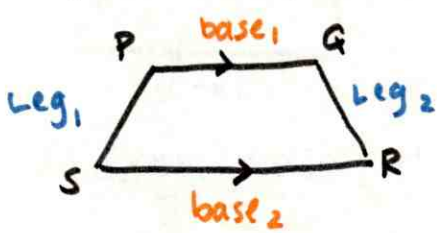


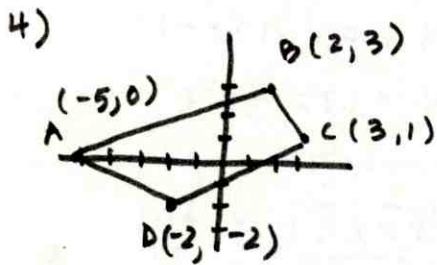
8.5 Trapezoids

1) Trapezoid PQRS, $\overline{PQ} \parallel \overline{RS}$. sketch and identify its bases and legs.



Bases
 \overline{PQ} and \overline{RS}

Legs
 \overline{PS} and \overline{QR}



slope \overline{AB} : $m = \frac{3}{7}$

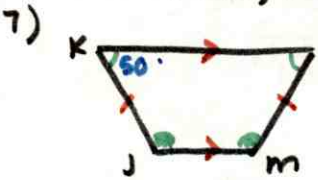
\overline{DC} : $m = \frac{3}{5}$

slope \overline{AD} : $m = -\frac{2}{3}$

\overline{BC} : $m = -\frac{2}{1}$

Not a trapezoid

Find the $m\angle J$, $m\angle L$ and $m\angle M$.

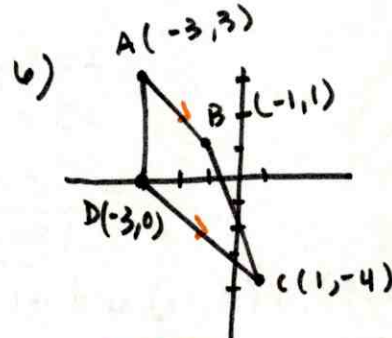


$m\angle L = 50$

$m\angle J = 180 - 50$

$m\angle J = 130$

$m\angle M$



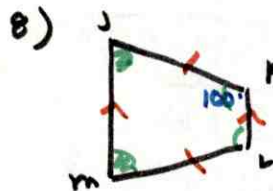
slope \overline{AB} : $m = -\frac{2}{2} = -1$

\overline{DC} : $m = -\frac{4}{4} = -1$

slope \overline{AD} : $m = \text{undefined}$

\overline{BC} : $m = -\frac{5}{2}$

$\overline{AB} \parallel \overline{DC}$
Trapezoid

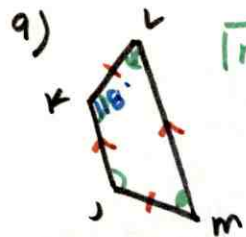


$m\angle L = 100$

$m\angle J = 180 - 100$

$m\angle J = 80$

$m\angle M$



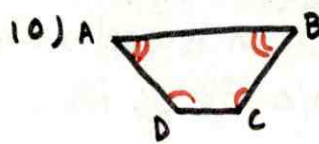
$m\angle J = 118$

$m\angle L = 180 - 118$

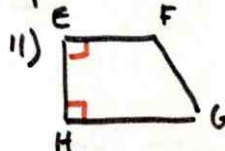
$m\angle L = 62$

$m\angle M$

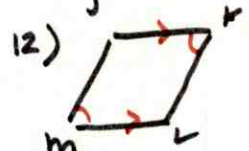
Determine if it's a trapezoid.



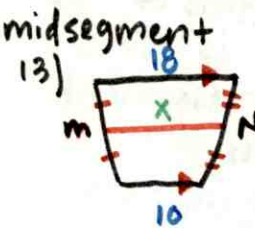
yes, base angles \cong
 \therefore isosceles trapezoid



yes, $\overline{EF} \parallel \overline{HG}$
by c1



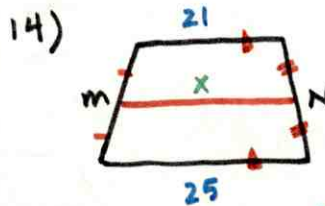
NO, opp \angle s \cong
 \therefore //gram



$x = \frac{18+10}{2}$

$x = \frac{28}{2}$

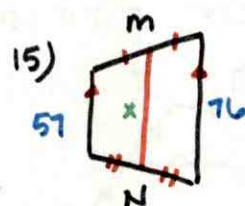
$MN = 14$



$x = \frac{21+25}{2}$

$x = \frac{46}{2}$

$MN = 23$



$x = \frac{57+76}{2}$

$x = \frac{133}{2}$

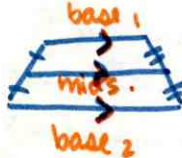
$MN = 66.5$

16) which statement is not always true?

A Base \angle s of isos. trap \cong .



B midsegment \parallel to bases.

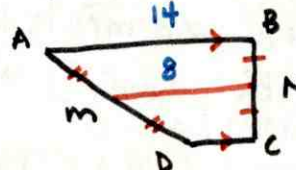


C Bases of trap. \parallel

D Legs of trap. are \cong only w/ isosceles



24) MN is a midsegment.



$DC = AB - MN$

$DC = 14 - 6$

$DC = 8$

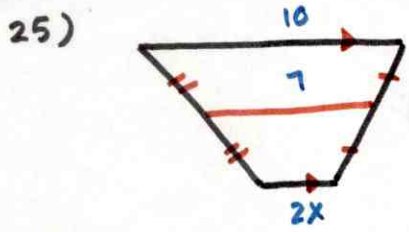
$MN = \frac{AB + DC}{2}$

$8 = \frac{14 + x}{2}$

$16 = 14 + x$

$DC = 2$

The ms. is the average of the bases.

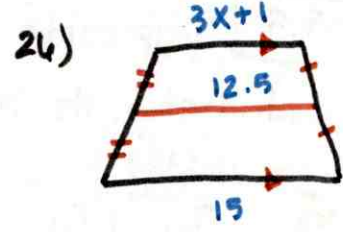


$$7 = \frac{(2x + 10)}{2}$$

$$14 = 2x + 10$$

$$4 = 2x$$

$$\boxed{x = 2}$$



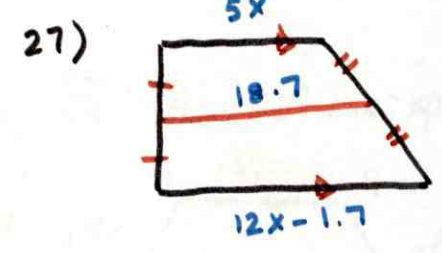
$$12.5 = \frac{(3x + 1 + 15)}{2}$$

$$25 = 3x + 1 + 15$$

$$25 = 3x + 16$$

$$9 = 3x$$

$$\boxed{x = 3}$$



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

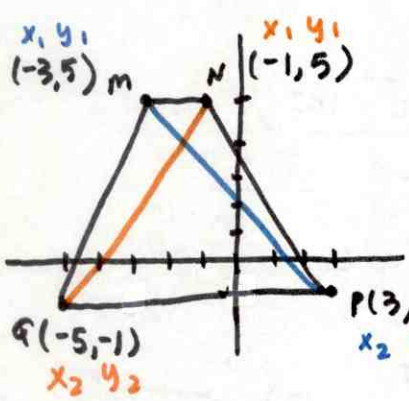
$$37.4 = 5x + 12x - 1.7$$

$$37.4 = 17x - 1.7$$

$$39.1 = 17x$$

$$\boxed{x = 2.3} \text{ or } \frac{39.1}{17}$$

28) $M(-3, 5)$, $N(-1, 5)$, $P(3, -1)$ and $Q(-5, -1)$
Find MP and NQ .



$$MP = \sqrt{(3 - (-3))^2 + (-1 - 5)^2}$$

$$= \sqrt{(6)^2 + (-6)^2}$$

$$= \sqrt{36 + 36}$$

$$= \sqrt{72} \sim 8.48$$

$$NQ = \sqrt{(-1 - (-5))^2 + (-1 - 5)^2}$$

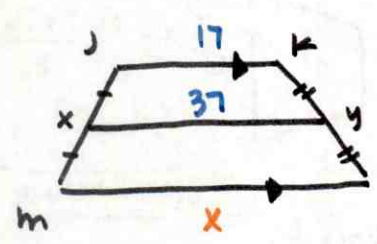
$$= \sqrt{(4)^2 + (-6)^2}$$

$$= \sqrt{16 + 36}$$

$$= \sqrt{52} \text{ or } 2\sqrt{13} \sim 7.2$$

- Trapezoid $MNPQ$ is not an isosceles trapezoid
b/c $\overline{MP} \neq \overline{NQ}$.

29) Trapezoid $JKLM$, $\overline{JK} \parallel \overline{LM}$, $JK = 17$.
The midsegment is \overline{xy} , and $xy = 37$.
Sketch $JKLM$. Find LM .

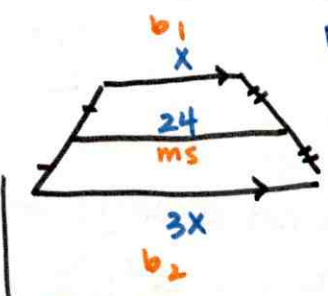


$$37 = \frac{(x + 17)}{2}$$

$$74 = x + 17$$

$$\boxed{LM = 57}$$

30) The ratio of the lengths of the bases of a trapezoid is 1:3.
The length of the midsegment is 24. Find the bases.



Ratio of bases = 1:3

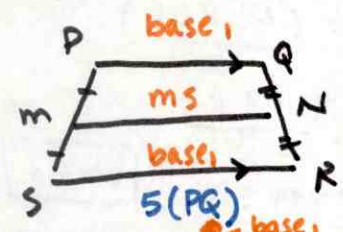
$$24 = \frac{(x + 3x)}{2}$$

$$48 = x + 3x$$

$$48 = 4x$$

$$x = 12$$

31) In trapezoid $PQRS$, $\overline{PG} \parallel \overline{RS}$ and \overline{MN} is the midsegment. If $RS = 5 \cdot PQ$, what is the ratio of MN to RS ?



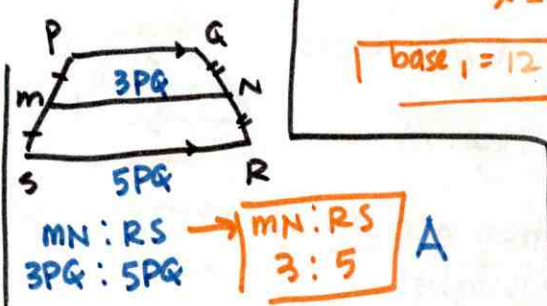
$$MN : RS$$

$$MN = \frac{(PQ + 5(PQ))}{2}$$

$$2MN = PQ + 5PQ$$

$$2MN = 6PQ$$

$$MN = 3PQ$$



$$\boxed{\text{base}_1 = 12} \quad \text{base}_2 = 3(12)$$

$$\boxed{\text{base}_2 = 36}$$

$$MN : RS$$

$$3PQ : 5PQ \rightarrow \boxed{3 : 5} \text{ A}$$