Name: _____ a)

Rectangle Properties Notes

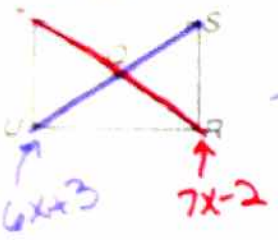
Properties of Rectangles (They take the properties of parallelograms)

- Opposite sides are congruent
- Opposite angles are congruent
- Consecutive angles are supplementary
- The diagonals of a parallelogram bisect each other

Plus...

- All four angles are right angles
- Diagonals are congruent

Example 1 In rectangle $RSTU$ above, $US = 6x + 3$ and $RT = 7x - 2$. Find x.



$6x+3=7x-2$ Diag's ≅

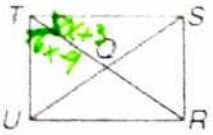
$-6x \quad -6x$

$3=x-2$

$+2 \quad +2$

$5=x$

Example 2 In rectangle $RSTU$ above, $m\angle STR = 8x + 3$ and $m\angle UTR = 16x - 9$. Find $m\angle STR$.



$8x+3+16x-9=90$ def of rect.

$24x-6=90$

$+6 \quad +6$

$24x=96$

$\frac{24x}{24}=\frac{96}{24}$

$x=4$

$8x+3$

$8(4)+3=35°$

3. If $AE = 3x + 3$ and $EC = 5x - 15$, find AC.

$3x+3=5x-15$ Diag's bis. each other

$-3x \quad -3x$

$3=2x-15$

$+15 \quad +15$

$18=2x$

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

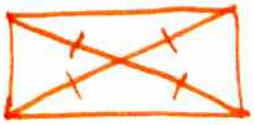
$9=x$

$3x+3=30$

$5x-15=30$

$AC=60$

4. If $DE = 6x - 7$ and $AE = 4x + 9$, find DB.



$4x+9=6x-7$ Diag's bis. each other ≅

$-4x \quad -4x$

$9=2x-7$

$+7 \quad +7$

$16=2x$

$\frac{16}{2}=\frac{2x}{2}$

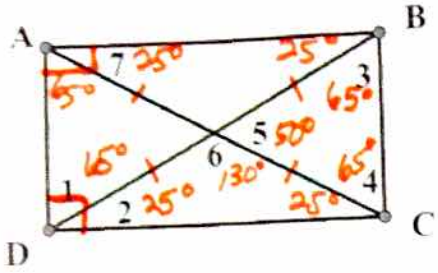
$8=x$

$6x-7=41$

82

Name: _____

5. *ABCD* is a rectangle. Find each measure if m<1 = 65°.



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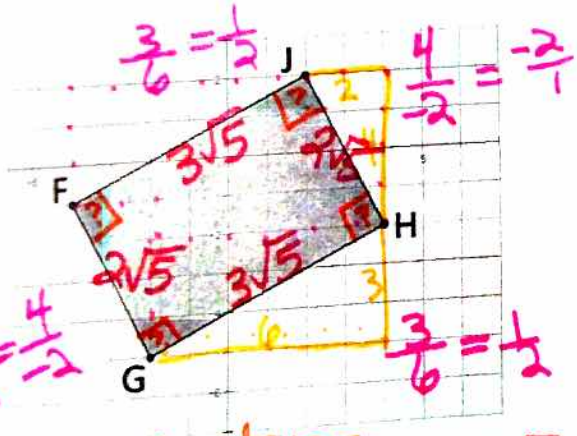
6. Determine whether the figure with vertices F(-4,-1), G(-2,-5), H(4,-2) and J(2,2) is a rectangle.

Def: 4 right ∠'s

To be a rectangle, you must test for opp. recip. slopes consec. sides.



yes, b/c consec. sides opp. recip. slopes.

$2^2+4^2=c^2$
$4+16=c^2$
$\sqrt{20}=\sqrt{c^2}$
$\sqrt{4}\sqrt{5}$
② $2\sqrt{5}=c$

$3^2+6^2=c^2$
$9+36=c^2$
$\sqrt{45}=\sqrt{c^2}$
$\sqrt{9}\sqrt{5}$
③ $3\sqrt{5}=c$

perimeter = $2\sqrt{5}+2\sqrt{5}+3\sqrt{5}+3\sqrt{5}$
$10\sqrt{5}$ u

Area = $b \cdot h = 3\sqrt{5} \cdot 2\sqrt{5} = 6 \cdot 5 = 30\ u^2$

$\sqrt{5} \cdot \sqrt{5} = 5$
$\sqrt{x} \cdot \sqrt{x} = x$
$\sqrt{175} \cdot \sqrt{175} = 175$

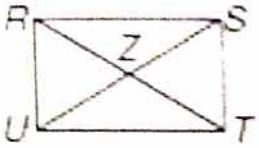
Name: _____ Hour: _____

Rectangles Homework

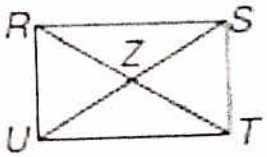
Directions: You must show all work and provide the justifications for your work!

ALGEBRA *RSTU* **is a rectangle.**

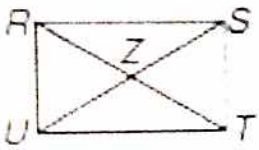
1. If $UZ = x + 21$ and $ZS = 3x - 15$, find US.



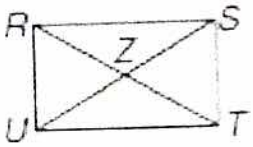
2. If $RZ = 3x + 8$ and $ZS = 6x - 28$, find UZ.



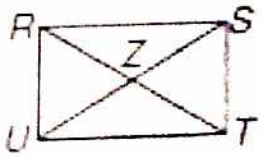
3. If $RT = 5x + 8$ and $RZ = 4x + 1$, find ZT.



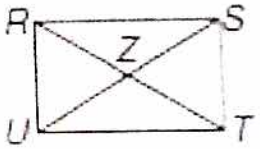
4. If $m\angle SUT = 3x + 6$ and $m\angle RUS = 5x - 4$, find $m\angle SUT$



5. If $m\angle SRT = x^2 + 9$ and $m\angle UTR = 2x - 44$, find x.



6. If $m\angle RSU = x^2 - 1$ and $m\angle TUS = 3x + 9$, find $m\angle RSU$



***GHJK* is a rectangle. Find each measure if $m\angle 1 = 37$.**

7. $m\angle 2$

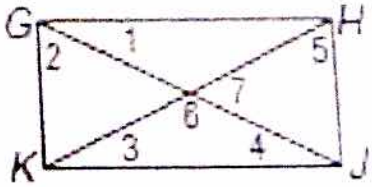
8. $m\angle 3$

9. $m\angle 4$

10. $m\angle 5$

11. $m\angle 6$

12. $m\angle 7$



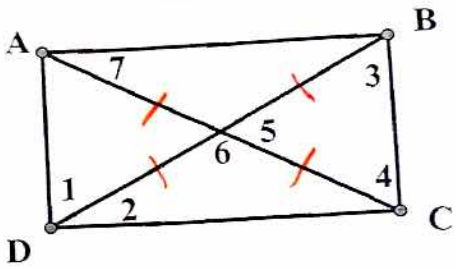
Name: _____ Hour: _____

ABCD is a rectangle. Find each measure if m<1 = 65.

13. m<2 14. m<3

15. m<4 16. m<5

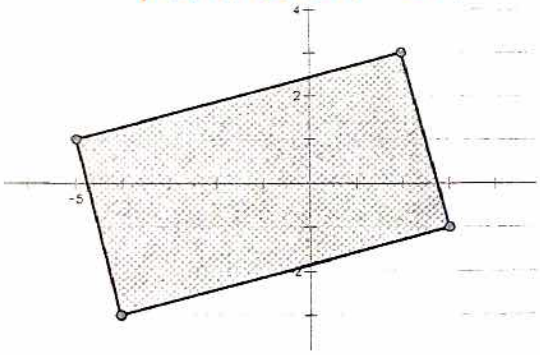
17. m<6 18. m<7



Show all work and follow all instructions below.

13. Determine whether the figure with vertices F(-4,-3),G(3,-1), H(2,3) and J(-5,1) is a rectangle.

Perimeter = ? Area = ?



14. Determine whether the figure with vertices F(-4,-3),G(-5,8), H(6,9) and J(7,-2) is a rectangle.

Perimeter = ? Area = ?