KEY

First Name:_____ Last Name:_____

L40 – FQ – 7.4 Parallel and Perpendicular

Use the following information to answer Q1-Q4:

A line passes through the points (-4,-5) and (4,9).

$x_1\ y_1 \quad x_2\ y_2$

Q1: The equation of the line, in *Slope y-Intercept Form,* is $y = \frac{d}{e}x + f$, where ***d, e,*** and ***f*** are ___, ___, and ___.

*(Record your **three digit** answer in the Numerical Response boxes below)*

7	4	2	

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9-(-5)}{4-(-4)} = \frac{14}{8} = \frac{7}{4}$

$y = mx + b$

$y = \frac{7}{4}x + b$ Use (4,9)

$9 = \frac{7}{4}(4) + b$

$9 = 7 + b$

$-7 \quad -7$

$2 = b$

$\Rightarrow y = \frac{7}{4}x + 2$

$y = \frac{d}{e}x + f$

$d = 7$
$e = 4$
$f = 2$

Q2: A parallel line has a slope of $\frac{g}{h}$, where ***g*** and ***h*** are ___ and ___.

*(Record your **two digit** answer in the Numerical Response boxes below)*

7	4		

Parallel? Same slope

$\frac{g}{h} = \frac{7}{4}$

KEY

Use the following additional information to answer Q3-4:

A perpendicular line passes through the point (7,-2).

Q3: The slope of the perpendicular line is

a. $\frac{4}{7}$

b. $-\frac{4}{7}$

c. $\frac{7}{4}$

d. $-\frac{7}{4}$

$m_{original} = \frac{7}{4}$ $\quad m_{new} = \frac{-4}{7}$

Q4: The equation of the perpendicular line, in *General Form*, is $ax + by - cd$, where ***a, b, c,*** and ***d*** are ___, ___, ___, and ___.

*(Record your **four digit** answer in the Numerical Response boxes below)*

4	7	1	4

$y = mx + b$

$y = -\frac{4}{7}x + b$ $\quad$ Use $(7, -2)$

$-2 = -\frac{4}{7}(7) + b$

$-2 = -4 + b$

$+4 \quad +4$

$2 = b \Rightarrow y = -\frac{4}{7}x + 2$

$+\frac{4}{7}x \quad +\frac{4}{7}x$

$\frac{4}{7}x + 1y = 2$

$-2 \quad -2$

$\frac{4}{7}x + 1y - 2 = 0$

$\times 7 \quad \times 7 \quad \times 7 \quad \times 7$

$4x + 7y - 14 = 0$

$ax + by - cd = 0$

$a = 4$

$b = 7$

$c = 1$

$d = 4$

KEY

$2x+3=3y$

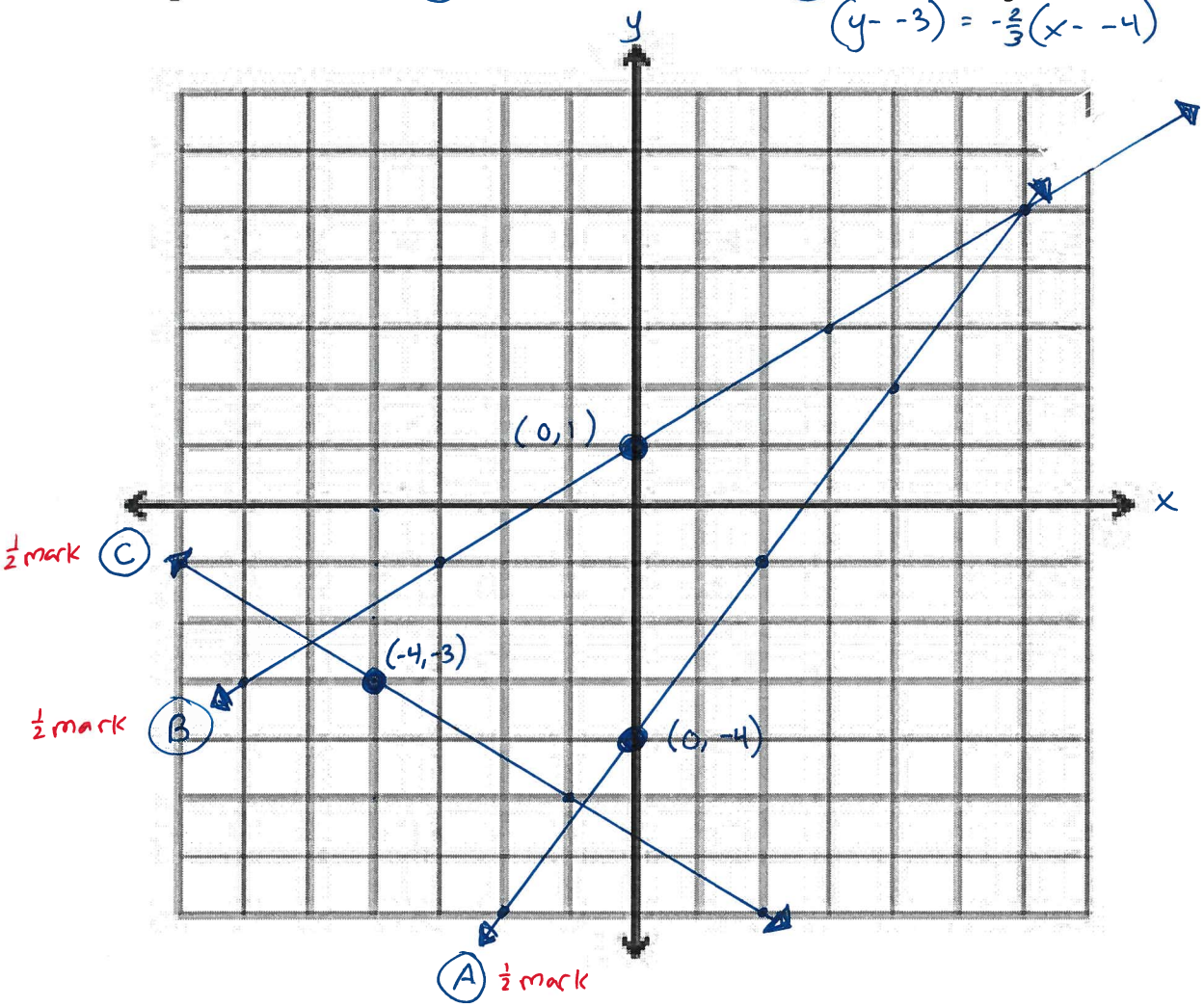
$\frac{2}{3}x+1=y$

$y=\frac{2}{3}x+1$

Q5: *(Long Answer)* Graph the following lines:

(A) $y=\frac{3}{2}x-4$ (B) $2x-3y+3=0$ (C) $(y+3)=-\frac{2}{3}(x+4)$

$(y--3)=-\frac{2}{3}(x--4)$



Which lines are perpendicular? Explain. *(2 marks)*

For (A), $m=\frac{3}{2}$ For (B), $m=\frac{2}{3}$ For (C), $m=-\frac{2}{3}$

½ mark Lines (A) and (C) are perpendicular → slope is the "negative reciprocal".

MARKING:

Beginning	0.0 – 2.5
Progressing	3.0 – 4.0
Competent	4.5 – 5.5
Exemplary	6.0