Name _____   Date _____

Explanation#1

Perpendicular lines have slopes that are opposite reciprocale, like $\frac{a}{b}$

And $\frac{-b}{a}$ opposite reciprocals have a product of -1.

The slope-intercept form of a liner equation is

Y = mx + b

Where m is the slope and b is the y-intercept

A. find the slope of line j

First find the slope m of line j. this is the only time you will use the equation of line j

Y = mx + b

$Y = \frac{7}{6}x$ - 12

Line j has a slope m of $\frac{7}{6}$

B. find the slope of line k.

Line k is perpendicular to j, so its slope is the opposite reciprocal: $\frac{-6}{7}$

C. Use the slope of line k and a point on line k to find its y-intercept.

Plug the slope m = $\frac{-6}{7}$ and the point (-4, 3) into the slope-intersept formula. Then solve for the y-intercept b.

Y = mx + b

$3 = \frac{-6}{7}(-4) + 12$

$3 = \frac{24}{7} + b$

$3 - \frac{24}{7} = b$

$\frac{21}{7} - \frac{24}{7} = b$

$-\frac{3}{7} = b$

D. Use the slope of line k and the y-intercept of line k to find the equation of the line.

Plug the slope m $= \frac{-6}{7}$ and the y-intercept b $= -\frac{3}{7}$ into the slope-intercept formula.

Y = mx + b

$Y = \frac{-6}{7}x + -\frac{3}{7}$

The equation of line k in slope-intercept form is y $= \frac{-6}{7}x - \frac{3}{7}$

Explanation#2

Parallel lines have the same slope.

Perpendicular lines have slope that are opposite reciprocals, like $\frac{a}{b}$ and $\frac{-b}{a}$ the slope also have a product of -1.

The lines are parallel because Line C and line D has same slope which is $\frac{-6}{3}$

Explanation#3

Perpendicular lines have slope that are opposite reciprocals, like $\frac{a}{b}$ and $\frac{-b}{a}$ opposite reciprocals have a product of -1

The slope-intercept form of a liner equation is

Y = mx + b

Where m is the slope and b is the y-intercept.

A. Find the slope of line j.

first find the slope of line j. this is the only time you will use the only time you will use the equation of line j.

Y = mx + b

$Y = \frac{3}{2}x - 10$

Line j has a slope m of $\frac{a}{b}$

B. find the slope of line k.

Line k is perpendicular to j, so its slope is the opposite reciprocal: $\frac{-2}{3}$

C. Use the slope of line k and a point on line k to find its y-intercept.

Plug the slope m = $\frac{-2}{3}$ and the point (-2, 7) into the slope-intersept formula. Then solve for the y-intercept b.

Y = mx + b

$7 = \frac{-2}{3}(-2) + b$

$7 = \frac{4}{3} + b$

$7 - \frac{4}{3} = b$

$\frac{21}{3} - \frac{4}{3} = b$

$\frac{17}{3} = b$

D. Use the slope of line k and the intercept of line k to find the equation of the line.

Plug the slope m = $\frac{-2}{3}$ and the y-intercept b = $\frac{18}{3}$ into the slpoe intercept formula.

Y = mx + b

$Y = \frac{-2}{3}x + \frac{17}{3}$