Trig 7.7

*Geom Ch. 3

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

Quiz 7.5-7.7
Tues

slope

y-intercept

parallel lines

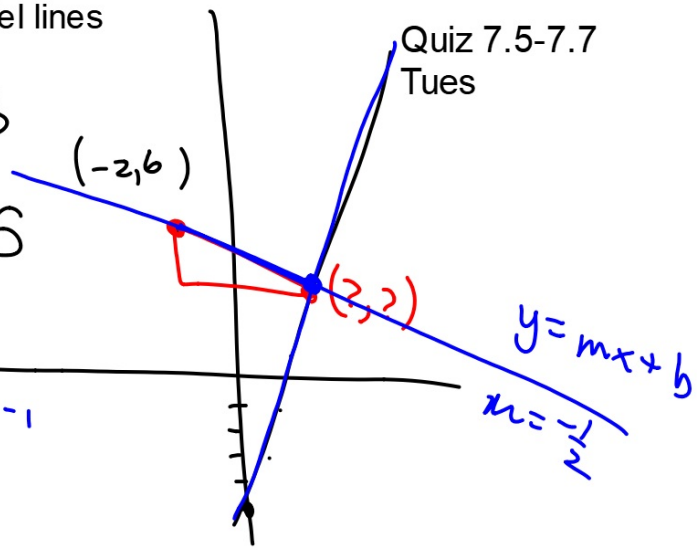
distance

whiteboards

$y = mx + B$

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

$\left(\frac{2}{1}\right)\left(\frac{-1}{2}\right) = -1$



$y = 2x - 5$

$(-2, 6)$

6-ish

① eqtn line 1

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

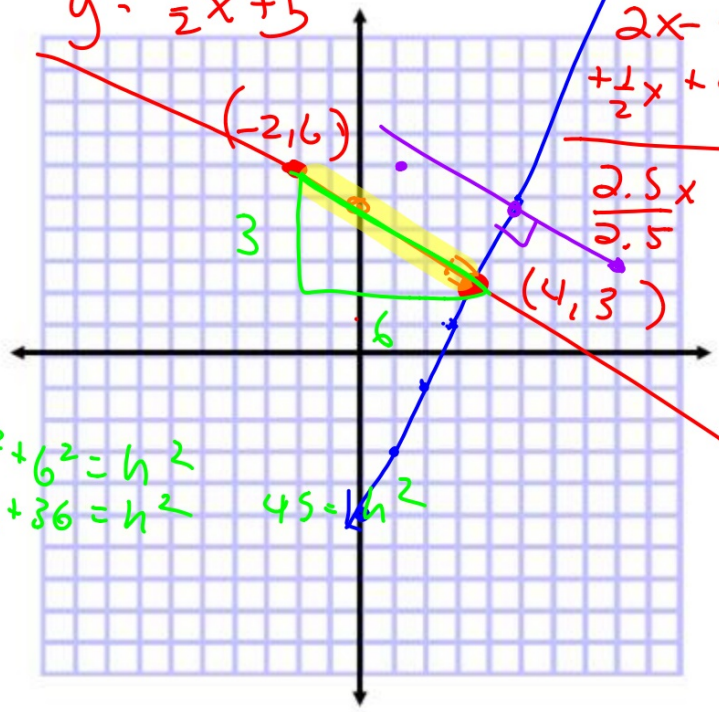
$y = mx + B$

$6 = -\frac{1}{2}(-2) + B$

$6 = 1 + B$

$-1 \quad -1$

$5 = B$



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

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

$+\frac{1}{2}x + 5 \quad +\frac{1}{2}x + 5$

$\frac{2.5}{2.5}x = \frac{10}{2.5}$

$x = 4$

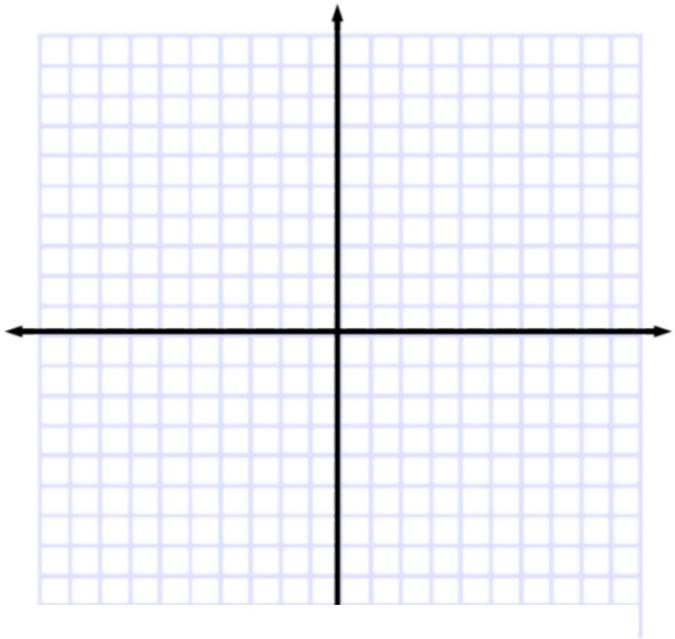
$y = 2 \cdot 4 - 5$

$y = 3$

$3^2 + 6^2 = h^2$

$9 + 36 = h^2 \quad 45 = h^2$

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



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

whiteboards

$d \approx 0.5$ ish

Find the distance between the point with the given coordinates and the line with the given equation.

5. $(1, 2)$ $2x - 3y = -2$

6. $(-2, 3)$, $6x - y = -3$

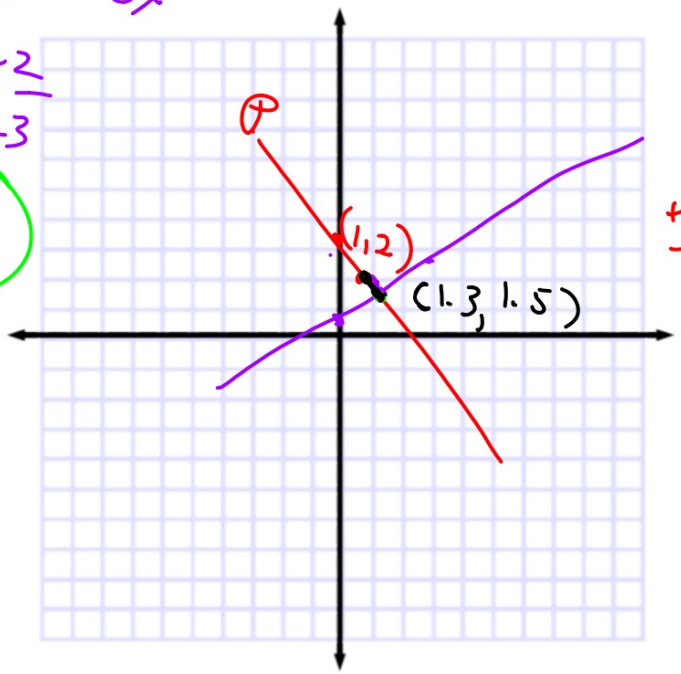
$y = -\frac{3}{2}x + 3.5$

$-2x \quad -2x$

$-3y = -2x - 2$

$-3 \quad -3 \quad -3$

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



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

$2 = -\frac{3}{2} \cdot 1 + B$

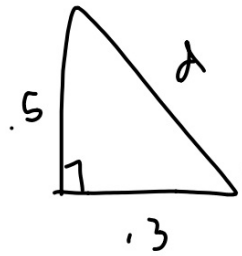
$2 = -1.5 + B$

$+1.5 \quad +1.5$

$3.5 = B$

$.5^2 + .3^2 = d^2$

$0.34 = d^2$



$d = 0.6$

$y = \frac{2}{3}x + \frac{2}{3}$ $\quad$ $y = -1.5x + 3.5$

$y = -1.5(1.3) + 3.5$

$\frac{2}{3}x + \frac{2}{3} = -1.5x + 3.5 \quad = 1.5$

$+1.5x \quad -\frac{2}{3} \quad +1.5x \quad -\frac{2}{3}$

$\frac{2.17x}{2.17} = \frac{2.83}{2.17}$ $\quad$ $x = 1.3$

7.7

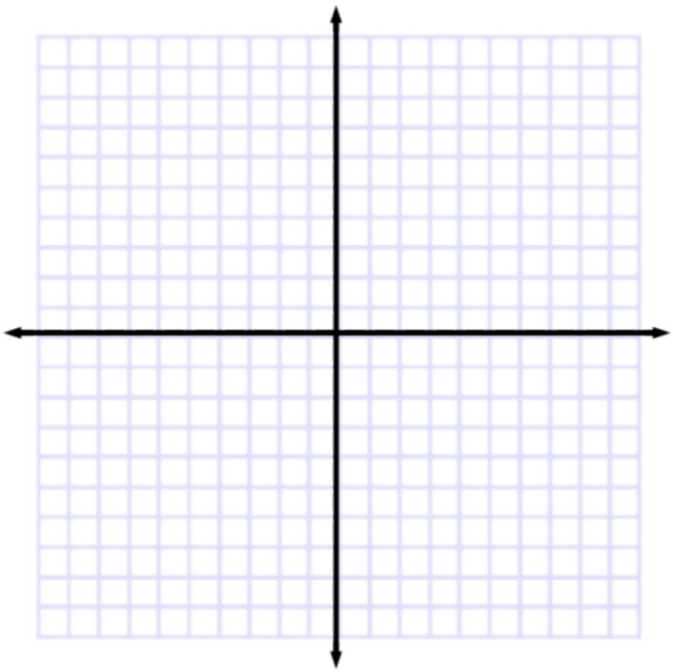
~~11=230~~

11, 13, 15, 17

Tell me everything you know about parallel lines...

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 $y = 3x + 4$.**



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

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

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