

5.1 Warm-Up

In Exercises 1–4, use $A(0, 10)$, $B(24, 0)$, and $C(0, 0)$.

1. Find AB .

2. Find the midpoint of \overline{CA} .

3. Find the midpoint of \overline{AB} .

4. Find the slope of \overline{AB} .

$$\begin{aligned} 1. \quad AB &= \sqrt{10^2 + 24^2} \\ &= \sqrt{100 + 576} \\ &= \sqrt{676} \\ &= 26 \end{aligned}$$

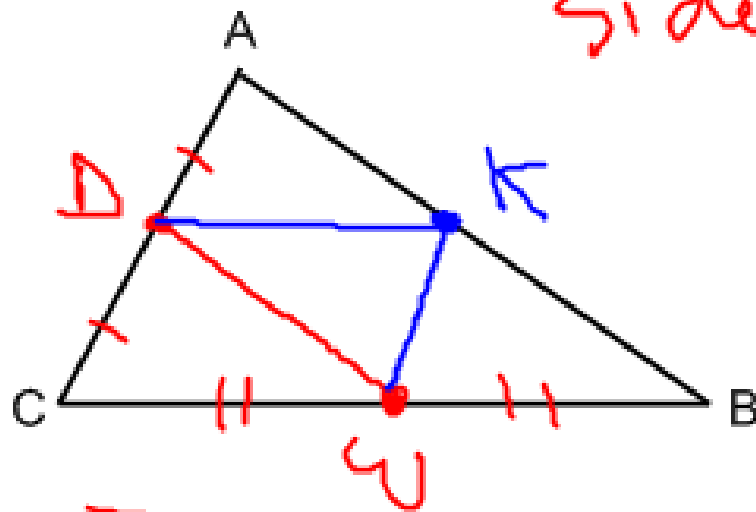
$$2. \quad \left(\frac{0+0}{2}, \frac{10+0}{2} \right) \\ (0, 5)$$

$$3. \quad \left(\frac{0+24}{2}, \frac{10+0}{2} \right) \\ (12, 5)$$

$$4. \quad \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 0}{0 - 24} = \frac{10}{-24} = -\frac{5}{12}$$

midsegment of a triangle:

a segment that connects
the midpoints of 2
sides of a \triangle .



\overline{DW} is a midsegment of $\triangle ABC$.

Goal: Find relationship b/w midsegment and other parts of the triangle.

1. Classify your triangle.
2. Label the vertices A, B, and C.
3. Find the midpoint of sides AB and AC.
4. Label the midpoints D and E and draw the midsegment.
5. Use a ruler and protractor to find the relationship b/w segment DE and other parts of the triangle.

Move to work with partner.

Distribute triangles and rulers.

Midsegment Theorem

A midsegment of a triangle is parallel to the third side and is half as long as that side.

$$2AC = HJ$$

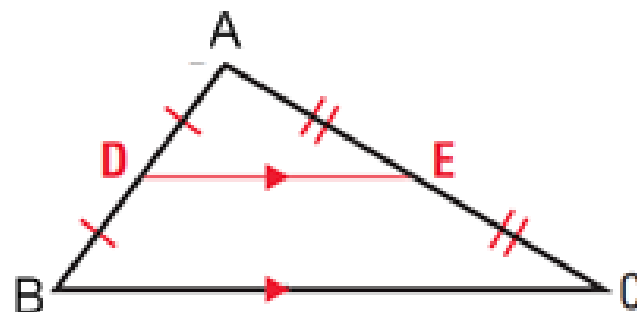
$$25. AC = \frac{1}{2} HJ$$

$$3y - 5 = \frac{1}{2}(4y + 2)$$

$$3y - 5 = 2y + 1$$

$$y = 6$$

$$AC = HB = 3 \cdot 6 - 5 = 13$$

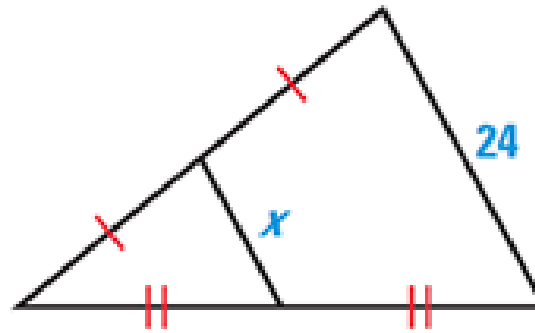


$$\overline{DE} \parallel \overline{BC}$$

$$DE = \frac{1}{2} BC$$

$$2 \overline{DE} = \overline{BC}$$

Find the value of x.



$$\frac{1}{2} \cdot 24 = 12 \neq x$$

Try this homework with your partner:

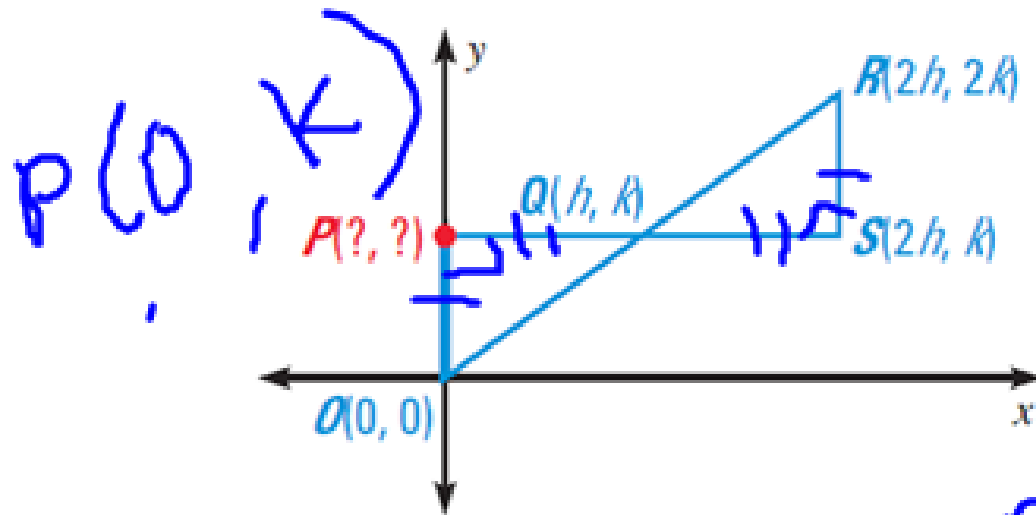
p 298

#'s 3-13 odd, 25, 29, 37

Discuss # 13.

APPLYING VARIABLE COORDINATES Find the coordinates of the red point(s) in the figure. Then show that the given statement is true.

29. $\triangle OPQ \cong \triangle RSQ$



$\angle P \cong \angle S$

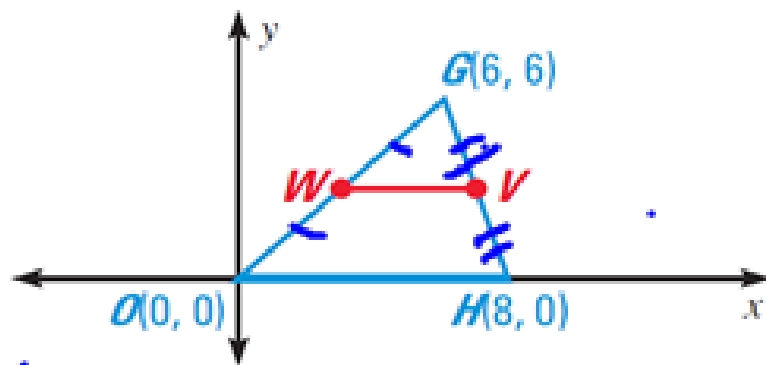
$\triangle's \cong$ by SAS.

$OP = k - 0 = k$
 $RS = 2k - k = k$
 $\overline{OP} \cong \overline{RS}$

$PQ = h - 0 = h$
 $SQ = 2h - h = h$
 $\overline{PQ} \cong \overline{SQ}$

37. **GIVEN** ▶ $O(0, 0)$, $G(6, 6)$, $H(8, 0)$,
 \overline{WV} is a midsegment.

PROVE ▶ $\overline{WV} \parallel \overline{OH}$ and $WV = \frac{1}{2}OH$



① $W = \left(\frac{6+0}{2}, \frac{6+0}{2} \right) = (3, 3)$

$V = \left(\frac{6+8}{2}, \frac{6+0}{2} \right) = (7, 3)$

② m of $\overline{HO} = 0$
 m of $\overline{WV} = 0$
So $\overline{WV} \parallel \overline{OH}$

③

$WV = 7 - 3$
 $= 4$

$OH = 8 - 0 = 8$

$4 = \frac{1}{2} \cdot 8$

So $WV = \frac{1}{2}OH$.

Add to previous homework:

#'s 4-14 even, 24, 26, 30, 36, 47-52

✓
review