Chapter 2.4

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

(30) slope $\frac{3}{4}$, passes through $(-6,9)$

$y = mx + b$

$9 = \frac{3}{4}(-6) + b$

$9 = \frac{-18}{4} + b$

$9 = -4\frac{1}{2} + b$

$+4\frac{1}{2} \quad +4\frac{1}{2}$

$13\frac{1}{2} = b$

$\boxed{y = \frac{3}{4}x + 13\frac{1}{2}}$

(31) passes through $(-1,2)$, parallel to the graph of $x - 3y = 14$

use $y = mx + b$ to find slope (solve for y)

$x - 3y = 14$

$-x \quad -x$

$\frac{-3y}{-3} = \frac{-x}{-3} + \frac{14}{-3}$

$y = \frac{1}{3}x - \frac{14}{3}$

There is the slope

Same slope

Find b (y-intercept)

$y = mx + b$

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

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

$+\frac{1}{3} \quad +\frac{1}{3}$

$2\frac{1}{3} = b$

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

Chapter 2.4 continued

(32) passes through $(3,-8)$ and $(-3,2)$

need slope... $m = \frac{y_2 - y_1}{x_2 - x_1}$ $(3,-8)$, $(-3,2)$ $x_1\ y_1$ $x_2\ y_2$

$$m = \frac{2-(-8)}{-3-3} = \frac{2+8}{-6} = \frac{10}{-6} = \frac{5}{-3}$$

$$m = -\frac{5}{3}$$

choose a point... $(3,-8)$

$y = mx + b$

$-8 = -\frac{5}{3}(3) + b$

$-8 = -5 + b$

$+5 \quad +5$

$-3 = b$

$y = mx + b$

$\boxed{y = -\frac{5}{3}x - 3}$

(33) passes through $(3,2)$, perpendicular to the graph of $4x - 3y = 12$

need slope... $4x - 3y = 12$

$-4x \quad -4x$

$\frac{-3y}{-3} = \frac{-4x}{-3} + \frac{12}{-3}$

$y = \frac{4}{3}x - 4$

slopes are opposite reciprocals

$m = -\frac{4}{3}$

$y = mx + b$

$2 = -\frac{4}{3}(3) + b$

$2 = -4 + b$

$+4 \quad +4$

$6 = b$

$y = mx + b$

$\boxed{y = -\frac{4}{3}x + 6}$

Assignment 2.4
Writing Linear Equations

Write an equation in slope-intercept form for t he line that satisfies each set of conditions.

slope ¾ , passes through (-6, 9)

y = mx + b

9 = -4 ½ + b
+4 ½ +4 ½
= b

y = x +

9 + 4 ½ =

A) 13.5
B) 3

passes through (-1, 2), parallel to the graph of x – 3y = 14

of x – 3x = 14

use y = mx + b
to find slope
(solve for y)

x – 3y = 14
-x -x
-3y = -x + 14
-3 -3 -3

$y = \frac{1}{3}x - \frac{14}{3}$

slope

Find b (y-intercept)
y = mx + b
2 = ⅓ (-1) + b
2 = -⅓ + b
+⅓ = +⅓
= b
= b

y = ⅓ x +

2 + ⅓ =

A) 2 ⅓
B) 23

Assignment 2.4
Writing Linear Equations

passes through(3, -8) and (-3, 2)

need slope… $m = \frac{y_2 - y_1}{x_2 - x_1}$ (3, -8) , (-3, 2)

x_1 y_1 x_2 y_2

$m = \frac{2-(-8)}{-3-3} = \frac{2+8}{-6} = \frac{10}{-6} = \frac{\square}{\square}$

$m = \frac{\square}{\square}$

10 ÷ 2 = □ → A) 12 B) 5

-6 ÷ 2 = □ → A) 3 B) -3

Chose a point… (3, -8)

y = mx + b

$-8 = -\frac{5}{3}(3) + b$

-8 = -5 + b

+5= +5

□ = b

y = mx + b

-8 + 5 = □ → A) -3 B) 13

y = - $\frac{5}{3}$ x + □

Choice Strategy

Assignment 2.4
Writing Linear Equations

passes through (3, 2), perpendicular to the graph of 4x – 3y = 12

need slope… 4x – 3y = 12

-4x -4x

-3y = -4x + 12

-3 -3 -3

$y = \frac{4}{3}x - 4$

slopes are opposite reciprocals

$m = -\frac{4}{3}$

y = mx + b

$2 = -\frac{4}{3}(3) + b$

2 = - 4 + b

+4 +4

□ = b

2 + 4 = □

A) 6

B) 8

y = mx + b

$y = -\frac{-4}{3}x +$ □

Choice Strategy

Assignment 2.4
Writing Linear Equations

Write an equation in slope-intercept form for t he line that satisfies each set of conditions.

slope ¾ , passes through (-6, 9)

y = mx + b

$9 = \frac{3}{4}(-6) + b$

$9 = \frac{\square}{4} + b$

9 = ▭ + b
+4 ½ +4 ½
▭ = b

y = ▭ x + ▭

¾ ● -6 = ▭
▭ ÷ 4 = ▭
9 + ▭ = ▭

passes through (-1, 2), parallel to the graph of x – 3y = 14

of x – 3x = 14

use y = mx + b
to find slope
(solve for y)

x – 3y = 14
-x -x
-3y = -x + 14
-3 -3 -3

$y = \frac{1}{3}x - \frac{14}{3}$

slope

Find b (y-intercept)
y = mx + b
2 = ⅓ (-1) + b

2 = ▭ + b
+⅓ = +⅓
= b
▭

y = ▭ x + ▭

⅓ ● -1 = ▭
2 + ▭ = ▭

Assignment 2.4
Writing Linear Equations

passes through(3, -8) and (-3, 2)

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

(3, -8) , (-3, 2)
x_1 y_1 x_2 y_2

$m = \frac{2-(-8)}{-3-3} = \frac{2+8}{-6} = \frac{\square}{\square} = \frac{\square}{\square}$

2 + 8 = ☐
-3 – 3 = ☐
☐ ÷ 2 = ☐
☐ ÷ 2 = ☐

$m = \frac{\square}{\square}$

Chose a point… (3, -8)

y = mx + b

y = mx + b

$-8 = -\frac{5}{3}(3) + b$

-8 = -5 + b
+5= +5
☐ = b

-8 + 5 = ☐

y = $\frac{\square}{\square}$ x + ☐

Closed Strategy

Assignment 2.4
Writing Linear Equations

passes through (3, 2), perpendicular to the graph of 4x – 3y = 12

need slope… 4x – 3y = 12

-4x -4x

-3y = -4x + 12

-3 -3 -3

slopes are opposite reciprocals

m = $-\frac{4}{3}$

y = mx + b

$2 = -\frac{4}{3}(3) + b$

2 = ☐ + b

+4 +4

☐ = b

y = $\frac{4}{3}$ x ☐

12 ÷ -3 = ☐

-4/3 ● 3 = ☐

2 + 4 = ☐

y = mx + b

y = $-\frac{-4}{3}x$ + ☐

LANDSCAPING

Mr. Ryan is planning to plant rows of roses in a garden he is designing for a client. Before planting, he sketches out his plan on a coordinate grid. A row of white roses will be planted along the line with equation y = 2x + 1. A row of red roses and pass through the point (3, 5). What equation would represent the line for the row of red roses?

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Writing Linear Equations

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x – 3y = 14
-x -x
-3y = -x + 14
-3 -3 -3

$y = \frac{1}{3}x - \frac{14}{3}$

slope

Find b (y-intercept)
y = mx + b
2 = ⅓ (-1) + b
2 = -⅓ + b
+⅓ = +⅓
= b
= b

2 + ⅓ =

y = x +

Closed Last Step Strategy

Assignment 2.4
Writing Linear Equations

passes through(3, -8) and (-3, 2)

need slope… $m = \frac{y_2 - y_1}{x_2 - x_1}$ (3, -8) , (-3, 2)

x_1 y_1 x_2 y_2

$m = \frac{2-(-8)}{-3-3} = \frac{2+8}{-6} = \frac{10}{-6} = \frac{\square}{\square}$

$m = \frac{\square}{\square}$

10 ÷ 2 = □

-6 ÷ 2 = □

Chose a point… (3, -8)

y = mx + b

y = mx + b

$-8 = -\frac{5}{3}(3) + b$

-8 = -5 + b

+5= +5

□ = b

-8 + 5 = □

y = □/□ x + □

Closed Last Step Strategy

Assignment 2.4
Writing Linear Equations

passes through (3, 2), perpendicular to the graph of 4x – 3y = 12

need slope… 4x – 3y = 12

-4x -4x

-3y = -4x + 12

-3 -3 -3

y = $\frac{4}{3}$x – 4

slopes are opposite reciprocals

m = - $\frac{4}{3}$

y = mx + b

$2 = -\frac{4}{3}(3) + b$

2 = - 4 + b

+4 +4

□ = b

2 + 4 = □

y = mx + b

y = - $\frac{-4}{3}x$ + □

Closed Last Step Strategy

Assignment 2.4
Writing Linear Equations

Write an equation in slope-intercept form for t he line that satisfies each set of conditions.

slope ¾ , passes through (-6, 9)

passes through (-1, 2), parallel to the graph of $x - 3y = 14$

passes through(3, -8) and (-3, 2)

passes through (3, 2), perpendicular to the graph of $4x - 3y = 12$

LANDSCAPING
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Open-Ended

Assignment 2.4
Writing Linear Equations

Write an equation in slope-intercept form for the line that satisfies each set of conditions. y=mx+b

slope ¾ , passes through (-6, 9)

passes through (-1, 2), parallel to the graph of x – 3y = 14

passes through(3, -8) and (-3, 2)

passes through (3, 2), perpendicular to the graph of 4x – 3y = 12

LANDSCAPING
Mr. Ryan is planning to plant rows of roses in a garden he is designing for a client.
Before planting, he sketches out his plan on a coordinate grid.
A row of white roses will be planted along the line with equation y = 2x + 1.
A row of red roses and pass through the point (3, 5).
What equation would represent the line for the row of red roses?