_\_\_Slope<sub>FG</sub> = \_\_\_\_\_Slope<sub>GH</sub> = \_\_\_\_\_Slope<sub>EH</sub> = \_\_\_\_\_

Reasoning:

