Name: ANS. key

Math Gr.10 CST Quiz

/10

Parallel and Perpendicular Lines

1. **Circle** whether the following lines are parallel or perpendicular to the line

$9x + 6y = 240$

a. $2y + 3x = -24$ → parallel or perpendicular?

b. $15y - 150 = 10x$ → parallel or perpendicular?

c. $9y - 6x + 18 = 0$ → parallel or perpendicular?

d. $6x - 16 = -4y$ → parallel or perpendicular?

/2

$9x + 6y = 240$
$-9x \quad -9x$
$\frac{6y}{6} = \frac{-9x}{6} + \frac{240}{6}$
$y = -\frac{3}{2}x + \frac{240}{6}$
$a = -\frac{3}{2}$

a. $2y + 3x = -24$
$-3x \quad -3x$
$\frac{2y}{2} = \frac{-3x}{2} - \frac{24}{2}$
$y = -\frac{3}{2}x - \frac{24}{2}$
$a = -\frac{3}{2}$
same parallel

b. $15y - 150 = 10x$
$+150 \quad +150$
$\frac{15y}{15} = \frac{10x}{15} + \frac{150}{15}$
$y = \frac{2}{3}x + \frac{150}{15}$
$a = \frac{2}{3}$ negative reciprocal perpendicular

c. $9y - 6x + 18 = 0$
$+6x - 18 \quad +6x - 18$
$\frac{9y}{9} = \frac{6x}{9} - \frac{18}{9}$
$y = \frac{2}{3}x - \frac{18}{9}$
$a = \frac{2}{3}$

d. $\frac{6x}{-4} - \frac{16}{-4} = \frac{-4y}{-4}$
$y = -\frac{3}{2}x + 4$
same parallel

2. **Given** the rule: y = 4x + 8

$a = 4$

Write a rule that is parallel to the line provided above:

$y = 4x + 16$

$a = 4$ same

Write a rule that is perpendicular to the line provided above:

$y = -\frac{1}{4}x + 16$

/2

$a = -\frac{1}{4}$ negative reciprocal

3. **Find** the equation of a line that is parallel to the line 2y – 4x + 10 = 0 and passes through the point (6, 19) **/2**

Step 1 x_1 y_1

Step 2:

$2y - 4x + 10 = 0$

$+4x - 10 \quad +4x - 10$

$2y = 4x - 10$

$\frac{2y}{2} = \frac{4x}{2} - \frac{10}{2}$

$y = 2x - 5$

Step 3: $a = 2$

Step 4: $y_1 = ax_1 + b$

$19 = 2(6) + b$

$19 = 12 + b$

$-12 \quad -12$

$7 = b$

$b = 7$

Step 5: $\boxed{y = 2x + 7}$

4. **a. Find** the equation of the line that is perpendicular to the line 2x – 3y – 3 = 0 and passing through the point A(–2, 1) **/2**

Step 1: x_1 y_1

Step 2:

$2x - 3y - 3 = 0$

$-2x \quad +3 \quad -2x + 3$

$-3y = -2x + 3$

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

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

Step 3: $a = \frac{2}{3}$

Step 4: negative reciprocal of a

$a = \frac{2}{3}$ n.r $a = -\frac{3}{2}$

Step 5: $y_1 = ax_1 + b$

$1 = -\frac{3}{2}(-2) + b$

$1 = \frac{6}{2} + b$

$1 = 3 + b$

$-3 \quad -3$

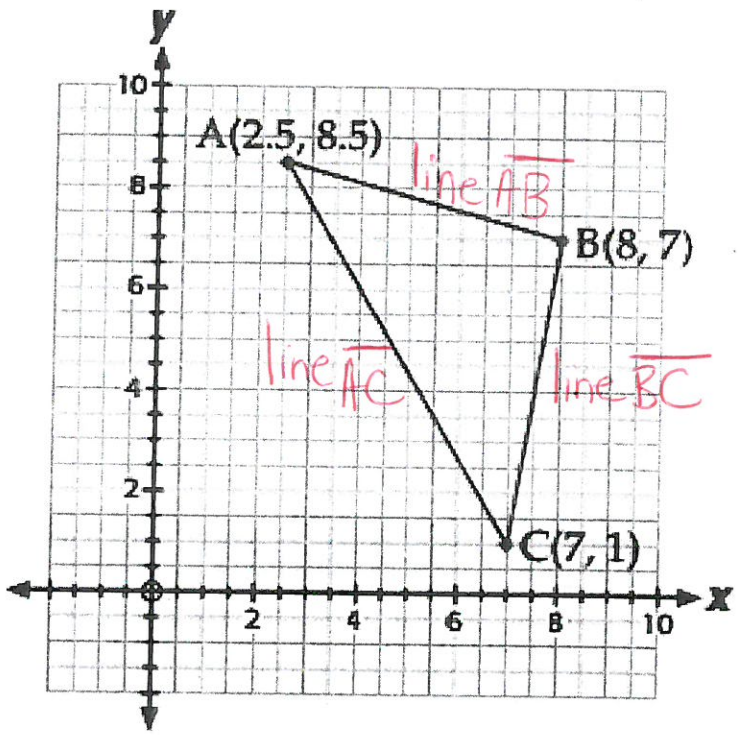
$-2 = b$

Step 6:

$\boxed{y = -\frac{3}{2}x - 2}$

5. Determine whether the triangle on the graph is a right triangle. **/2**

***remember** *a right triangle is where one of its interior angles is a right angle (90 degrees).*



line $\overline{AB}$

A (2.5, 8.5) B (8, 7)
x_1 y_1 x_2 y_2

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 8.5}{8 - 2.5} = \frac{-1.5}{5.5}$$

or -0.27

line $\overline{AC}$

A (2.5, 8.5) C (7, 1)

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 8.5}{7 - 2.5} = \frac{-7.5}{4.5}$$

or -1.6

line $\overline{BC}$

B (8, 7) C (7, 1)
x_1 y_1 x_2 y_2

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 7}{7 - 8} = \frac{-6}{-1} = \frac{6}{1} = 6$$

ANS: This is NOT a right triange since none of the slopes are the negative reciprocal of each other with would indicate perpendicular lines (90°).