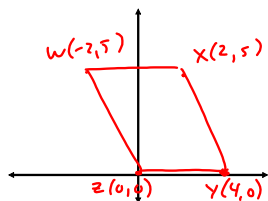


Mental Floss: Fri, Feb 3rd

Find the coordinates of point M , the intersection of the diagonals of $\square WXYZ$.

$W(-2, 5), X(2, 5), Y(4, 0), Z(0, 0)$



Midpoint of \overline{WY}

$$x = \frac{-2+4}{2} \quad y = \frac{5-0}{2}$$

$$x = 1 \quad y = 2.5$$

Midpoint of \overline{XZ}

$$x = \frac{2+0}{2} \quad y = \frac{5-0}{2}$$

$$x = 1 \quad y = 2.5$$

$M(1, 2.5)$

Properties of Parallelograms

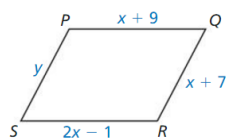
- Opp sides \parallel
- Opp sides \cong
- Opp angles \cong
- Consecutive angles supp
- Diagonals bisect each other

Proving Parallelograms

- Prove both pairs opp sides \parallel
- Prove both pairs opp sides \cong
- Prove both pairs opp angles \cong
- **Prove 1 pair opp angles both \parallel and \cong**
- Prove diagonals bisect each other

Example #1 Finding Side Lengths of a Parallelogram

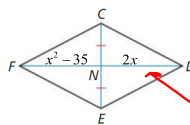
For what values of x and y is quadrilateral $PQRS$ a parallelogram?



$2x - 1 = x + 9$
 $x = 10$
 $y = 10 + 7$
 $y = 17$

Example #2 Finding Diagonal Lengths of a Parallelogram

For what value of x is quadrilateral $CDEF$ a parallelogram?

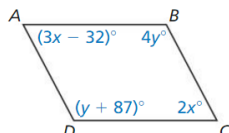


$x^2 - 35 = 2x$
 $x^2 - 2x - 35 = 0$
 $(x + 5)(x - 7) = 0$
 $x = -5, 7$
 $2(-5) = -10$
 $x = 7$

Example #3

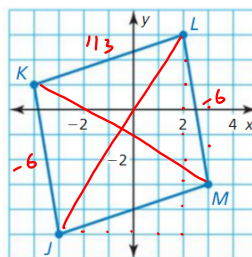
For what values of x and y is quadrilateral $ABCD$ a parallelogram? Explain your reasoning.

$3x - 32 = 2x$
 $x = 32$
 $4y = y + 87$
 $3y = 87$
 $y = 29$



Example #4






Show that a quadrilateral $JKLM$ is a parallelogram.



SLOPES
 $1/3$ & -6
LENGTHS
 $\sqrt{40}$ & $\sqrt{37}$
MIDPOINTS
 $M(-\frac{1}{2}, -1)$

Concept Summary

Ways to Prove a Quadrilateral Is a Parallelogram

1. Show that both pairs of opposite sides are parallel.	
2. Show that both pairs of opposite sides are congruent.	
3. Show that both pairs of opposite angles are congruent.	
4. Show that one pair of opposite sides are congruent and parallel.	
5. Show that the diagonals bisect each other.	

Homework

7.3 p.381 #5-8,12,17-20,23,33,34