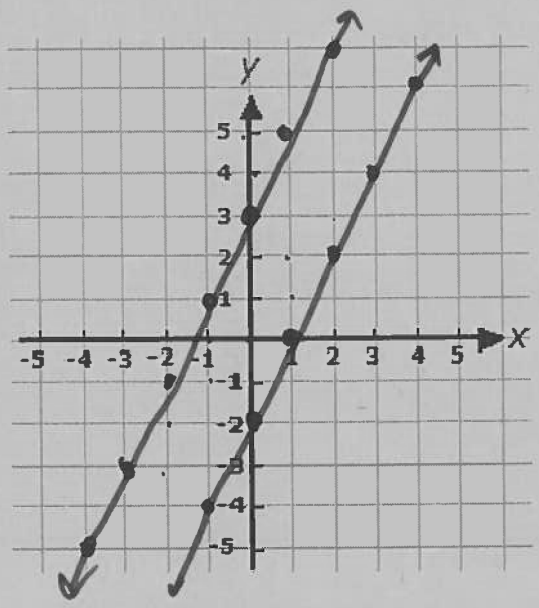
Name: Key Date: Hour:

Geometry 3.7 Graphing Parallel and Perpendicular Lines

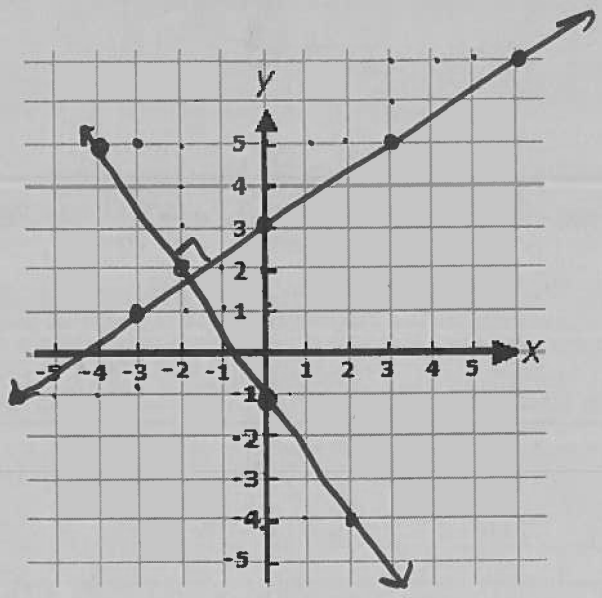
1.) On the grid below, graph the lines y=2x+3 and y=2x – 2.



2.) What relationship do you notice about the two lines you graphed above? In other words, are the lines parallel, perpendicular, or neither?

Parallel

3.) On the grid below, graph the lines $y=\frac{2}{3}x+3$ and $y=-\frac{3}{2}x-1$.



4.) What relationship do you notice about the two lines you graphed above? In other words, are the lines parallel, perpendicular, or neither?

Perpendicular

From the front page, you should recognize that:

Parallel lines have the **SAME** slopes.

Perpendicular lines have *OPPOSITE RECIPROCAL* slopes.

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Now let's take a look at the 3.7 homework assignment #s 1-31 odds, 35, and 36. P.S. you will NEED YOUR BOOK!

Record your work and answers in the table for #s 1 -11 odd.

Problem	Slope of line 1?	Slope of line 2?	Parallel: yes or no?
1	$-\frac{1}{2}$	$-\frac{1}{2}$	yes
3	$\frac{3}{2}$	$\frac{2}{1}$	No
5	$\frac{6-6}{2--3} = \frac{0}{5} = 0$	$\frac{0-0}{0-7} = \frac{0}{-7} = 0$	yes
7	$\frac{3}{4}$	$\frac{3}{4}$	yes; different y-int same slopes
9	Show Work. $y = 7x + 6$ ↑ 7	Show Work. $y = -7x + 8$ ↓ -7	No; not same slopes
11	Show Work. $5y = -2x - 1$ $y = \boxed{-\frac{2}{5}}x - \frac{1}{5}$	Show Work. $y = -\frac{4}{10}x - \frac{20}{10}$ $y = \boxed{-\frac{2}{5}}x - 2$	yes; same slope

Use the below table to answer 13 and 15.

Problem	Slope of given line	Slope of a parallel line	Given Point	**Equation in Point Slope From**
13	$\frac{1}{3}$	$\frac{1}{3}$	(6, 0)	$y - 0 = \frac{1}{3}(x - 6)$
15	$-\frac{3}{2}$	$-\frac{3}{2}$	(6, -2)	$y + 2 = -\frac{3}{2}(x - 6)$

Use the table to answer 17 and 19.

Problem	Slope of line 1?	Slope of line 2?	Perpendicular: **yes or no?**
17	$-\frac{3}{2}$	$\frac{2}{3}$	yes
19	-1	1	yes

Use the below table to answer 21.

Problem	Slope of given line	Slope of a perpen. line	Given Point	**Equation in Point Slope From**
21	$\frac{1}{2}$	$-\frac{2}{1}$	$(4,0)$	$y-0=-2(x-4)$

Use the table below to answer 23.

Problem	~~Midpoint~~ P	Slope of MN	**Equation in Point Slope Form**
23 $(1,9)$ $(9,-1)$	~~part~~ mdpt $(5,4)$	$\frac{-1-9}{9-1}=\frac{-10}{8}$ $-\frac{5}{4}$	$y-4=-\frac{5}{4}(x-5)$

Use the table to answer 25 and 27.

Problem	Slope of 1st line	Slope of 2nd line	Perpendicular?
25	Show Work. $y=-1x-7$ ↑ -1	Show Work. $y=1x+20$ ↓ 1	yes opp. Recip.
27	Show Work. $2x-7y=-42$ $\frac{-7y}{-7}=\frac{-2x}{-7}-\frac{42}{-7}$ $y=\frac{2}{7}x+6$ $\frac{2}{7}$	Show Work. $y=-\frac{7}{4}x-\frac{2}{4}$ $y=-\frac{7}{4}x-\frac{1}{2}$ $-\frac{7}{4}$	NO not opp. Recp.

Use the table to answer 29 and 31.

Problem	**Slope AB**	*Slope BC*	**Slope CD**	*Slope DA*	Are opposite sides parallel? Explain.
29	$\frac{2}{3}$	-3	$\frac{2}{3}$	-3	yes $\overline{AB} \parallel \overline{CD}$ $\overline{BC} \parallel \overline{DA}$ same slopes
31	$\frac{1}{2}$	-1	$\frac{1}{4}$	$-\frac{1}{2}$	NO not the same slopes

Use the table to answer 35.

Slope RS	Slope ST	Slope TU	Slope UV	Slope VW
0	−1	1	0	−1

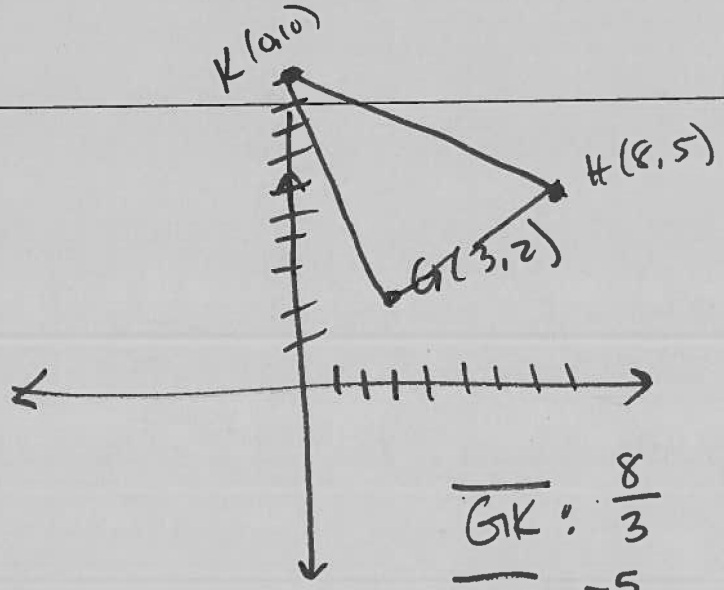
Which sides are parallel?

$\overline{RS} \parallel \overline{UV}$ $\overline{TS} \parallel \overline{VW}$ $\overline{RW} \parallel \overline{TU}$

Use the table to answer 36.

Slope GH	Slope HK	Slope KG

Are any two sides perpendicular? If so, which pair? Would these points plot a right triangle? Explain.



$\overline{GK}$: $\frac{8}{3}$

$\overline{KH}$: $\frac{-5}{8}$

$\overline{GH}$: $\frac{3}{5}$

No opposite reciprocals