Quiz: Parallel, Perpendicular & Equations of Lines   Total: ___ 25/25
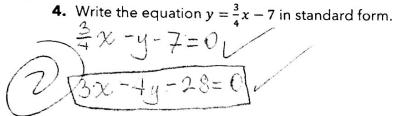
1. ~~What~~ is the slope of a line that is perpendicular to $y = -\frac{4x}{5} - 6$? $\frac{5}{4}$ ✓
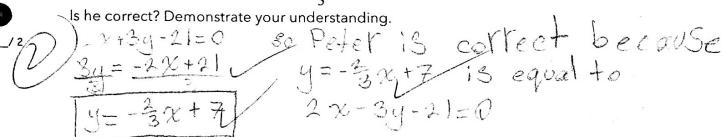
2. What is the slope of a line that is parallel to $x - 8y = 4$? $\frac{1}{8}$ ✓

③ $\frac{x}{8} - \frac{4}{8} = \frac{8y}{8}$ $y = \frac{1}{8}x - \frac{1}{2}$

3. Find the equation of the line parallel to $y = -4$ and passing through (5,2) $y = 2$

4. Write the equation $y = \frac{3}{4}x - 7$ in standard form.

$\frac{3}{4}x - y - 7 = 0$ ✓

② $\boxed{3x - 4y - 28 = 0}$ ✓

5. Peter states that the equations $y = -\frac{2}{3}x + 7$ and $2x + 3y - 21 = 0$ represent the same line.

Is he correct? Demonstrate your understanding.

$-/2$ ②

$-x + 3y - 21 = 0$

$\frac{3y}{3} = \frac{-2x + 21}{3}$ ✓

$\boxed{y = -\frac{2}{3}x + 7}$ ✓

so Peter is correct becouse

$y = -\frac{2}{3}x + 7$ is equal to

$2x - 3y - 21 = 0$

6. Find the equation of a line with:

a) Perpendicular to $y = 3x + 8$ and passing through $(-1, -5)$

3.3 ⑥

$m = -\frac{1}{3}$

$-5 = -\frac{1}{3}(-1) + b$

$-5 = \frac{1}{3} + b$

$-15 = 1 + 3b$

$-16 = 3b$

$-\frac{16}{3} = b \Rightarrow \boxed{y = -\frac{1}{3}x + -\frac{16}{3}}$

b) Passing through $E(-4,2)$ and $F(1,-3)$.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{-3 - 2}{1 - (-4)}$

$m = \frac{-5}{5}$

$m = -1$

$2 = -1(-4) + b$

$2 = 4 + b$

$-4 \quad -4$

$-2 = b$

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

7. A campsite fee at the national park is $12.25 per night. Kyle and his friends paid $113.50 for their 8 night camping trip. The equation relating cost and number of nights is of the form $C = mn + b$, where C is the total cost and n is the number of nights.

a) Determine the equation that models this situation.

$$113.5 = 12.25(8) + b$$
$$113.5 = 98 + b$$
$$-98 \qquad -98$$
$$15.5 = b$$

$$\boxed{C = 12.25n + 15.50}$$

b) Use your equation to determine the cost of a 14-night camping trip.

$$C = 12.25(14) + 15.5$$
$$C = 171.5 + 15.5$$
$$\boxed{C = 187}$$

so it would cost $187

8. The total cost of swimming at a community swimming pool is made up of a membership fee and a cost per swim. At this community centre, Mike pays a total of $115.25 and swims 41 times. Adam pays a total of $79.25 and swims 25 times.

What is the membership fee? Show your work.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$m = \frac{115.25 - 79.25}{41 - 25}$$
$$m = \frac{36}{16}$$
$$m = \frac{9}{4}$$

$$79.25 = \frac{9}{4}(25) + b$$
$$79.25 = \frac{225}{4} + b$$
$$317 = 225 + 4b$$
$$-225 \quad -225$$
$$92 = 4b$$
$$\boxed{23 = b}$$

∴ The membership fee is $23 and it costs $2.25/time.

9. Find the POI for this system of equations.

$$x + 3y = 3 \qquad \frac{3y}{3} = \frac{-x + 3}{3}$$
$$y = \frac{2}{3}x - 5 \qquad y = -\frac{1}{3}x + 1$$

POI = $\boxed{(6, -1)}$

$$-\frac{1}{3}x + 1 = \frac{2}{3}x - 5$$
$$1 + 5 = \frac{2}{3}x + \frac{1}{3}x$$
$$6 = 1x$$
$$y = -\frac{1}{3}(6) + 1 \qquad \boxed{y = -1}$$
$$y = -2 + 1 \implies$$