# Review of Standards 10 & 11

Name: KEY

C 1. ∠13 and ∠10

a 2. ∠3 and ∠8

f 3. ∠1 and ∠4

d 4. ∠9 and ∠10

e 5. ∠ 14 and ∠16

a 6. ∠11 and ∠6

c 7. ∠4 and ∠14

f 8. ∠1 and ∠15

b 9. ∠15 and ∠10

f 10. ∠9 and ∠6

d 11. ∠7 and ∠11

a = alternate interior angles

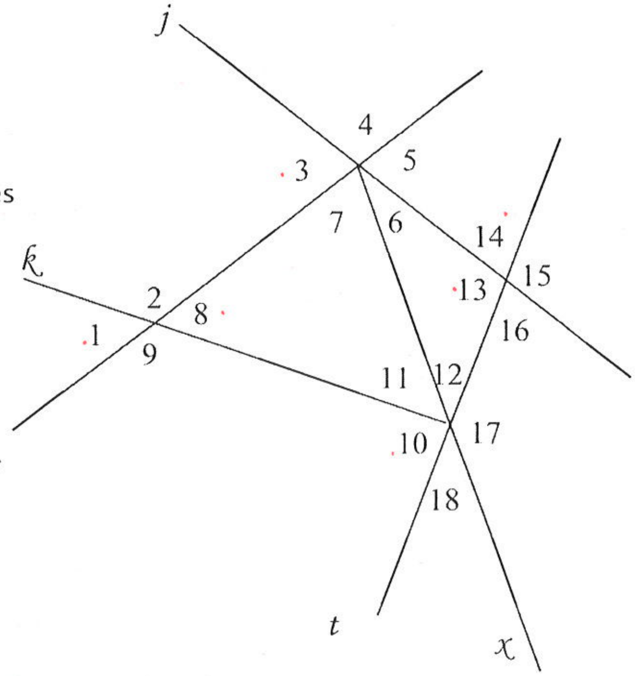
b = alternate exterior angles

c = corresponding angles

d = consecutive interior angles

e = vertical angles

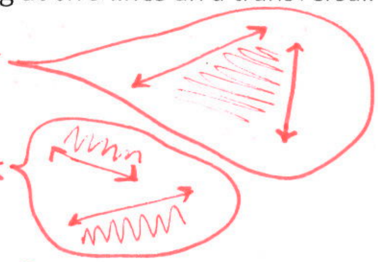
f = none of the above




**(12)** Explain what we mean by the following words when looking at two lines an a transversal:

Interior: BETWEEN the 2 lines

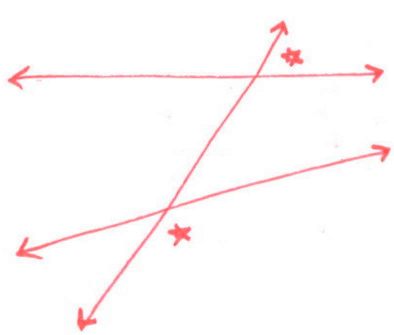
Exterior: OUTSIDE the 2 lines



Alternate: on DIFFERENT sides of the transversal

Consecutive: on the SAME side of the transversal

**(13)** If someone wanted to argue that there should be such a thing as "consecutive exterior" angles, draw a picture of an example of them:



OUTSIDE the 2 lines
SAME side of transversal

(14) Write the equation of the line that is parallel to 2x + 6y + 5 = 0 that contains the point (2, -1).

$2x + 6y = -5$
$-2x \quad\quad -2x$
$6y = -2x - 5$
$\frac{6y}{6} = \frac{-2x-5}{6}$
$y = -\frac{1}{3}x - \frac{5}{6}$

original
$m = -\frac{1}{3}$

new
$m = -\frac{1}{3}$
pt $(2,-1)$

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

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

(15) Write the equation of the line that is perpendicular to 4x – 5y – 1 = 0 that contains the point (6, 4)

$4x - 5y = 1$
$-4x \quad\quad -4x$
$-5y = -4x + 1$
$\frac{-5y}{-5} = \frac{-4x+1}{-5}$
$y = \frac{4}{5}x - \frac{1}{5}$

original
$m = \frac{4}{5}$

new
$m = -\frac{5}{4}$
pt $(6, 4)$

$y = -\frac{5}{4}x + b$
$4 = -\frac{5}{4}(6) + b$
$4 = -\frac{30}{4} + b$
$4 = -7\frac{1}{2} + b$
$b = 11\frac{1}{2}$

$\boxed{y-4 = -\frac{5}{4}(x-6)}$ OR $\boxed{y = -\frac{5}{4}x + 11\frac{1}{2}}$

(16) A friend argues that since the product of the slopes of a horizontal line and vertical line does not equal -1, they are not perpendicular. Do you agree with them? Explain.

I agree the product of their slopes ≠ -1 (undefined × 0 ≠ -1) but I disagree that it means they are NOT ⊥. The slopes perpendicular Lines Postulate makes a special exception and lists that all horizontal lines are ⊥ to vertical lines.

(17) Are the slopes of two vertical lines equal? Explain.

Their slopes are NOT equal (because undefined ≠ undefined). However, they are still parallel, because the slopes of parallel lines Postulate specifically states that.

(18) Find the coordinate of point P along the directed line segment AB so that AP to PB has the ratio of 3 to 7. Point A is located at (-2,1) and B is located at (4,-3). ~~How far is it between 2x – 3y = -24 and (-1,16)?~~

A (-2, 1)
B (4, -3)
3 to 7

directions from A to B:

right 6 $\times \frac{3}{10} = \frac{18}{10} = 1\frac{4}{5}$ right
down 4 $\times \frac{3}{10} = \frac{12}{10} = 1\frac{1}{5}$ down

from A to P

A (-2, 1)
↓ ↓
right $1\frac{4}{5}$ down $1\frac{1}{5}$

$\boxed{P\left(-\frac{1}{5}, -\frac{1}{5}\right)}$

**(19)** How far is it between 2x – 3y = -24 and (-1,16)?

$2x - 3y = -24$
$-2x \quad\quad -2x$
$-3y = -2x - 24$
$\frac{-3y}{-3} = \frac{-2x-24}{-3}$
$y = \frac{2}{3}x + 8$

original

$m = \frac{2}{3}$

new

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

pt $(-1, 16)$

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

$16 = -\frac{3}{2}(-1) + b$

$16 = \frac{3}{2} + b$

$-1.5 \quad -1.5$

$14\frac{1}{2} = b$

$y = -\frac{3}{2}x + 14\frac{1}{2}$

Point of Intersection

$y = \frac{2}{3}x + 8$

$y = -\frac{3}{2}x + 14\frac{1}{2}$

$6\left(\frac{2}{3}x + 8\right) = \left(-\frac{3}{2}x + 14\frac{1}{2}\right)6$

$4x + 48 = -9x + 87$
$+9x \quad\quad +9x$
$13x + 48 = 87$
$-48 \quad -48$
$\frac{13x}{13} = \frac{39}{13}$

$x = 3$
$y = 10$

$(3, 10)$

$y = \frac{2}{3}(3) + 8$
$= 10$

distance:

$(-1, 16)$
$(3, 10)$

$\sqrt{(4)^2 + (6)^2}$

$\sqrt{16 + 36}$

$\sqrt{52} = \boxed{2\sqrt{13}}$

**(20)** The slope of line *m* is greater than 0 and less than 1. Write an inequality for the slope of a line perpendicular to line *m*. Explain your reasoning.

$0 < m < 1$

like $\frac{1}{100{,}000}$

opposite reciprocal $= \frac{-100{,}000}{1}$

like $\frac{99999}{100{,}000}$

opposite reciprocal $= \frac{-100{,}000}{99{,}999}$

Therefore the slope of a line ⊥ to line m would have to be $< -1$.

$\boxed{\text{slope of line } \perp \text{ to line } m < -1}$

**(21)** Find the value of k so the line passes through points (k – 9, k + 7) and (2,9) and has a y-intercept of 10.
*HINT: May be helpful to think of the y-intercept as a point with coordinates…*

slope between $(2,9)$ and $(0,10)$

$m = \frac{10-9}{0-2} = \frac{1}{-2}$

Therefore the point must satisfy the equation $y = -\frac{1}{2}x + 10$

$(k+7) = -\frac{1}{2}(k-9) + 10$

$k + 7 = -\frac{1}{2}k + 4.5 + 10$

$2(k+7) = (-\frac{1}{2}k + 14.5)2$

$2k + 14 = -k + 29$
$+k \quad\quad +k$
$3k + 14 = 29$
$\frac{3k}{3} = \frac{15}{3}$

$\boxed{k = 5}$