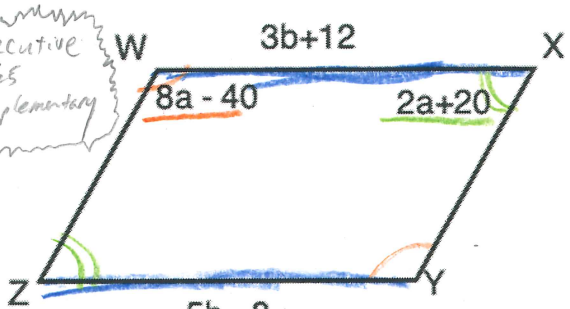
Solutions

CO-C11a

Practice Assessment

Consider parallelogram WXYZ.



1. Find the measure of $\angle Z$

Consecutive Angles Supplementary

$\angle W + \angle X = 180°$

$8a - 40 + 2a + 20 = 180°$

$10a - 20 = 180°$

$10a = 200$

$a = 20$

plug into $\angle X$: $2(20) + 20 = 60°$

Opposite Angles $\cong$ So $\angle Z = 60°$

2. Find the length of $\overline{ZY}$

Opposite Sides $\cong$

$5b - 8 = 3b + 12$

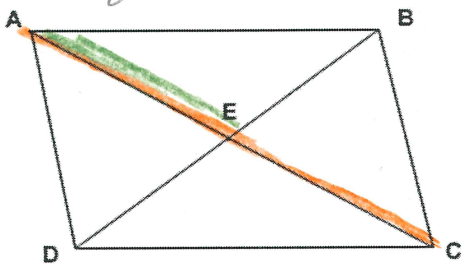
$-3b \quad -3b$

$2b - 8 = 12$

$+8 \quad +8$

$\frac{2b}{2} = \frac{20}{2} \Rightarrow b = 10$ → plug in $5(10) - 8 = 42$

Consider parallelogram ABCD with diagonals intersecting at E.



3. If AC = 12x-6, and AE = 2x+9, find the length of EC.

Diagonals bisected

$12x - 6 = 2(2x + 9)$

$12x - 6 = 4x + 18$

$-4x \quad +6 \quad -4x \quad +6$

$\frac{8x}{8} = \frac{24}{8}$

$x = 3$

plug in ($\overline{AE} \cong \overline{EC}$)

$AE = 2(3) + 9$

$6 + 9 = 15$

CO-C11b

Consider rectangle ABCD.

4. If AR = $4x - 2$ and BR = $x + 7$, find the length of AC.

Rectangle

$\overline{AR} \cong \overline{BR}$

$4x - 2 = x + 7$

$-x \quad +2 \quad -x \quad +2$

$3x = 9$

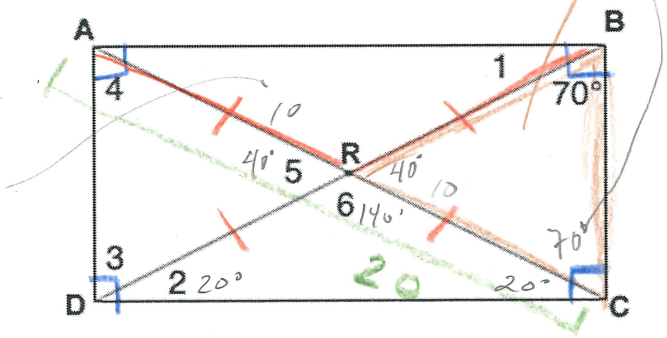
$x = 3$ → plug in

$AR = 4(3) - 2$

$12 - 2$

$= 10$

ISOS.



5. Find the angle measures:

$\angle 1 = 20°$ $\angle 2 = 20°$ $\angle 3 = 70°$

$\angle 4 = 70°$ $\angle 5 = 40°$ $\angle 6 = 140°$

6. True or false (if false, write or show an explanation): All rectangles are squares.

False. Rectangles can be squares, but need not be if sides are not $\cong$.

Both rectangles, only B is a square.

Consider rhombus DCBA with diagonals intersecting at E.

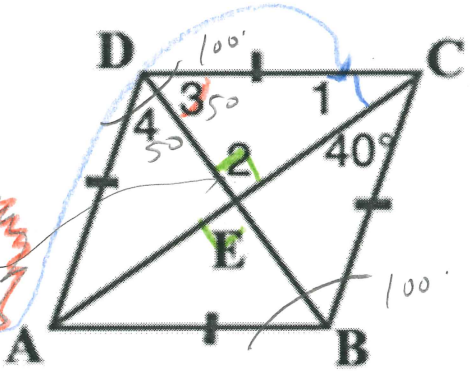
7. Find the angle measures

$\angle 1 = 40°$ $\angle 2 = 90°$ $\angle 3 = 50°$ (△'s make 180°)

$\angle 4 = 50°$ $\angle ABC = 100°$

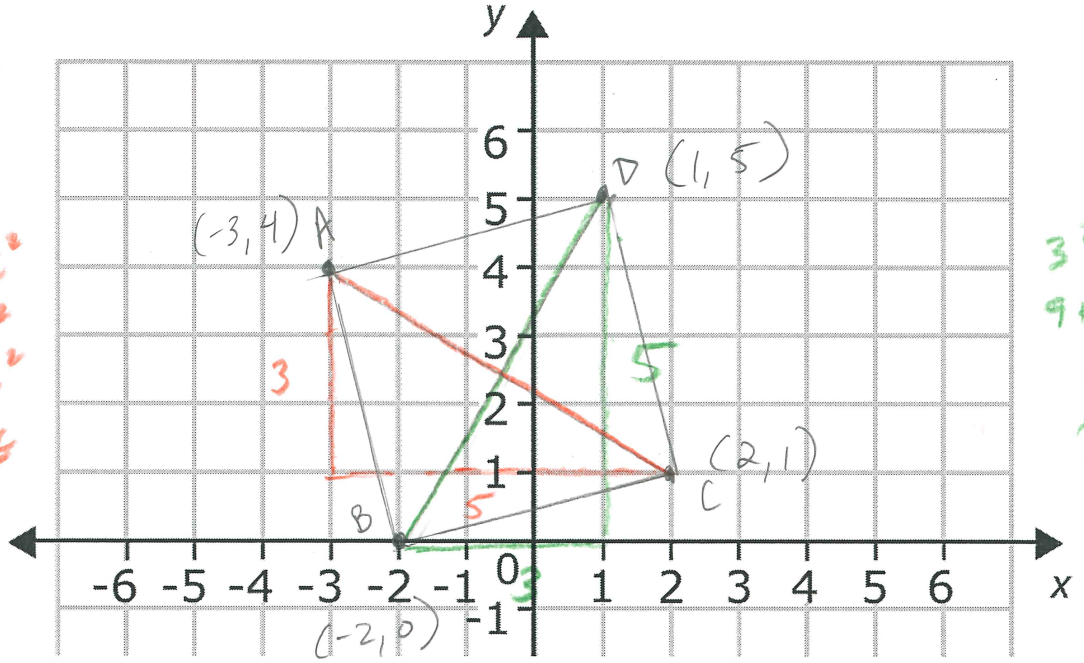
opposite ∠'s $\cong$

Rhombus
- diagonals ⊥
- diagonals bisect angles



GPE-B4a

Classify the quadrilateral formed by the points A(-3,4) B(-2,0) C(2,1) and D(1,5).



Method 2

$3^2+5^2=AC^2$
$9+25=AC^2$
$34=AC^2$
$\sqrt{34}=AC$

$3^2+5^2=BD^2$
$9+25=BD^2$
$34=BD^2$
$\sqrt{34}=BD$

8. Is it a parallelogram? Justify your answer with numbers.

↳ Do the diagonals have the same midpoint?

$\overline{AC}$ midpoint: $\left(\frac{-3+2}{2}, \frac{4+1}{2}\right) \rightarrow \left(-\frac{1}{2}, \frac{5}{2}\right)$ ← Same, so yes!

$\overline{BD}$ midpoint $\left(\frac{-2+1}{2}, \frac{0+5}{2}\right) \rightarrow \left(-\frac{1}{2}, \frac{5}{2}\right)$

Method 1

9. Is it a rectangle? Justify your answer with numbers.

↳ are diagonals the same length?

$\overline{AC}$: $\sqrt{(-3-2)^2+(4-1)^2}$

$\sqrt{(-5)^2+(3)^2} = \sqrt{25+9} = \sqrt{34}$

$\overline{BD}$: $\sqrt{(1-(-2))^2+(5-0)^2}$

$\sqrt{(3)^2+(5)^2}$

$\sqrt{9+25} = \sqrt{34}$

Same! So, yes.

10. Is it a rhombus? Justify your answer with numbers.

↳ are diagonals' slopes ⊥? [opposite reciprocal]

Slope of AC: $\frac{4-1}{-3-2} = \frac{3}{-5}$

Slope of BD: $\frac{0-5}{-2-1} = \frac{-5}{-3} = \frac{5}{3}$

$-\frac{3}{5} \perp \frac{5}{3}$ So, yes!

11. So what type of quadrilateral is it? Explain.

Parallelogram ✓
Rectangle ✓
Rhombus ✓

→ Square. meets criteria of all 3 types.