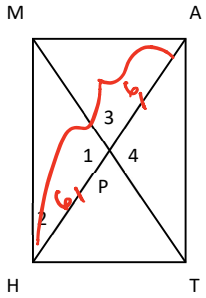
# Quadrilaterals – Rectangles

Homework Section 6.4 Name_____

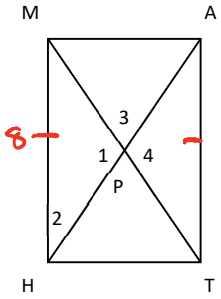
Use rectangle MATH and MNRS with the given information to solve each problem.

#1) HP = 6, find HA



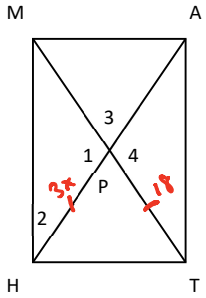

HP + PA = HA
6 + 6 = HA
12 = HA

#2) MH = 8, find AT.



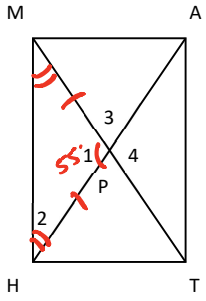

MH = AT
8 = AT

#3) HP = 3x and PT = 18, find x.



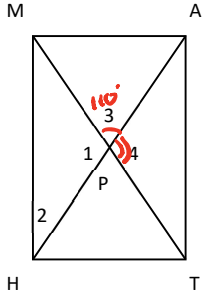

HP = PT
3x = 18
x = 6

#4) m∠1 = 55, find m∠2.



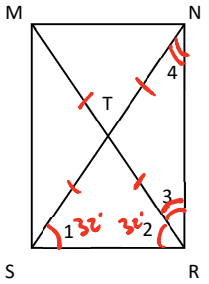

m∠1 + m∠2 + m∠HMP = 180°
55 + m∠2 + m∠2 = 180
55 + 2m∠2 = 180
2m∠2 = 125
m∠2 = 125/2

#5) m∠3 = 110, find m∠4.



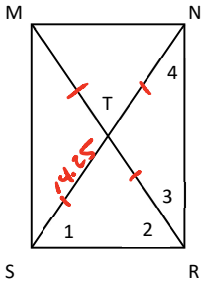

m∠3 + m∠4 = 180°
110° + m∠4 = 180°
m∠4 = 70°

#6) If m∠1 = 32, find the m∠2, m∠3, and m∠4.



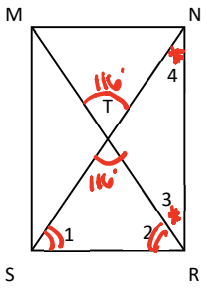

m∠2 = 32
m∠2 + m∠3 = 90°
32° + m∠3 = 90°
m∠3 = 58
m∠3 = m∠4
58 = m∠4

#7) If ST = 14.25, find MR.




MR = MT + TR
MR = 14.25 + 14.25
MR = 28.5

#8) If m∠MTN = 116, find m∠1 and m∠4.

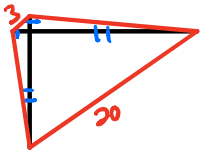



m∠1 + m∠4 + 116 = 180 (Angle Sum Th'm)
2m∠1 + 116 = 180
2m∠1 = 64
m∠1 = 32

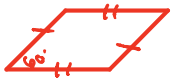
116 = m∠4 + m∠4 (Ext angle th'm)
116 = 2m∠4
58 = m∠4

Draw a counterexample to show that each statement below is false.

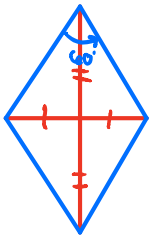
#9) If a quadrilateral has congruent diagonals, then it is a rectangle.




#10) If a quadrilateral has opposite sides congruent, then it is a rectangle.




#11) If a quadrilateral has diagonals that bisect each other, then it is a rectangle.

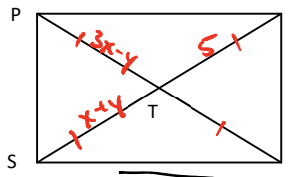


# Quadrilaterals – Rectangles

Homework Section 6.4 Name_____

Find the values of x and y in rectangle PQRS.

#12) PT = 3x – y, ST = x + y, TQ = 5




$PT = TQ$ $\quad 3x - y = 5$ $\quad ST = TQ$ $\quad x + y = 5$

$3x - y = 5$, $x + y = 5$ → $x = 5 - y$

$3(5-y) - y = 5$

$15 - 3y - y = 5$

$15 - 4y = 5$

$-4y = -10$

$y = \frac{10}{4}$

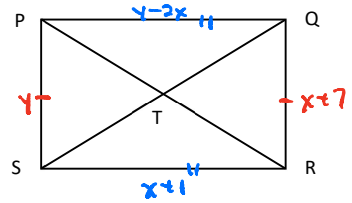
$y = \frac{5}{2}$

$x = \frac{10}{2} - \left(\frac{5}{2}\right)$

$x = \frac{5}{2}$

$\left(\frac{5}{2}, \frac{5}{2}\right)$

13) PS = y, QR = x + 7, PQ = y – 2x, SR = x + 1




$PQ = SR$ $\quad y - 2x = x + 1$ $\quad PS = QR$ $\quad y = x + 7$

$y - 2x = x + 1$, $y = x + 7$ → $y = x + 7$

$(x+7) - 2x = x + 1$

$-x + 7 = x + 1$

$7 = 2x + 1$

$6 = 2x$

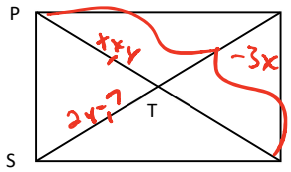
$3 = x$

$y = (3) + 7$

$y = 10$

$(3, 10)$

#14) PT = x + y, ST = 2y – 7, PR = -3x




$ST = PT$ $\quad 2y - 7 = x + y$ $\quad y - 7 = x$

$PT + TR = PR$ $\quad (x+y) + (x+y) = -3x$ $\quad 2x + 2y = -3x$ $\quad 2y = -5x$

$y - 7 = x$, $2y = -5x$ → $y - 7 = x$

$2y = -5(y-7)$

$2y = -5y + 35$

$7y = 35$

$y = 5$

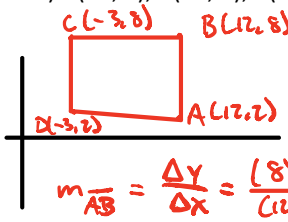
$(5) - 7 = x$

$-2 = x$

$(-2, 5)$

Determine whether ABCD is a rectangle. Explain

#15) A(12, 2), B(12, 8), C(-3, 8), D(-3, 2)




$m_{\overline{AB}} = \frac{\Delta y}{\Delta x} = \frac{(8)-(2)}{(12)-(12)} = \frac{6}{0} =$ und vertical

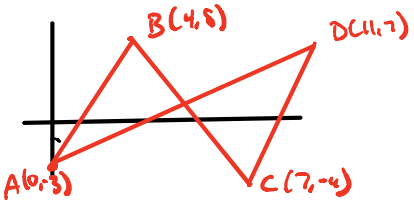
$m_{\overline{CD}} = \frac{\Delta y}{\Delta x} = \frac{(8)-(2)}{(-3)-(-3)} = \frac{6}{0} =$ und vertical

$m_{\overline{BC}} = \frac{\Delta y}{\Delta x} = \frac{(8)-(8)}{(-3)-(12)} = \frac{0}{-15} = 0$ horizontal

$m_{\overline{AD}} = \frac{\Delta y}{\Delta x} = \frac{(2)-(2)}{(-3)-(12)} = \frac{0}{-15} = 0$ horizontal

This is a rectangle because opposite sides are parallel and consecutive sides are ⊥.

#16) A(0, -3), B(4, 8), C(7, -4), D(11, 7)



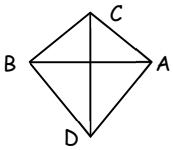

This is not a quadrilateral because so it can't be a rectangle.

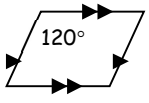
#1) 12 #2) 8 #3) 6

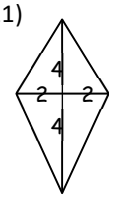
#4) 62.5 #5) 70 #6) 32, 58, 58

#7) 28.5 #8) 32, 58

#9) CD = AB, m∠ADB = 70° #10) #11)




#12) (2.5, 2.5) #13) (3, 10) #14) (-2, 5)

#15) Yes, opposite sides are parallel and consecutive sides are ~~parallel~~ ⊥.

#16) No, opposite sides are not parallel.