Geometry 3.4

Write the equation of a parallel line*

Write the equation of a perpendicular line*

Use equations to solve problems

*Algebra 1 Ch. 5

slope

parallel Same slope

perpendicular opp & recip. or ( )( ) = -1

slope-intercept form → $y = mx + B$

point-slope form → $y - ? = m(x - ?)$

speed dating (?)

square puzzle (?)

5. Write an equation in slope-intercept form for a line parallel to $y = -\frac{3}{4}x$ containing $(-3, 6)$.

$m = \frac{-3}{4}$

$6 = -\frac{3}{4} \cdot -3 + B$

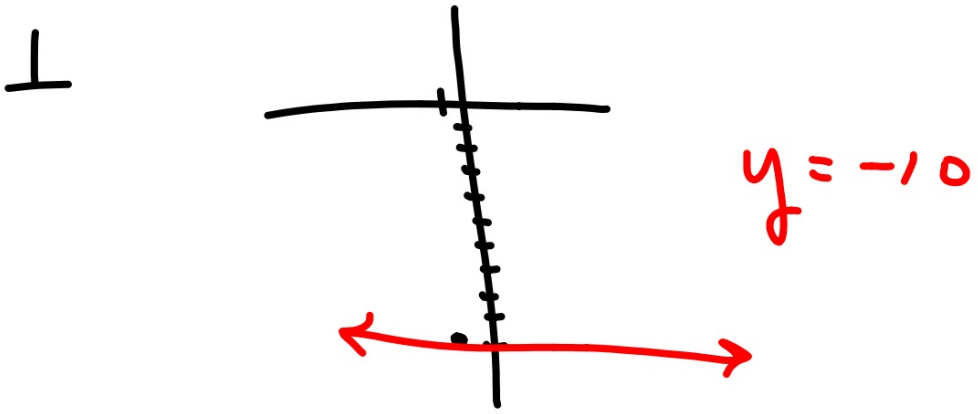
$6 = \frac{9}{4} + B$

$-\frac{9}{4} \quad -\frac{9}{4}$

$\frac{15}{4} = B$

$y = -\frac{3}{4}x + \frac{15}{4}$

38. passes through $(-1, -10)$, parallel to $y = 7$



Example 5 Write Equations of Parallel or Perpendicular Lines

Write an equation in slope-intercept form for a line perpendicular to $y = -3x + 2$ containing $(4, 0)$.

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

$y = \frac{1}{3}x + B$

$0 = \frac{1}{3} \cdot 4 + B$

$0 = \frac{4}{3} + B$

$-\frac{4}{3} \quad -\frac{4}{3}$

$B = -\frac{4}{3}$

$y = \frac{1}{3}x + \frac{-4}{3}$

Write an equation in slope-intercept form for each line described.

37. passes through $(-7, -4)$, perpendicular to $y = \frac{1}{2}x + 9$

$m = -2$

$y = mx + B$

$-4 = -2 \cdot -7 + B$

$-4 = 14 + B$

$-14 \quad -14$

$-18 = B$

$y = -2x - 18$

39. passes through $\overset{x}{(6}, \overset{y}{2})$, parallel to $y = -\frac{2}{3}x + 1$

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

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

$y - 2 = \frac{-2}{3}(x - 6)$

40. passes through $(-2, 2)$, perpendicular to $y = -5x - 8$

$x \quad y$

$m = \frac{1}{5}$

$y - 2 = \frac{1}{5}(x + 2)$

if texts > 100 plan x is less

if text < 100 plan y

Real-World Example 6 Write Linear Equations

PT

FINANCIAL LITERACY Benito's current wireless phone plan, Plan X, costs $39.95 per month for unlimited calls and $0.05 per text message. He is considering switching to Plan Y, which costs $35 per month for unlimited calls plus $0.10 for each text message. Which plan offers him the better rate?

x: $39.95 + 0.05t$

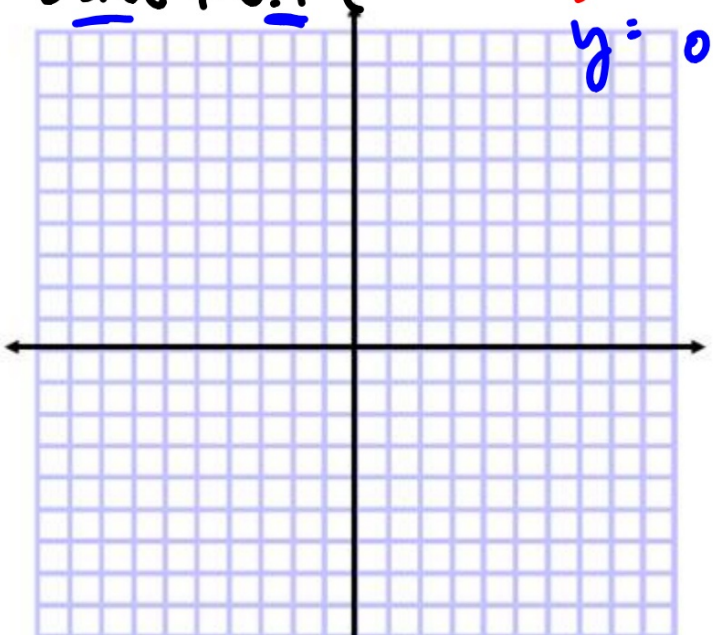
y: $35.00 + 0.1t$

$y = .05x + 39.95$

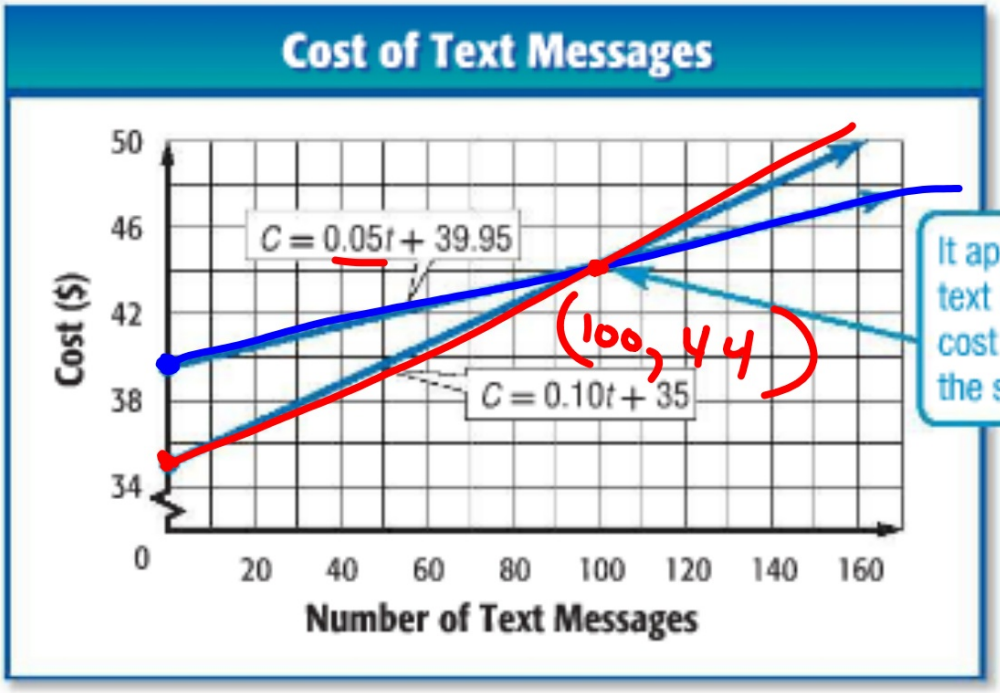
$y = 0.1x + 35.00$

Rate of change:

Starting value:



Graph the two equations on the same coordinate plar



When do the two plans cost the same?

Speed dating

1. Write the equation.
2. Check with me.
3. You are now the expert on this problem.

WB 3.4 prac. (6 if skills too)