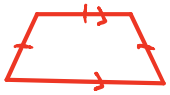
Quadrilaterals – Trapezoids

Homework Section 6.6 Name_____

If possible, draw a trapezoid that has the following characteristics. If the trapezoid cannot be drawn, explain why.

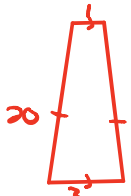
#1) 3 congruent sides



#2) congruent bases

Not possible. If the bases are congruent, it makes a parallelogram.

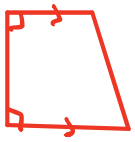
#3) a leg longer than both bases



#4) bisecting diagonals

Can't be done. Bisecting diagonals makes a parallelogram

#5) two right angles



#6) four acute angles

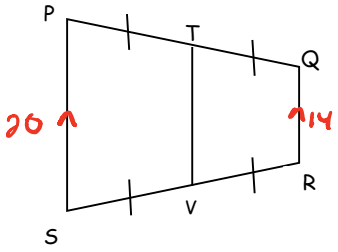
Not possible. A quadrilateral's angles sum to 360°

#7) one pair of opposite angles congruent

Not possible. If one pair of sides are congruent and a pair of opposite angles are congruent, it would be a parallelogram.

PQRS is an isoscelees trapezoid with bases $\overline{PS}$ and $\overline{QR}$. Use the figure and the given information to solve each problem.

#8) If PS = 20 and QR = 14, find TV.



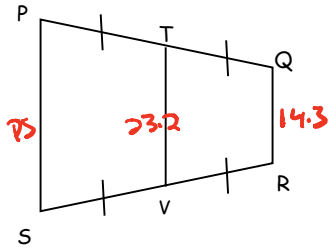
$TV = \frac{PS+QR}{2}$

$TV = \frac{(20)+(14)}{2}$

$TV = \frac{34}{2}$

$TV = 17$

#9) If QR = 14.3 and TV = 23.2, find PS.



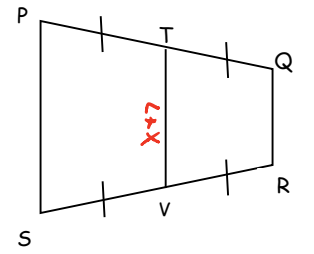
$TV = \frac{PS+QR}{2}$

$23.2 = \frac{PS+(14.3)}{2}$

$46.4 = PS + 14.3$

$32.1 = PS$

#10) If TV = x + 7 and PS + QR = 5x + 2, find x.



$TV = \frac{PS+QR}{2}$

$2 \cdot (x+7) = \frac{5x+2}{2} \cdot 2$

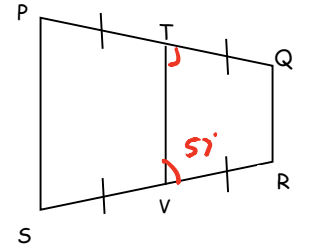
$2x+14 = 5x+2$

$14 = 3x+2$

$12 = 3x$

$4 = x$

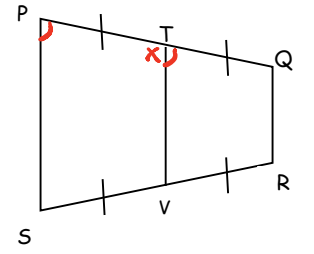
#11) If m∠RVT = 57, find m∠QTV.



$m\angle QTV = m\angle RVT$

$m\angle QTV = 57°$

#12) If m∠VTP = x, find m∠TPS in terms of x.



$m\angle TPS + m\angle VTP = 180°$

$m\angle TPS + x = 180$

$m\angle TPS = 180 - x$

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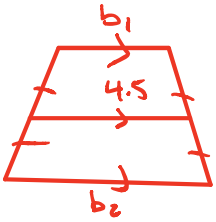
#13) If the measure of the median of an isosceles trapezoid is 4.5, what are the possible integral measures for the bases?



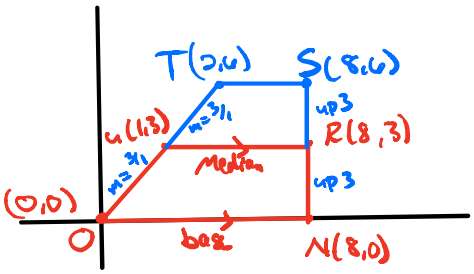
$$\text{Median} = \frac{b_1 + b_2}{2}$$

$$4.5 = \frac{b_1 + b_2}{2}$$

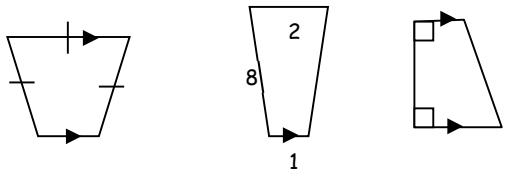
$$9 = b_1 + b_2$$

(1, 8)
(2, 7)
(3, 6)
(4, 5)

#14) $\overline{UR}$ is the median of a trapezoid TSNO with bases $\overline{ON}$ and $\overline{TS}$. If the coordinates of the points are U(1, 3), R(8, 3), O(0, 0), and N(8, 0), find the coordinates of T and S.



#1) #3) #5)



#2) Cannot be drawn
#4) Cannot be drawn: If the diagonals bisected, it would be a parallelogram.
#6) Cannot be drawn: no quadrilateral has four acute angles.
#7) Cannot be drawn: It would be a parallelogram.

#8)	17	#9)	32.1
#10)	4	#11)	57
#12)	180 – x	#13)	1, 8: 2, 7; 3, 6; 4, 5
#14)	T(2, 6), S(8, 6)		