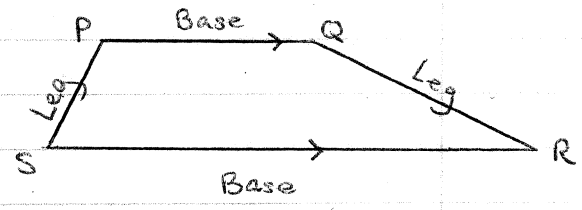
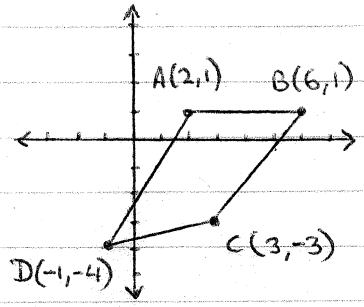
Geometry Ch 8-5 Exer, pg 540 #1, 5-9, 13-16, 18-23, 25-27

1. In trapezoid PQRS, $\overline{PQ} \parallel \overline{RS}$. Sketch PQRS and label its bases and legs.



A, B, C, D are the vertices of a quadrilateral. Determine whether ABCD is a trapezoid.

5. A(2,1), B(6,1), C(3,-3), D(-1,-4)



$m_{AB} = \frac{1-1}{6-2} = \frac{0}{4} = \boxed{0}$

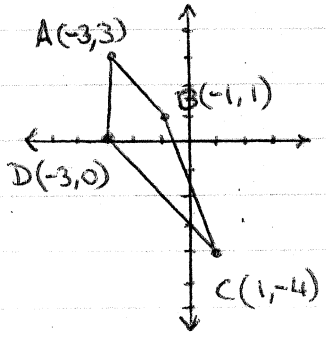
$m_{CD} = \frac{-3-(-4)}{3-(-1)} = \boxed{\frac{1}{4}}$

$m_{BC} = \frac{-3-1}{3-6} = \frac{-4}{-3} = \boxed{\frac{4}{3}}$

$m_{DA} = \frac{-4-1}{-1-2} = \frac{-5}{-3} = \boxed{\frac{5}{3}}$

Based on the slopes, no two line segments are parallel. ABCD <u>is</u> <u>not</u> a trapezoid.

6. A(-3,3), B(-1,1), C(1,-4), D(-3,0)



$m_{AB} = \frac{3-1}{-3-(-1)} = \frac{2}{-2} = \boxed{-1}$

$m_{CD} = \frac{0-(-4)}{-3-1} = \frac{4}{-4} = \boxed{-1}$

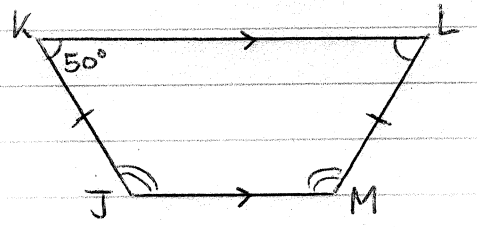
$m_{BC} = \frac{1-(-4)}{-1-1} = \boxed{\frac{5}{-2}}$

$m_{DA} = \frac{3-0}{-3-(-3)} = \frac{3}{0} = \boxed{\text{und}}$

There is one pair of parallel lines because AB and CD have the same slope.
AB and CD are the bases; BC and DA are the legs; ABCD <u>is</u> a trapezoid

Find the measures of $\angle J$, $\angle L$, and $\angle M$

7.



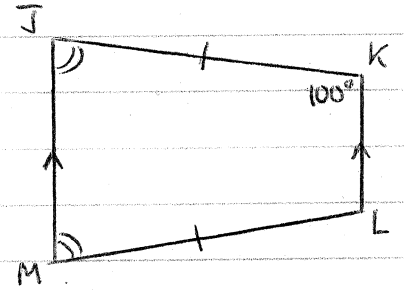
$\angle L \cong \angle K$; $\boxed{\angle L = 50°}$

$\angle J + \angle K = 180$

$\angle J + 50° = 180$

$\boxed{\angle J = 130°}$ $\boxed{\angle M = 130°}$

8.



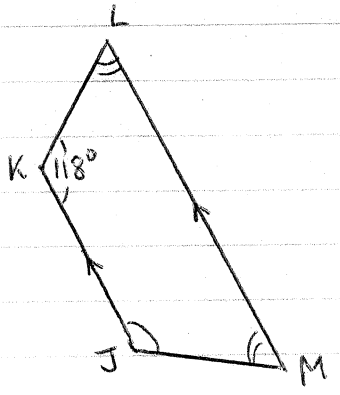
$\angle L \cong \angle K$; $\boxed{\angle L = 100°}$

$\angle J + \angle K = 180$

$\angle J + 100 = 180$

$\boxed{\angle J = 80}$ $\boxed{\angle M = 80}$

9.



$\angle J \cong \angle K$; $\boxed{\angle J = 118°}$

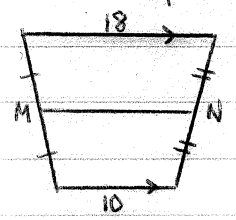
$\angle L + \angle K = 180$

$\angle L + 118 = 180$

$\boxed{\angle L = 62°}$ $\boxed{\angle M = 62°}$

Find the trapezoid's midsegment length.

13.



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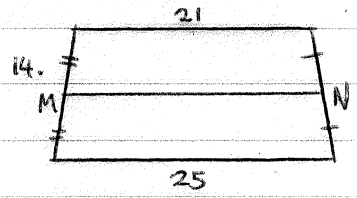

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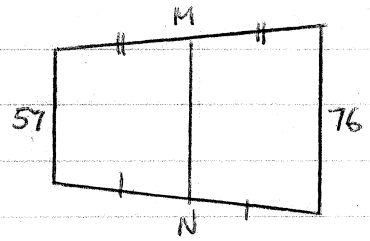


$MN = \frac{18+10}{2} = \frac{28}{2}$

$\boxed{MN = 14}$

$MN = \frac{21+25}{2} = \frac{46}{2}$

$\boxed{MN = 23}$

$MN = \frac{57+76}{2} = \frac{133}{2}$

$\boxed{MN = \frac{133}{2} = 66.5}$

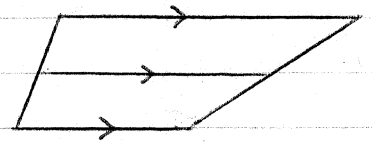
16. Which statement is not always true?

A. Base angles of isos. trap are $\cong$ okay

B. Mid-segment of trap is $\parallel$ to bases yes

C. Bases of a trap. are parallel. yes

D. Legs of a trap are congruent.

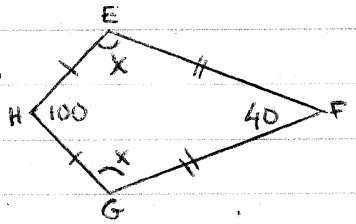


Only if the trapezoid is isosceles

EFGH is a kite. Find $m\angle G$.

The angles between the pairs of congruent sides are congruent

18.



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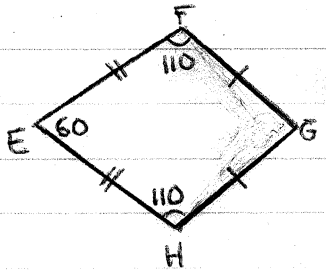

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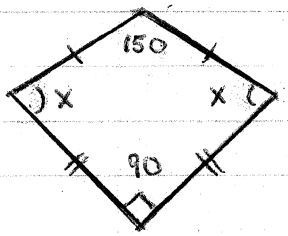


$100 + 40 + x + x = 360$

$2x = 360 - 140$

$2x = 220$

$\boxed{x = 110}$

$\boxed{\angle G = 110}$

$60 + 110 + \angle G + 110 = 360$

$\angle G + 280 = 360$

$\boxed{\angle G = 80}$

$x + x + 150 + 90 = 360$

$2x + 240 = 360$

$2x = 120$

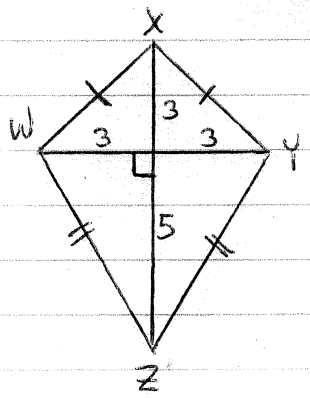
$x = 60$

$\boxed{\angle G = 60}$

Remember that the kite's diagonals are $\perp$

Find the side lengths for the given kite.

21.



$WX^2 = 3^2 + 3^2$

$WX^2 = 9 + 9 = 18$

$WX = \sqrt{18} = \sqrt{9 \cdot 2} = \sqrt{9}\sqrt{2}$

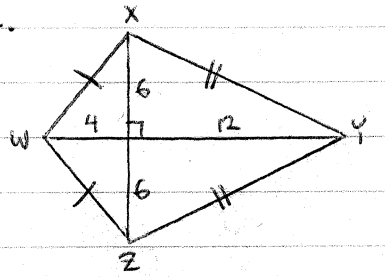
$\boxed{WX = 3\sqrt{2}}$; $\boxed{XY = 3\sqrt{2}}$

$ZY^2 = 3^2 + 5^2$

$ZY^2 = 9 + 25 = 34$

$\boxed{ZY = \sqrt{34}}$; $\boxed{ZW = \sqrt{34}}$

22.



$WX^2 = 4^2 + 6^2$

$WX^2 = 16 + 36 = 52$

$WX = \sqrt{52} = \sqrt{4 \cdot 13} = \sqrt{4}\sqrt{13}$

$\boxed{WX = 2\sqrt{13}}$

$\boxed{WZ = 2\sqrt{13}}$

$XY^2 = 6^2 + 12^2$

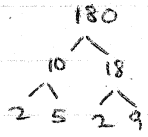
$XY^2 = 36 + 144 = 180$

$XY = \sqrt{180} = \sqrt{4 \cdot 9 \cdot 5}$

$XY = \sqrt{4}\sqrt{9}\sqrt{5}$

$\boxed{XY = 6\sqrt{5}}$

$\boxed{ZY = 6\sqrt{5}}$



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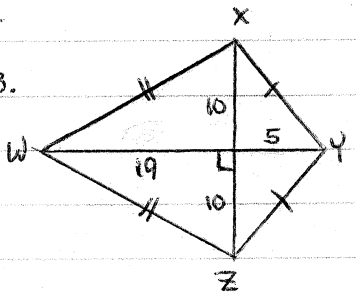


$WX^2 = 19^2 + 10^2$

$WX^2 = 361 + 100 = 461$

$WX = \sqrt{461}$

$\boxed{WX = \sqrt{461}}$

$\boxed{WZ = \sqrt{461}}$

$XY^2 = 10^2 + 5^2$

$XY^2 = 100 + 25 = 125$

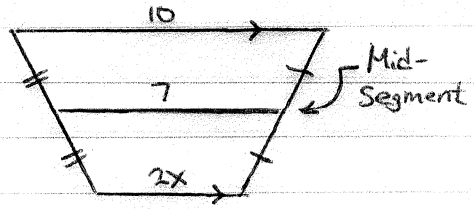
$XY = \sqrt{125} = \sqrt{25 \cdot 5} = \sqrt{25}\sqrt{5}$

$\boxed{XY = 5\sqrt{5}}$

$\boxed{ZY = 5\sqrt{5}}$

ALGEBRA: Find the value of x

25.



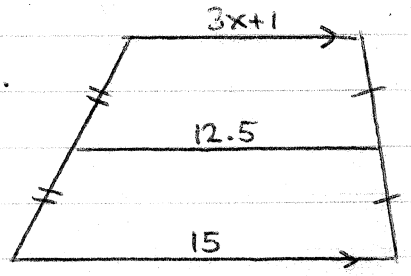
$$\frac{(10)+(2x)}{2} = 7$$

$$10 + 2x = 14$$

$$2x = 4$$

$$\boxed{x = 2}$$

26.



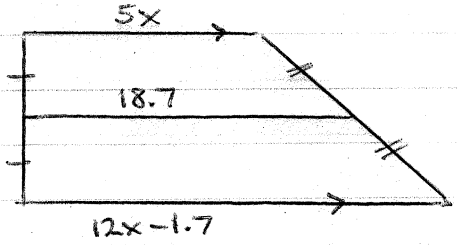
$$\frac{(3x+1)+(15)}{2} = 12.5$$

$$3x + 16 = 25$$

$$3x = 9$$

$$\boxed{x = 3}$$

27.



$$\frac{(5x)+(12x-1.7)}{2} = 18.7$$

$$17x - 1.7 = 37.4$$

$$17x = 39.1$$

$$\boxed{x = 2.3}$$