1. Classify each angle pair as *corresponding, alternate interior, alternate exterior, consecutive interior, or consecutive exterior*.

a) ∠1 and ∠9 corresp.

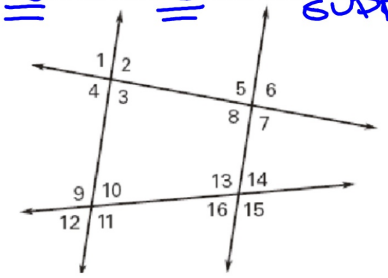
b) ∠8 and ∠13 SSI

c) ∠6 and ∠16 AE

d) ∠4 and ∠10 AI

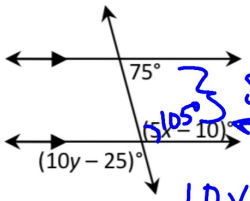
e) ∠8 and ∠16 corresp

f) ∠10 and ∠13 SSI



2. Find the missing variables.

a.



SSI

$5x-10+75=180$

$5x+65=180$

$5x=115$

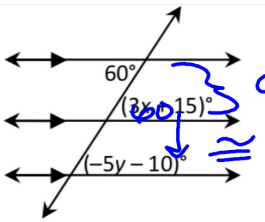
$x=23$

$10y-25=105$

$10y=130$

$y=13$

b.



alt ≅

$60=3x+15$

$45=3x$

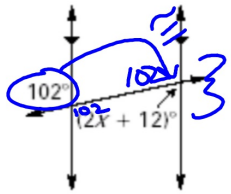
$x=15$

$60=-5y-10$

$70=-5y$

$y=-14$

c.



linear pair

$2x+12+102=180$

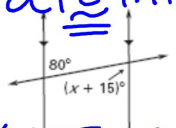
$2x+114=180$

$2x=66$

$x=33$

3. For the following diagrams, state the type of angles that are given, state their relationship, and then find x.

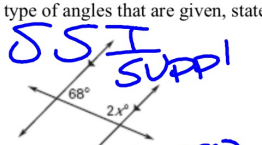
a. alt int ≅



$x+15=80$

$x=65$

b. SSI SUPPL

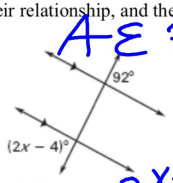


$2x+68=180$

$2x=112$

$x=56$

c. AE ≅

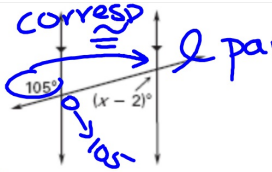


$92=2x-4$

$96=2x$

$x=48$

d. corresp ≅ → ∥ pair

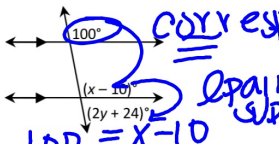


$105+x-2=180$

$103+x=180$

$x=77$

e. corresp ≅ → ∥ pair SUPPL



$100=x-10$

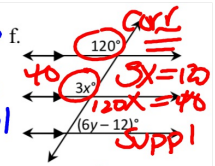
$x=110$

$100+2y+24=180$

$2y=56$

$y=28$

f. corr ≅ → ∥ pair SUPPL



$3x=120$

$x=40$

$6y-12+120=180$

$6y+108=180$

$6y=72$

$y=12$

4. $\frac{2}{3}(9x-6)-4=9x-6$

Based on the equation above, what is the value of $3x-2$?

A) -4

B) $-\frac{4}{5}$

C) $-\frac{2}{3}$

D) 4

$6x-4-4=9x-6$

$6x-8=9x-6$

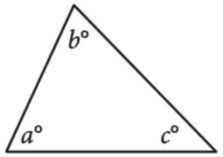
$-8=3x-6$

$-2=3x$

$x=-2/3$

$3(-2/3)-2$

5.



Note: Figure not drawn to scale.

In the triangle above, $a = 34$. What is the value of $b + c$?

$a+b+c=180$

$34+b+c=180$

$b+c=146$

Consider a line with slope 5 and y-intercept -3.

- What is an equation for a line with slope and y-intercept -3?

$y = 5x - 3$

- How does the equation change if the slope stays the same but the y-intercept changes to 7?

$y = 5x + 7$

- What is the equation of a line with slope 1/3 and passes through the point (2, -3)?

$y = mx + b$

$-3 = \frac{1}{3}(2) + b$

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

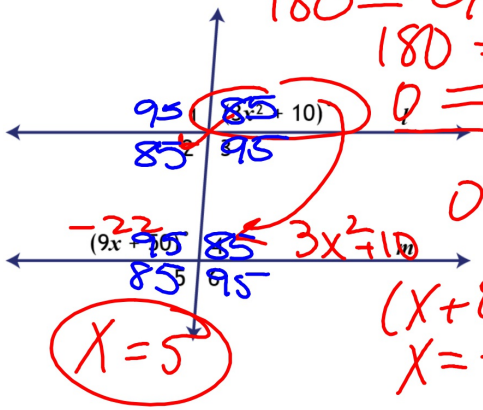
$-3 - \frac{2}{3} = b$

$b = -\frac{11}{3}$

$y - y_1 = m(x - x_1)$

$y = \frac{1}{3}x - \frac{11}{3}$

16. **REINFORCE** Given $l \parallel m$, find the measure of each measured angle in the diagram.



$180 = 9x + 50 + 3x^2 + 10$

$180 = 3x^2 + 9x + 60$

$0 = 3x^2 + 9x - 120$

$0 = x^2 + 3x - 40$

$(x + 8)(x - 5) = 0$

$x = -8, 5$

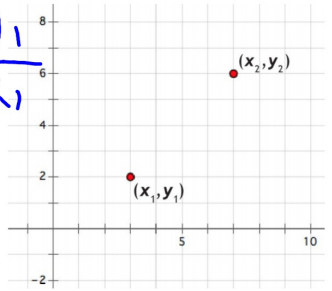
$x = 5$

17. **REINFORCE** When are the alternate interior angles formed by two lines cut by a transversal **not** congruent?

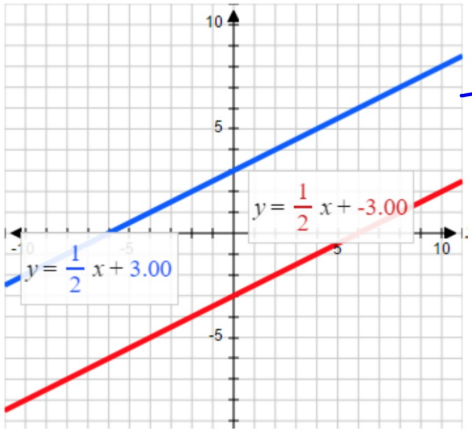
when the lines are not ||

1. **REVIEW** In algebra, you learned that the slope of a line represents the rate of change, the ratio of the change in y to the change in x. On the graph below, two general points, (x_1, y_1) and (x_2, y_2) are shown. Derive the formula for the slope between the two points.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

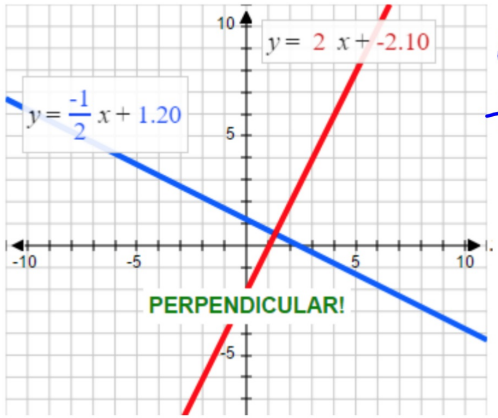


2. What is true about the slopes of parallel lines?



These lines are ||, b/c they have same slopes but diff y-int

3. What is true about the slopes of perpendicular lines?



These lines are ⊥ b/c they have opp/rec slopes

4. Use the equations in the table below to answer the following questions.

$y = -3x + (-2)$	$y = 3x + 1$	$y = \frac{1}{3}x + 2$
$y = -\frac{1}{3}x - 2$	$y = 3x - 2$	$y = 3x + 2$

a. Which of the lines represented by the equations are parallel to $y = 3x$?

$y = 3x+1$, $y = 3x+2$, $y = 3x-2$

b. Which of the lines represented by the equations is parallel to $y = 3x$ and has a y-intercept of -2?

$y = 3x-2$

5. Use the equations in the table below to answer the following questions.

$y = -3x + (-2)$	$y = -\frac{1}{3}x + 2$	$y = \frac{1}{3}x + 2$
$y = -\frac{1}{3}x - 2$	$y = 3x - 2$	$y = -\frac{1}{3}x + 1$

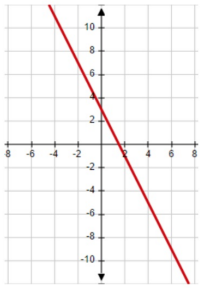
a. Which of the lines represented by the equations are perpendicular to $y = 3x$?

$y = -\frac{1}{3}x+2$, $y = -\frac{1}{3}x-2$, $y = \frac{-1}{3}x+1$

b. Which of the lines represented by the equations is perpendicular to $y = 3x$ and has a y-intercept of -2?

$y = -\frac{1}{3}x-2$

6. The graph shows the line $y = -2x + 3$.



$y - y_1 = m(x - x_1)$

$y = mx + b$

$y = -2x - 5$

a. Write the equation of the line parallel to the line $y = -2x + 3$ that passes through the point (-2,-1). Add the graph of the line to the graph above.

$y = mx + b$

$-1 = -2(-2) + b$

$-1 = 4 + b$

$b = -5$

b. Write the equation of the line perpendicular to the line $y = -2x + 3$ that passes through the point (2,-1). Add the graph of the line to the graph above.

$m = \frac{1}{2}$

$-1 = \frac{1}{2}(2) + b$

$-1 = 1 + b \quad b = -2$

$y = \frac{1}{2}x - 2$

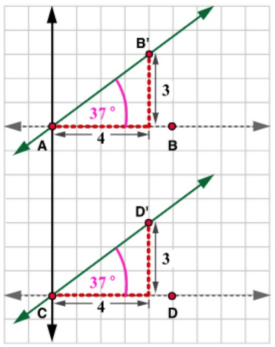
7. Use the given word choices to complete the following statements.

infinitely many	several	zero	exactly one

a. Any line has infinitely many line(s) parallel to it. It has exactly 1 parallel line(s) through a specified y-intercept.

b. Any line has infinitely many line(s) perpendicular to it. It has exactly 1 perpendicular line(s) through a specified y-intercept.

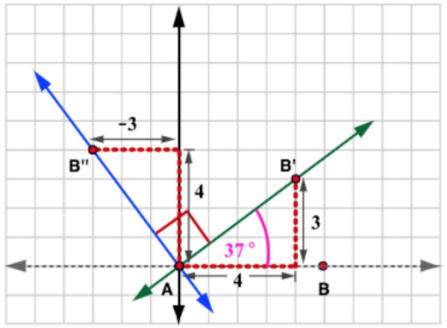
8. The diagram shows parallel lines in the coordinate plane. Show that these lines have the same slope.



$\overleftrightarrow{AB'} = \frac{3}{4}$

$\overleftrightarrow{CD'} = \frac{3}{4}$

9. This diagram shows perpendicular lines in the coordinate plane. Show that the product of the slopes of these lines is -1.



$\overleftrightarrow{AB'} = \frac{3}{4}$

$\overleftrightarrow{AB''} = \frac{-4}{3}$

$\frac{3}{4} \cdot \frac{-4}{3} = -1$

Hwk #22 - due Monday

(1) Parallel & Perpendicular Lines Worksheet
(2) Agile Mind Questions