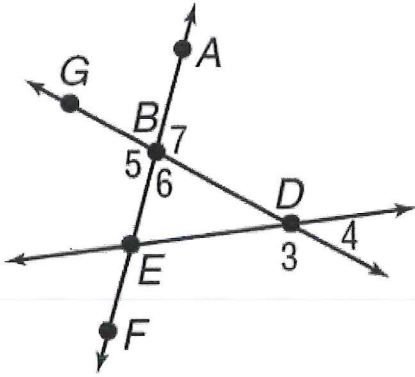


Directions: Use the figure to answer questions 1-3.

Students must review vocabulary as vocabulary will be assessed on the test. ☺



1) Name all angles that have B as a vertex.

$\angle 7, \angle 6, \angle 5, \angle ABG$   
(straight angles:  $\angle ABE + \angle GBD$ )

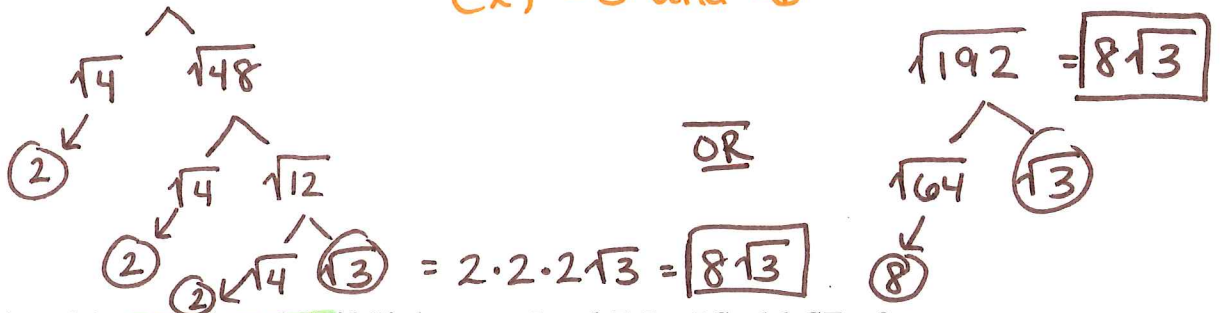
2) Name a pair of supplementary angles.

Answers will vary  
ex)  $\angle 3 + \angle 4 = 180^\circ$

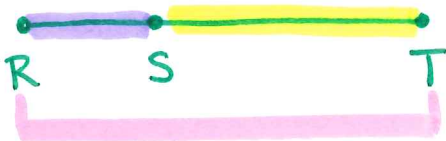
3) Name a pair of vertical angles.

Answers will vary  
ex)  $\angle 5$  and  $\angle 6$

4) Simplify the radical:  $\sqrt{192}$



5) Find the value of the variable and ST if S is between R and T. Let  $RS = 16$ ,  $ST = 2x$ ,  $RT = 5x + 10$ . You must show all of your work, justify, and show geometry.



$RS + ST = RT$  segment addition

$16 + 2x = 5x + 10$

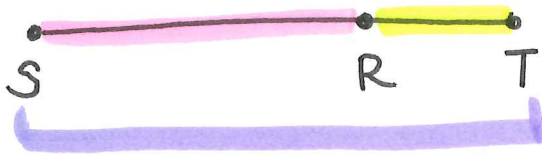
$16 = 3x + 10$

$6 = 3x$

$x = 2$

$ST = (2)(2) = 4$

- 6) Find the value of  $x$  and  $SR$  if  $R$  is between  $S$  and  $T$ .  $SR = 3x$ ,  
 $RT = 2x + 1$ ,  $ST = 6x - 1$ . You must show all of your work, justify, and show geometry.



$$SR + RT = ST \text{ segment addition}$$

$$3x + 2x + 1 = 6x - 1$$

$$5x + 1 = 6x - 1$$

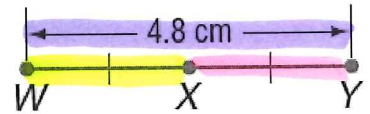
$$1 = x - 1$$

$$SR = 3(2)$$

$$\boxed{SR = 6}$$

$$\boxed{2 = x}$$

- 7) Using the picture to the right, find the length of  $\overline{XY}$ . You must show all of your work, justify, and show geometry.



$$WX + XY = WY \text{ segment addition}$$

$$x + x = 4.8$$

$$2x = 4.8$$

$$\boxed{x = 2.4 \text{ cm}}$$

- 8) Find the value of  $x$  and  $\overline{ST}$  using the figure to the right if  $T$  is the midpoint of  $SU$ . You must show all of your work, justify, and show geometry.

$$ST \cong TU \text{ def. of midpoint}$$



$$2x + 1 = 3x - 5$$

$$1 = x - 5$$

$$\boxed{6 = x}$$

$$ST = 2(6) + 1$$

$$\boxed{ST = 13}$$

- 9) Find the value(s) of  $x$  and  $\overline{ST}$  using the figure to the right if T is the midpoint of SU,  $ST = (x - 4)^2$ , and  $TU = 9$ cm. You must show all of your work, justify, check your answers, and show geometry.



$ST \cong TU$  def of midpoint

$$(x - 4)^2 = 9$$

$$(x - 4)(x - 4) = 9$$

$$x^2 - 8x + 16 = 9$$

$$x^2 - 8x + 7 = 0$$

$$(x - 7)(x - 1) = 0$$

$$x - 7 = 0 \quad x - 1 = 0$$

$$x = 7$$

$$x = 1$$

$$\boxed{-7} \cdot \boxed{-1} = 7$$

↓       ↓

$$\boxed{-7} + \boxed{-1} = -8$$

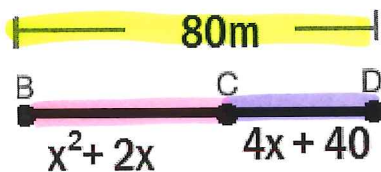
check:  $x = 7$

$$(7 - 4)^2 = 3^2 = 9 \checkmark = ST$$

check:  $x = 1$

$$(1 - 4)^2 = (-3)^2 = 9 \checkmark = ST$$

- 10) Find the value(s) of  $x$  and  $BC$ . You must show all of your work, justify, check your answers, and show geometry.



$BC + CD = BD$  segment addition

$$x^2 + 2x + 4x + 40 = 80$$

$$x^2 + 6x + 40 = 80$$

$$x^2 + 6x - 40 = 0$$

$$(x - 4)(x + 10) = 0$$

$$x - 4 = 0 \quad x + 10 = 0$$

$$x = 4$$

~~$$x = -10$$~~

$$\boxed{-4} \cdot \boxed{10} = -40$$

↓       ↓

$$\boxed{-4} + \boxed{10} = 6$$

check  $x = 4$

$$BC = 4^2 + 2(4) = 24$$

$$CD = 4(4) + 40 = 56$$

$$24 + 56 = 80 \checkmark$$

~~check  $x = -10$~~

~~$$BC = (-10)^2 + 2(-10) = 80$$~~

~~$$CD = 4(-10) + 40 = 0$$~~

↑  
segment cannot have a length of 0.

Directions: Find the distance, midpoint, and slope of each segment. You must simplify radicals and fractions!

11) J(4, 2), K(8, -6)

dist:  $8^2 + 4^2 = x^2$   
 $64 + 16 = x^2$   
 $180 = x^2$

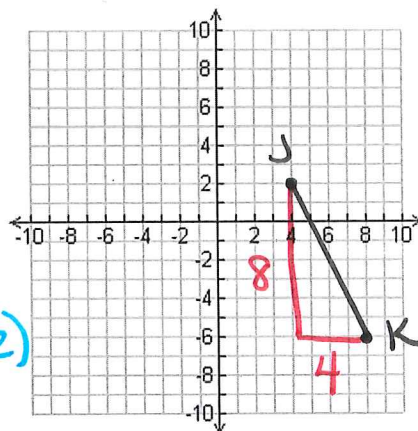
$(4) \leftarrow \sqrt{16} \quad (15)$

Distance:  $4\sqrt{5}$  units

Midpoint:  $(6, -2)$

Slope:  $-2$

midpt:  
 $\left(\frac{4+8}{2}, \frac{2+(-6)}{2}\right)$   
 $= \left(\frac{12}{2}, \frac{-4}{2}\right) = (6, -2)$

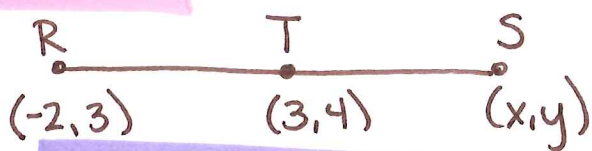


Slope:

$\frac{\text{rise}}{\text{run}} = \frac{-8}{4} = -2$

12) Find the coordinate of the endpoint S if T is the midpoint of RS and T(3, 4) and R(-2, 3).

STUDY THIS!!



$\left(\frac{-2+x}{2}, \frac{3+y}{2}\right) = (3, 4)$

$\frac{-2+x}{2} = 3$

$\frac{3+y}{2} = 4$

$-2+x = 6$

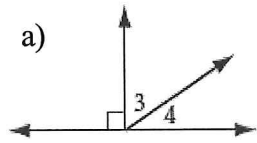
$3+y = 8$

$x = 8$

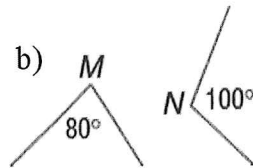
$y = 5$

$S(8, 5)$

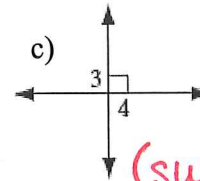
13) Classify all that apply: adjacent, vertical, linear pairs, complementary, supplementary, right angle and/or congruent.



a) adjacent  
complementary

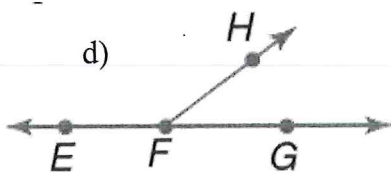


b) supplementary

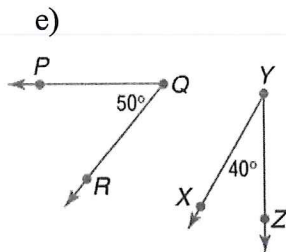


vertical angles

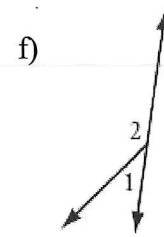
(suppl. but not always — only b/c  $\angle 3$  and  $\angle 4$  are each  $90^\circ$ )



d) adjacent  
supplementary  
linear pair

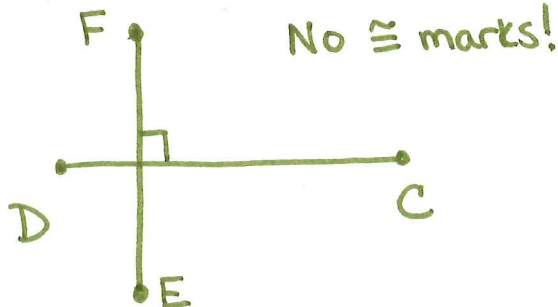


e) complementary



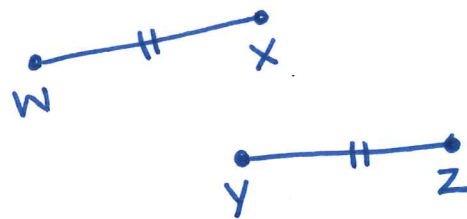
f) adjacent  
supplementary  
linear pair

14) Draw  $\overline{FE} \perp \overline{DC}$

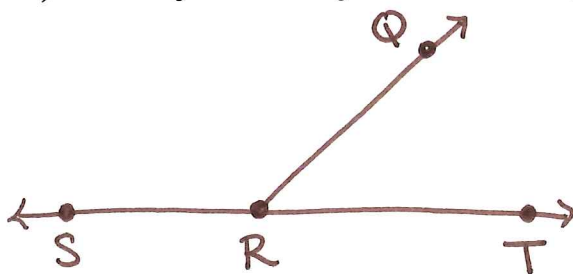


No  $\cong$  marks!

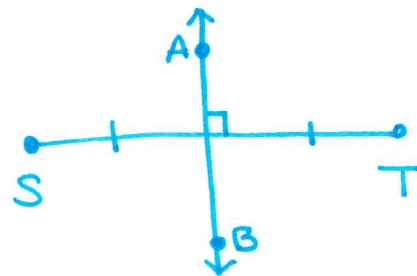
15) Draw  $\overline{WX} \cong \overline{YZ}$



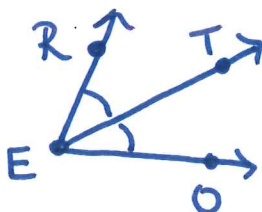
16) Draw  $\angle QRS$  and  $\angle QRT$  are a linear pair



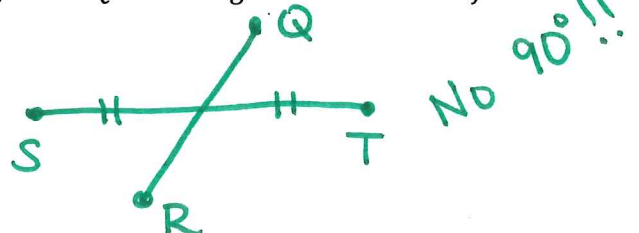
17) Draw  $\overline{AB}$  is a  $\perp$  bisector of  $\overline{ST}$



18) Draw  $\overline{ET}$  is an angle bisector of  $\angle REO$



19) Draw  $\overline{QR}$  is a segment bisector of  $\overline{ST}$



No  $90^\circ$ !!