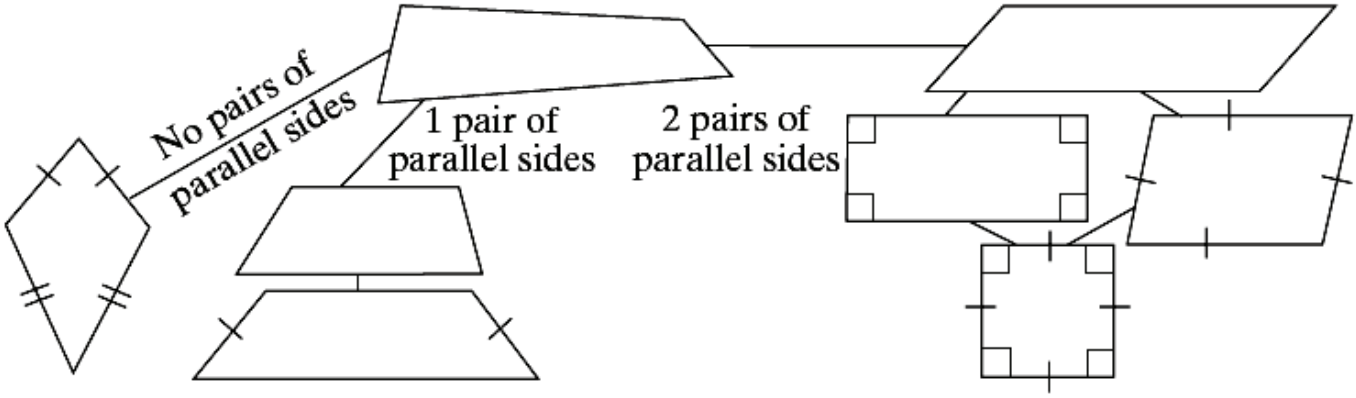
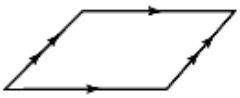
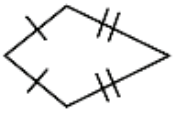
Name_____ Class_____

Special Quadrilaterals

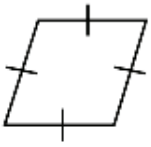




A [ ] is a quadrilateral with both pairs of opposite sides _____ _____.

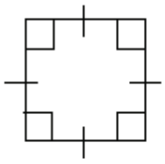


A [ ] is a quadrilateral with two pairs of _____ congruent and no _____ _____ congruent.

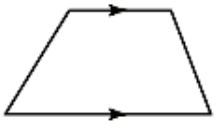


A [ ] is a parallelogram with four_____ _____.

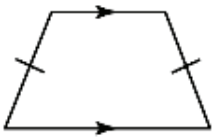
A [ ] is a parallelogram with four_____ _____.



A [ ] is a parallelogram with four_____ _____ and four _____.

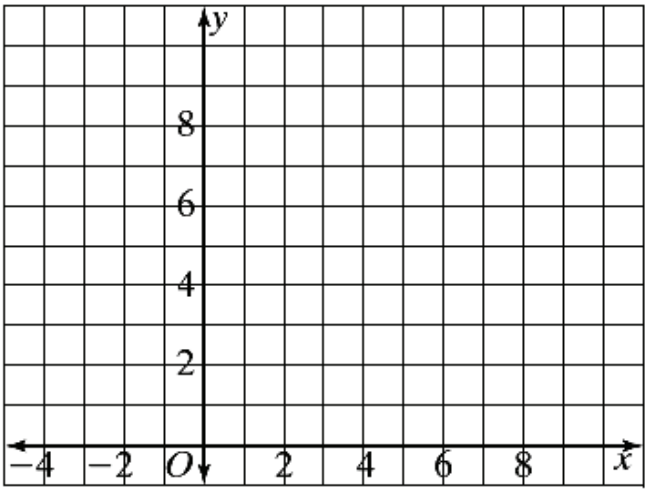


A [ ] is a quadrilateral with _____ _____ _____.



An _____ _____ is a trapezoid whose nonparallel sides are congruent.

Classifying by Coordinate Methods Determine the most precise name for the quadrilateral with vertices $Q(-4, 4)$, $B(-2, 9)$, $H(8, 9)$, and $A(10, 4)$. Graph quadrilateral $QBHA$.



Find the slope of each side.

Slope of $\overline{QB} = \dfrac{9-4}{-2-(-4)} = \square$

Slope of $\overline{BH} = \dfrac{9-9}{8-(\square)} = \square$

Slope of $\overline{HA} = \dfrac{4-\square}{10-\square} = \square$

Slope of $\overline{QA} = \dfrac{\square-\square}{\square-\square} = \square$

$\overline{BH}$ is parallel to $\overline{QA}$ because their slopes are $\square$.

$\overline{HA}$ is not parallel to $\overline{QB}$ because their slopes are $\square$.

One pair of opposite sides is parallel, so $QBHA$ is a $\square$.

Next, use the distance formula to see whether any pairs of sides are congruent.

$QB = \sqrt{(-2-(-4))^2 + (9-\square)^2} = \sqrt{4+\square} = \square$

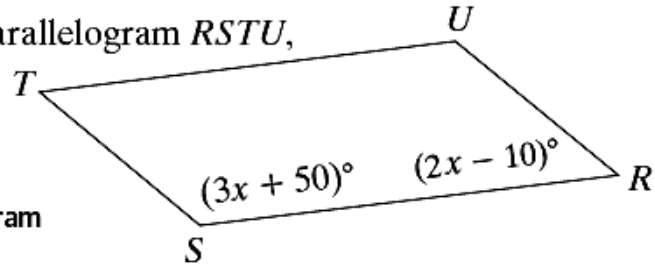
$HA = \sqrt{(10-8)^2 + (\square-\square)^2} = \sqrt{\square+\square} = \square$

$BH = \sqrt{(8-(-2))^2 + (\square-\square)^2} = \sqrt{\square+\square} = \square$

$QA = \sqrt{(-4-\square)^2 + (\square-\square)^2} = \sqrt{\square+\square} = \square$

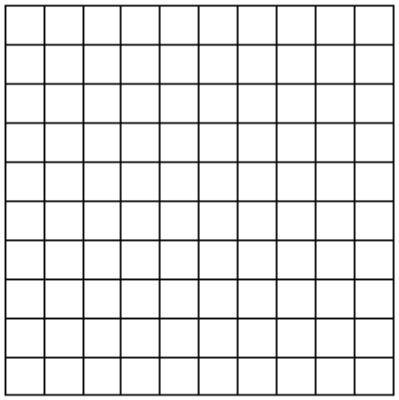
Because $QB = \square$, $QBHA$ is $\square$.

Using the Properties of Special Quadrilaterals In parallelogram $RSTU$, $m\angle R = 2x - 10$ and $m\angle S = 3x + 50$. Find x.



$RSTU$ is a parallelogram.	**Given**
$\overline{ST} \parallel$ ☐	**Definition of parallelogram**
$m\angle R + m\angle S =$ ☐	**If lines are parallel, then interior angles on the same side of a transversal are** ☐.
☐ + ☐ = 180	**Substitute** ☐ **for** $m\angle R$ **and** ☐ **for** $m\angle S$.
☐ + ☐ = 180	**Simplify.**
☐ = ☐	**Subtract 40 from each side.**
$x =$ ☐	**Divide each side by 5.**

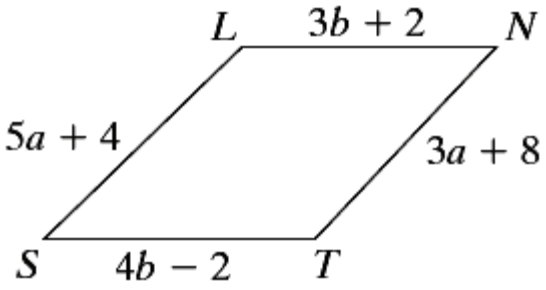
1. a. Graph quadrilateral $ABCD$ with vertices $A(-3, 3)$, $B(2, 4)$, $C(3, -1)$, and $D(-2, -2)$.



b. Classify $ABCD$ in as many ways as possible.

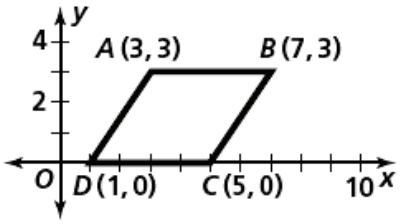
c. Which name gives the most information about $ABCD$? Explain.

2. Find the values of the variables in the rhombus. Then find the lengths of the sides.

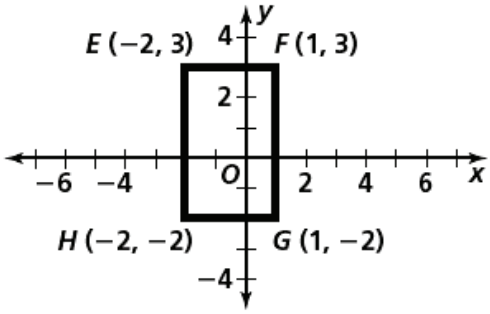


Determine the most precise name for each quadrilateral.

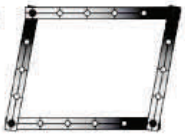
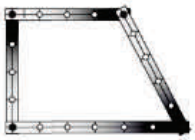
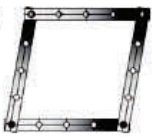
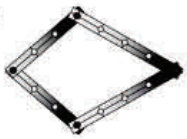
1. _____



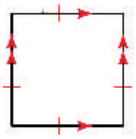
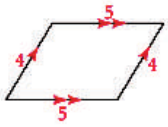
2. _____

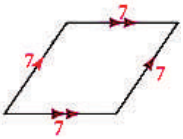


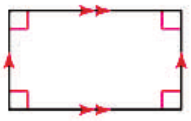
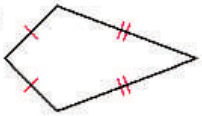
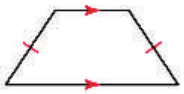
These quadrilaterals are made from a toy building set. Judging by appearance, classify each quadrilateral in as many ways as possible.

1. 
2. 
3. 
4. 
5. 
6. 

Determine the most precise name for each quadrilateral.

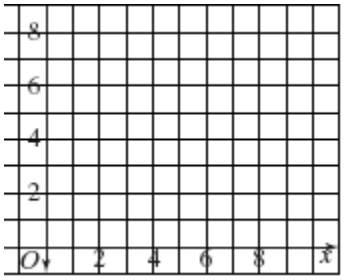
7. 
8. 

9. 

10. 
11. 
12. 

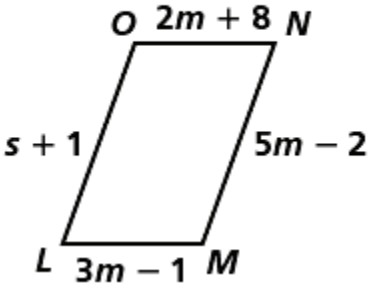
Graph and label each quadrilateral with the given vertices. Then determine the most precise name for each quadrilateral.

$A(3, 5), B(7, 6), C(6, 2), D(2, 1)$



Find the values of the variables. Then find the lengths of the sides of each quadrilateral.

parallelogram $LONM$



square $FGHI$