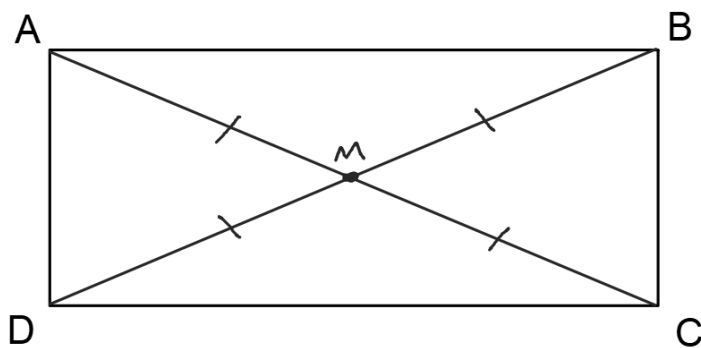


Special Parallelograms:

- Rectangle
- Rhombus
- Square

Rectangle:

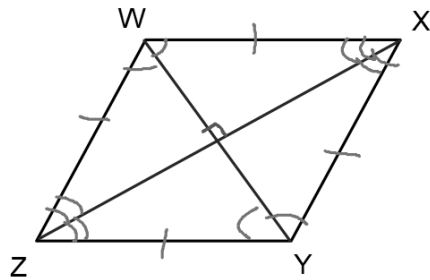
- Parallelogram
- Special Properties
 - Equiangular — 4 right \angle 's
 - Diagonals are Congruent



$$\overline{AC} \cong \overline{BD}$$

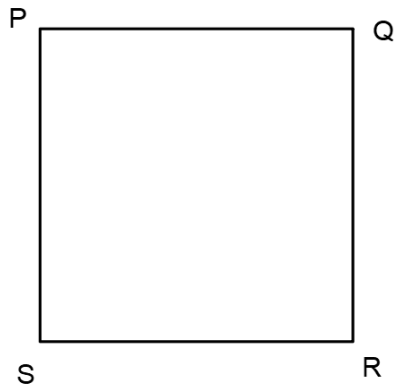
Rhombus:

- Parallelogram
- Special Properties
 - Equilateral
 - Diagonals are perpendicular
 - Diagonals are angle bisectors



Square:

- Parallelogram
 - Special Properties
 - Equilateral
 - Equiangular
 - Diagonals are perpendicular
 - Diagonals are angle Bisectors
- * Diagonals are \cong*



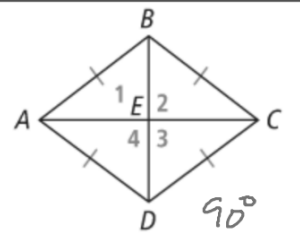
Put in X in the box if the shape **always** has the given property.

Property	Parallelogram	Rectangle	Rhombus	Square	Kite	Trapezoid	Isos Trap
Both pairs of opposite sides are \parallel	X	X	X	X			
Exactly 1 pair of opposite sides are \parallel						X	X
Diagonals are \perp			X	X	X		
Diagonals are \cong		X		X			X
Diagonals bisect each other	X	X	X	X			
Both pairs of opposite sides are \cong	X	X	X	X			
Exactly 1 pair of opposite sides are \cong							X
All sides are \cong			X	X			
Both pairs of opposite \angle 's are \cong	X	X	X	X			
Exactly 1 pair of opposite \angle 's are \cong					X		
All \angle 's are \cong		X		X			

A. Parallelogram $ABCD$ is a rhombus. What are the measures of $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$?

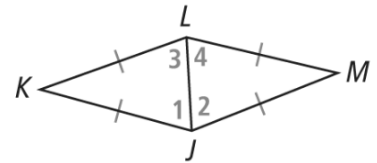
All four sides of a rhombus are congruent.

SOLUTION



B. Parallelogram $JKLM$ is a rhombus. How are $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ related?

$$\overline{JL} \cong \overline{JL}$$



What is WY ? = 8

Enter your answer.

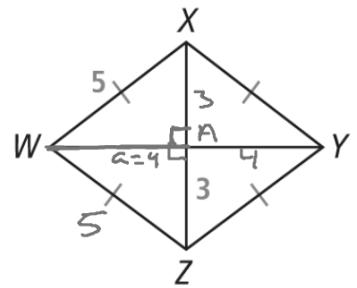
$$a^2 + b^2 = c^2$$

$$a^2 + 3^2 = 5^2$$

$$a^2 + 9 = 25$$

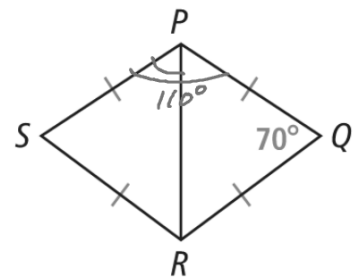
$$a^2 = 16$$

$$a = 4$$



What is $m\angle RPS$?

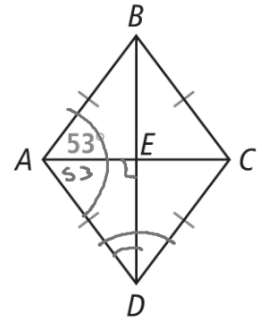
Enter your answer.



Quadrilateral $ABCD$ is a rhombus. What is $m\angle ADE$?

SOLUTION

37°



Quadrilateral $GHJK$ is a rhombus. What is GH ?

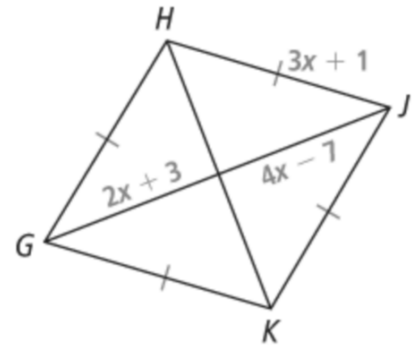
SOLUTION

$$2x + 3 = 4x - 7$$

$$10 = 2x$$

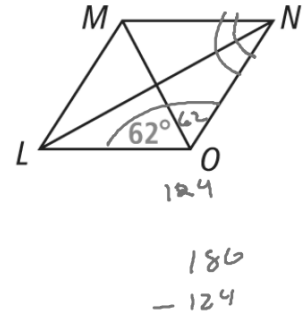
$$x = 5$$

$$\begin{aligned} GH &= 3(5) + 1 \\ &= 16 \end{aligned}$$



2. a. The quadrilateral is a rhombus. What is $m\angle MNO$?

Enter your answer.

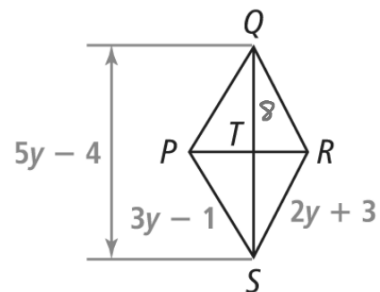


The quadrilateral is a rhombus. What is QT ?

After your answer: $3y - 1 = 2y + 3$

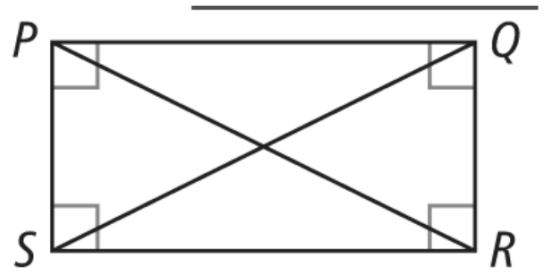
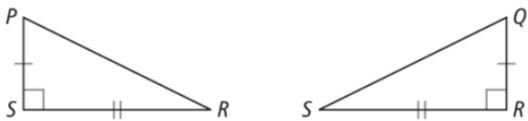
$$y = 4$$

$$5(4) - 4 = \frac{16}{2} = 8$$



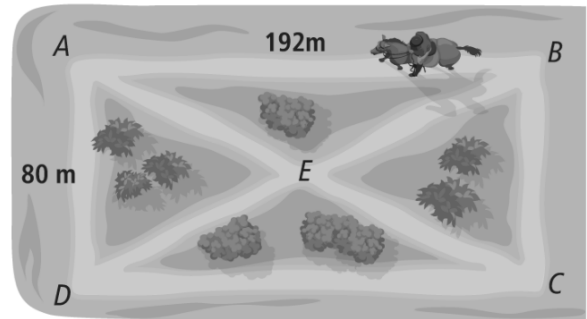
Given: $PQRS$ is a rectangle.

Prove: $\overline{PR} \cong \overline{QS}$



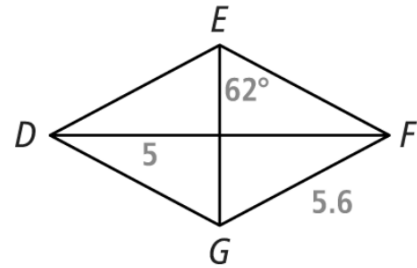
Statements	Reasons
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)
7)	7)
8)	8)

Paul is training his horse to run the course at a pace of 4 meters per second or faster. Paul rides his horse from D to C to E to B in 1 minute 30 seconds. The figure $ABCD$ is a rectangle. Did he make his goal?



Use rhombus $DEFG$ to find DF .

Enter your answer.



Use rhombus $DEFG$ to find $m\angle DFG$.

Use rhombus $DEFG$ to find EG .

Use rectangle $MNPQ$ to find MP .

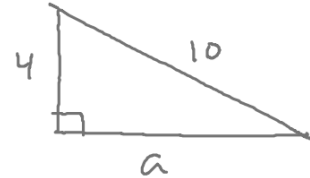
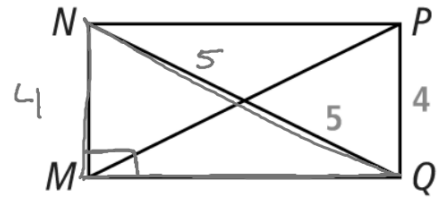
Enter your answer.

$$a^2 + 4^2 = 10^2$$

$$a^2 + 16 = 100$$

$$a^2 = 84$$

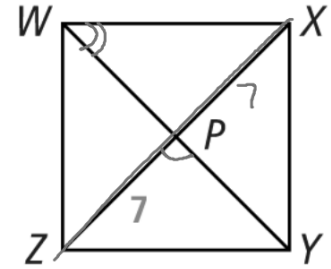
$$a = \sqrt{84} \approx 9.2$$



8. Use rectangle $MNPQ$ to find MQ . Round to the nearest tenth.

Use square $WXYZ$ to find $m\angle YPZ$.

Enter your answer.



Use square $WXYZ$ to find $m\angle XWP$.

Use square $WXYZ$ to find $\angle XZ$.

What is the value of x ?

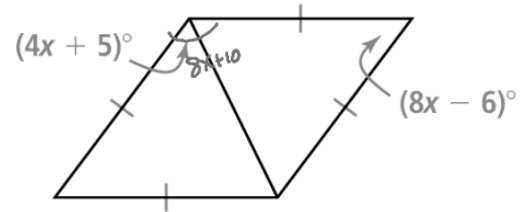
enter your answer

$$8x + 10 + 8x - 6 = 180$$

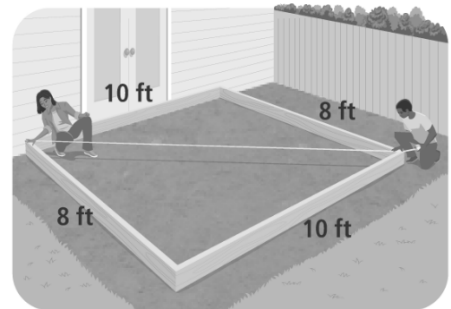
$$16x + 4 = 180$$

$$16x = 176$$

$$x = 11$$

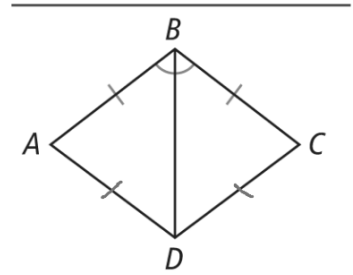


Ashton measures the diagonals for his deck frame and finds that they are congruent. Will the deck be rectangular?



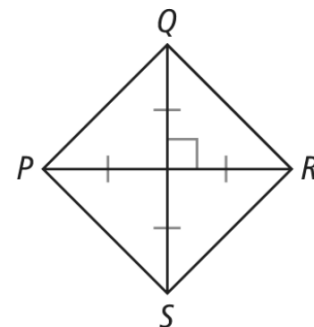
Can you conclude whether the parallelogram is a rhombus, a square, or a rectangle? Explain.

A. Parallelogram $ABCD$



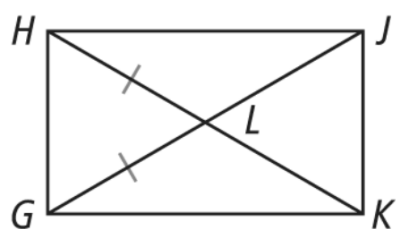
Can you conclude whether the parallelogram is a rhombus, a square, or a rectangle? Explain.

B. Parallelogram $PQRS$

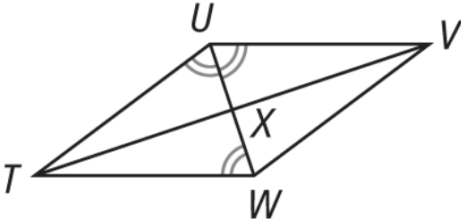


SOLUTION

4. a. Is the parallelogram a rhombus, a square, or a rectangle? Explain.



4. b. Is the parallelogram a rhombus, a square, or a rectangle? Explain.



Quadrilateral $STUV$ is a rhombus. What are the values of x and y ?

SOLUTION

