Trig 7.7

Find the distance from a point to a line
Find the distance between 2 parallel lines

slope

y-intercept

parallel lines

distance

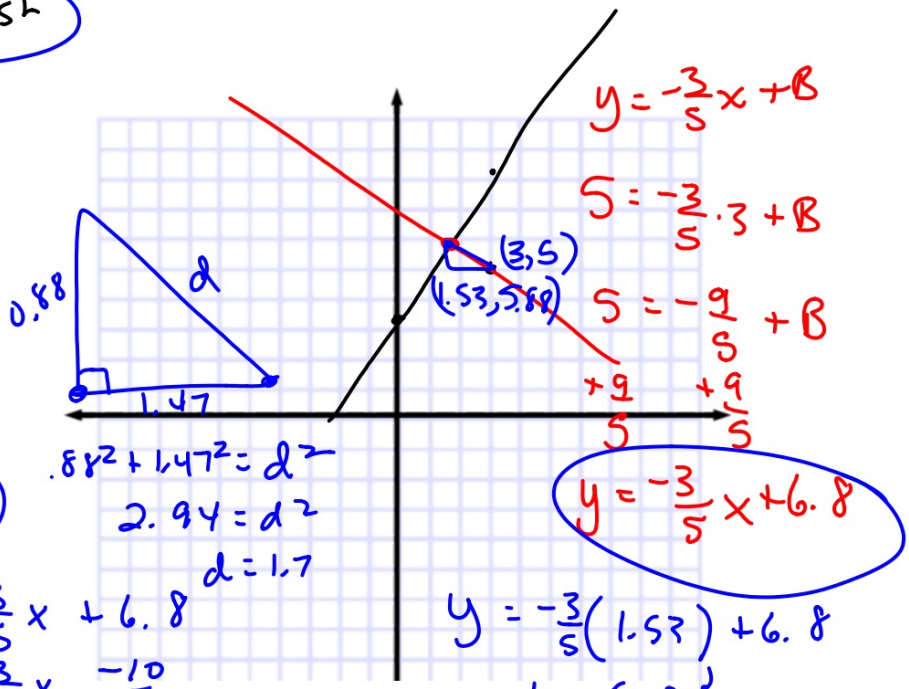
whiteboards

*Geom Ch. 3

Quiz 7.7 Tues

2-ish

Where is the (shortest) distance?
Plan: Use the pythagorean theorem
What do I need to know?



$5x - 3y + 10 = 0$

$\frac{-3y}{-3} = \frac{-5x}{-3} - \frac{10}{-3}$

$y = \frac{5}{3}x + 3\frac{1}{3}$

$.88^2 + 1.47^2 = d^2$

$2.94 = d^2$

$d = 1.7$

$y = \frac{-3}{5}x + B$

$5 = \frac{-3}{5} \cdot 3 + B$

$5 = -\frac{9}{5} + B$

$+\frac{9}{5} \quad +\frac{9}{5}$

$y = \frac{-3}{5}x + 6.8$

$\frac{5}{3}x + \frac{10}{3} = -\frac{3}{5}x + 6.8$

$+\frac{3}{5}x \quad -\frac{10}{3} \quad +\frac{3}{5}x \quad -\frac{10}{3}$

$y = -\frac{3}{5}(1.53) + 6.8$

$y = 5.88$

$2\frac{4}{15}x = 3.46$

$x = 1.53$

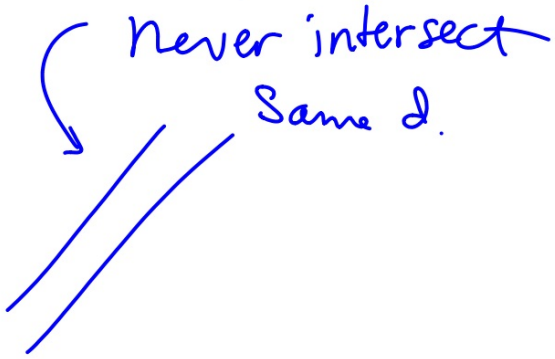
1 Find the distance between $P(4, 5)$ and the line with equation $8x + 5y = 20$.

Tell me everything you know about parallel lines...

Slopes =

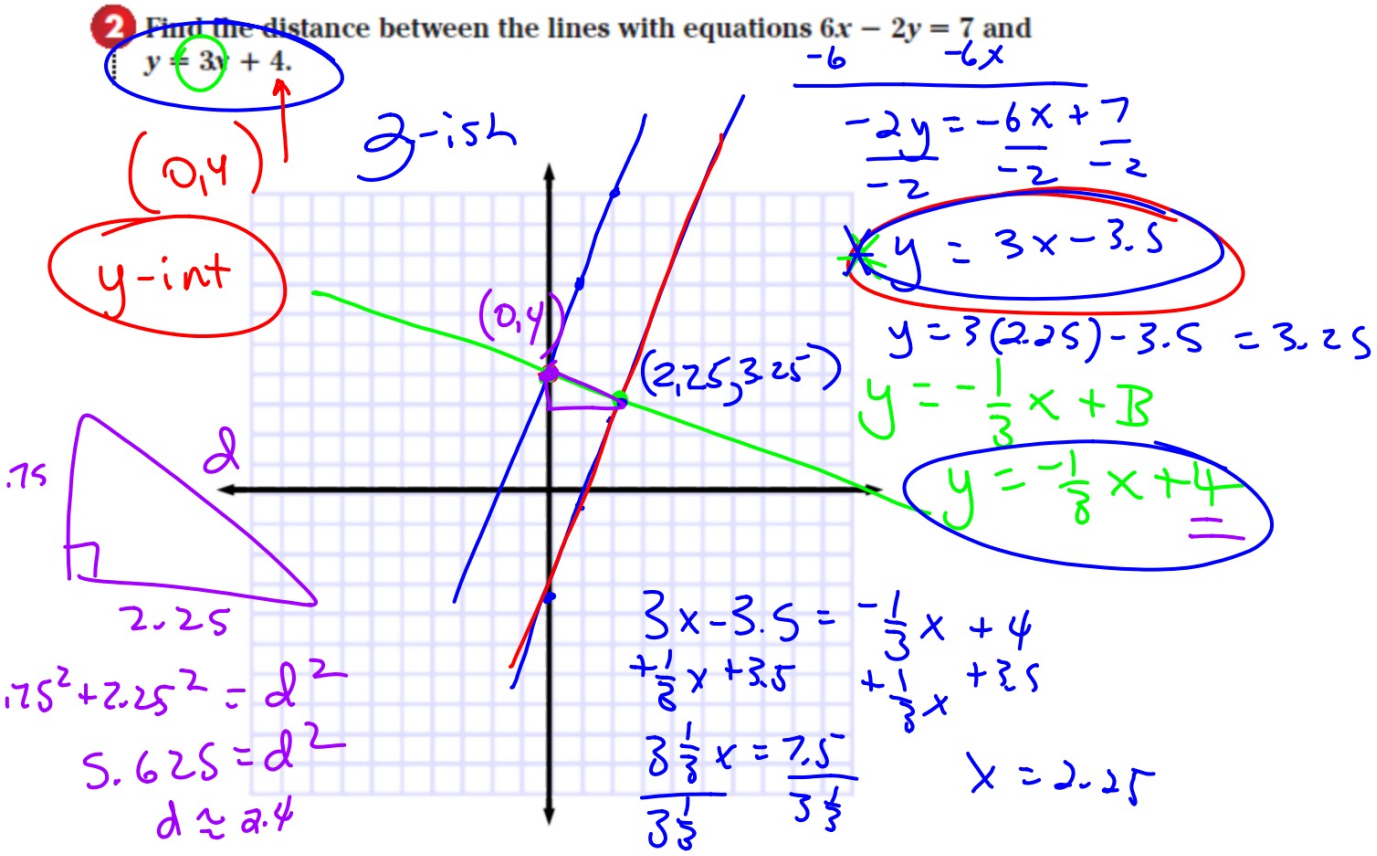
never intersect

Same d.



Parallel lines same distance apart
Use one eq to get a y-intercept (this is your point)
Use other eq (this is your line)

2 Find the distance between the lines with equations $6x - 2y = 7$ and $y = 3x + 4$.



$-6 \quad -6x$

$-2y = -6x + 7$

$-2 \quad -2 \quad -2$

$y = 3x - 3.5$

$y = 3(2.25) - 3.5 = 3.25$

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

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

$3x - 3.5 = -\frac{1}{3}x + 4$

$+\frac{1}{3}x + 3.5 \quad +\frac{1}{3}x + 3.5$

$3\frac{1}{3}x = 7.5$

$3\frac{1}{3} \quad 3\frac{1}{3}$

$x = 2.25$

$.75^2 + 2.25^2 = d^2$

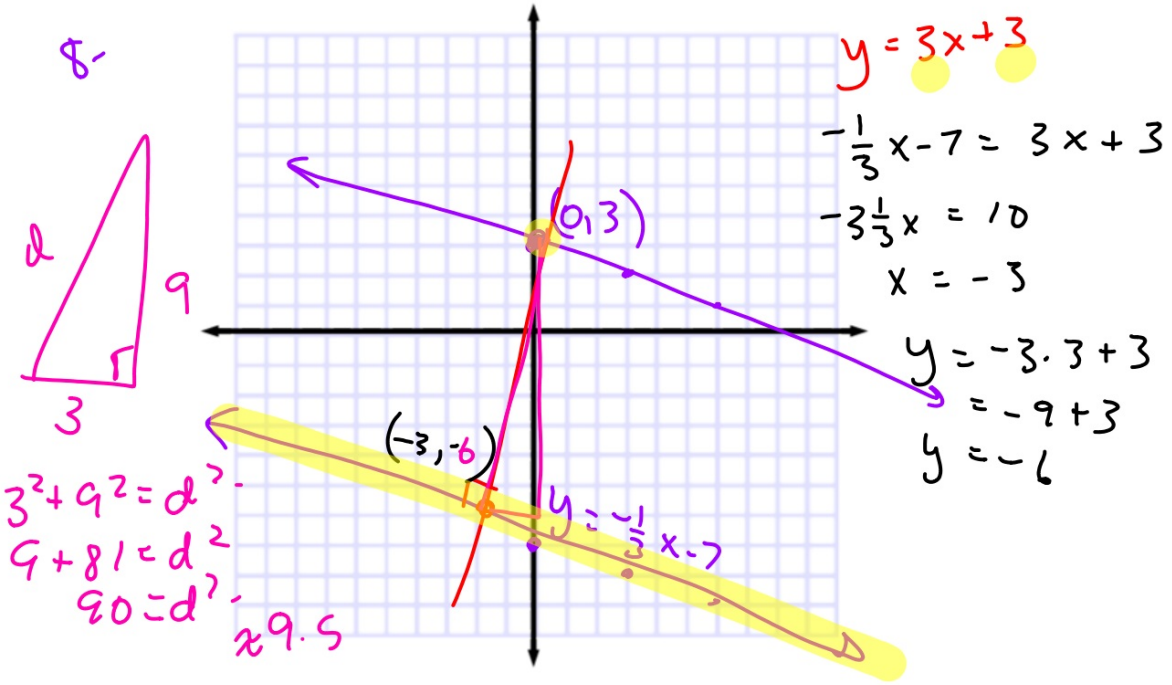
$5.625 = d^2$

$d \approx 2.4$

Find the distance between the parallel lines with the given equations.

7. $3x - 5y = 1$
   $3x - 5y = -3$

8. $y = -\frac{1}{3}x + 3$
   $y = -\frac{1}{3}x - 7$



WB 7.7
1, 3, 5, 6

Quiz → Wed
Test → Mon.