

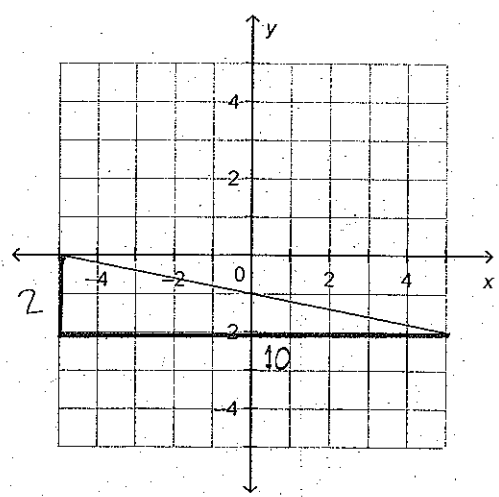
Math 10 - Ch.6 Test - Linear Equations PRACTICE TEST

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Multiple Choice

Identify the choice that best completes the statement or answers the question.

a 1. Write an equation to describe this graph.



$$\text{SLOPE} = \frac{-2}{10} = \frac{-1}{5}$$

$$b = -1$$

$$\therefore y = -\frac{1}{5}x - 1$$

a. $y = -\frac{1}{5}x - 1$

c. $y = \frac{1}{5}x - 1$

b. $y = -\frac{1}{5}x + 1$

d. $y = \frac{1}{5}x + 1$

c 2. In which form is the equation $10x + 7y - 5 = 0$ written?

a. Standard form

c. General form

b. Slope-intercept form

d. Slope-point form

b 3. Which equation is written in general form?

a. $-4x - 12y + 15 = 0$

c. $12x = 4y - 15$

b. $12x - 4y + 15 = 0$

d. $\frac{1}{15}x - 4y - 12 = 0$

b 4. Write an equation for the graph of a linear function that has slope 8 and passes through $R(4, -3)$.

a. $y + 3 = -8(x - 4)$

$$y - y_1 = m(x - x_1)$$

b. $y + 3 = 8(x - 4)$

$$y - (-3) = 8(x - 4)$$

c. $y + 3 = \frac{1}{8}(x - 4)$

$$y + 3 = 8(x - 4)$$

d. $y - 3 = 8(x + 4)$

5. Describe the graph of the linear function with this equation: $y + 3 = \frac{1}{3}(x - 2)$

- a. The graph is a line through $(-2, 3)$ with slope $\frac{1}{3}$.
- b.** The graph is a line through $(2, -3)$ with slope $\frac{1}{3}$.
- c. The graph is a line through $(2, -3)$ with slope $-\frac{1}{3}$.
- d. The graph is a line through $(-2, 3)$ with slope $-\frac{1}{3}$.

$$y - y_1 = m(x - x_1)$$

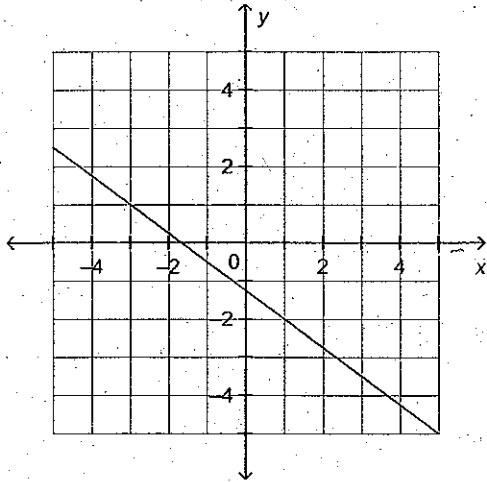
$$\text{so, } m = \frac{1}{3}$$

$$x_1 = 2$$

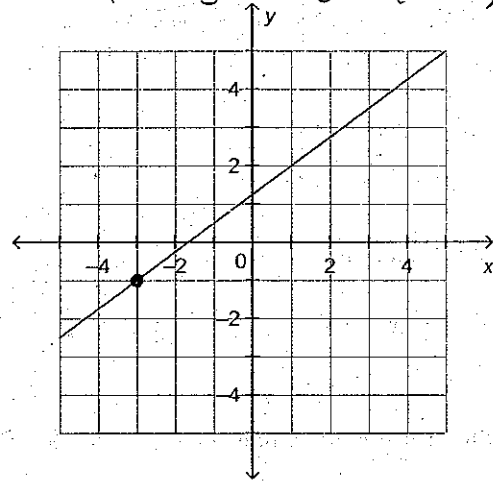
$$y_1 = -3$$

6. Which graph represents the equation $y + 1 = \frac{3}{4}(x + 3)$?

a.

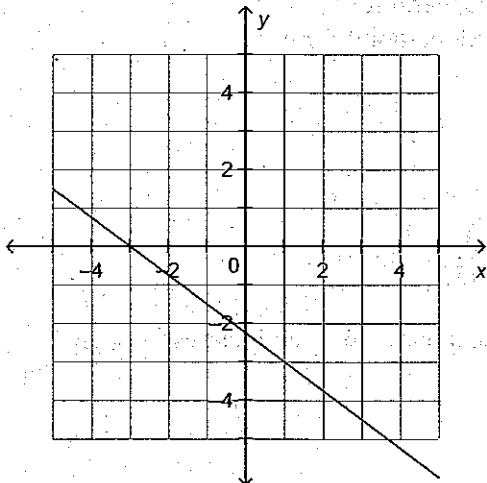


c.

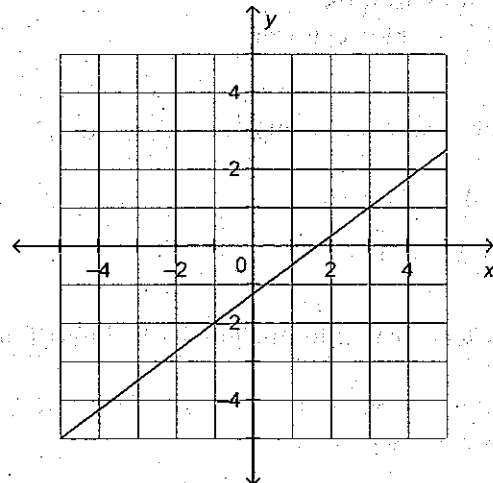


look for graph with $m = \frac{3}{4}$
passing through $(-3, -1)$

b.



d.



Graph c is the only one that passes through $(-3, -1)$

a 7. Predict what will be common about the graphs of these equations.

i) $y = 2x - 6$

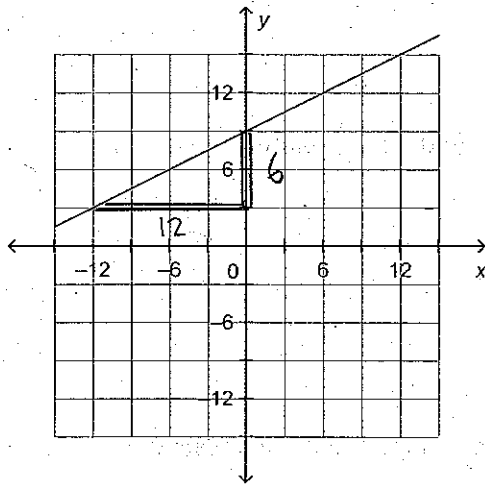
iii) $y = -5x - 6$

ii) $y = -3x - 6$

iv) $y = 5x - 6$

- (a) All the graphs will have the same y-intercept.
- b. All the graphs will have the same x-intercept.
- c. All the graphs will have the same slope.
- d. None of the above.

d 8. Write an equation to describe this graph.



$$m = \frac{6}{12} = \frac{1}{2}$$

$$b = 9$$

a. $f(x) = -\frac{1}{2}x + 9$

c. $f(x) = -\frac{1}{2}x - 9$

b. $f(x) = \frac{1}{2}x - 9$

(d) $f(x) = \frac{1}{2}x + 9$

d 9. Which equations represent parallel lines?

a. $y = 8x + 8, y = -5x + 8$

c. $y = 8x - 5, y = 14x + 14$

b. $y = 14x - 5, y = -5x + 8$

(d) $y = \underline{-5x + 14}, y = \underline{-5x + 8}$ same slope

b 10. Which equations represent perpendicular lines?

a. $y = 6x - 7, y = 6x + 7$

c. $y = 11x - 7, y = 11x + \frac{1}{7}$

(b) $y = \underline{-7x + 11}, y = \underline{\frac{1}{7}x + 6}$

d. $y = \frac{1}{6}x + 6, y = 6x + 6$

slopes are negative reciprocals

- d 11. Determine the slope of the line with this equation: $16x - 4y + 2 = 0$ slope = $-\frac{A}{B} = -\frac{-16}{-4} = 4$
- a. -4 c. $-\frac{1}{4}$
- b. $\frac{1}{4}$ (d.) 4

- b 12. Write this equation in slope-intercept form: $10x + 3y - 4 = 0$ $3y = -10x + 4$
- a. $y = \frac{10}{3}x + \frac{4}{3}$ c. $y = \frac{10}{3}x - \frac{4}{3}$ $y = \frac{-10x + 4}{3}$
- (b.) $y = -\frac{10}{3}x + \frac{4}{3}$ d. $y = -\frac{10}{3}x - 4$ $y = -\frac{10x}{3} + \frac{4}{3}$

Short Answer

13. Write an equation for the graph of a linear function that has slope $-\frac{1}{3}$ and y -intercept -3 .

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

14. Write an equation for the graph of a linear function that has slope 1 and y -intercept 8.

$$y = 1x + 8 \longrightarrow y = x + 8$$

15. Write this equation in standard form: $y = -\frac{3}{2}x + 8$

$$2 \left[y = -\frac{3}{2}x + 8 \right] \longrightarrow 2y = -3x + 16 \longrightarrow 3x + 2y = 16$$

16. Write this equation in general form: $y + 5 = \frac{5}{3}(x - 3)$

$$3(y + 5) = 3 \left(\frac{5}{3}(x - 3) \right) \longrightarrow 3y + 15 = 5(x - 3)$$

$$3y + 15 = 5x - 15$$

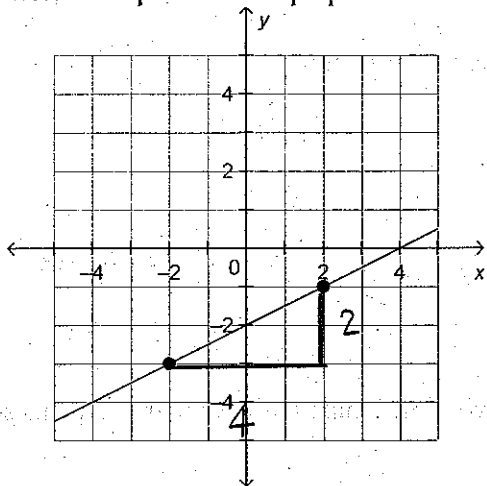
$$-5x + 3y + 15 + 15 = 0$$

$$4$$

$$5x - 3y - 30 = 0$$

Problem

17. a) Write an equation in slope-point form for this line.



$$m = \frac{2}{4} = \frac{1}{2}$$

$$\text{using } (-2, -3) \quad y + 3 = \frac{1}{2}(x + 2)$$

$$\text{or, using } (2, -1) \quad y + 1 = \frac{1}{2}(x - 2)$$

- b) Write the equation in part a in slope-intercept form. What is the
- y
- intercept of this line? (2 marks)

$$y\text{-int} = -2$$

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

18. Write an equation for the line that passes through
- $B(-1, 3)$
- and is:

- a) parallel to the line
- $y = -\frac{7}{3}x - 3$

$$y - 3 = -\frac{7}{3}(x + 1)$$

- b) perpendicular to the line
- $y = -\frac{7}{3}x - 3$

$$\text{slope} = \frac{3}{7} \text{ for } \perp \text{ line}$$

$$y - 3 = \frac{3}{7}(x + 1)$$

19. Students at Tahayghen Secondary School sell punch during the school carnival. The number of cups sold, n , is a linear function of the temperature in degrees Celsius, t . The students sold 458 cups when the temperature was 25°C . They sold 534 cups when the temperature was 29°C .

a) Write an equation in slope-point form to represent this function. $(25, 458)$ $(29, 534)$

$$m = \frac{534 - 458 \text{ cups}}{29 - 25^{\circ}\text{C}} = \frac{76 \text{ cups}}{4^{\circ}\text{C}} = 19 \text{ cups}/^{\circ}\text{C}$$

$$\therefore y - 458 = 19(x - 25) \quad \text{or} \quad y - 534 = 19(x - 29)$$

b) Use the equation in part a to determine the approximate temperature when the students sell 325 cups of punch.

$$325 - 458 = 19(x - 25)$$

$$-133 = 19x - 475$$

$$-133 + 475 = 19x$$

$$342 = 19x$$

$$\frac{342}{19} = x$$

$$x = 18^{\circ}\text{C}$$

20. Write an equation in general form for the line that passes through $A(3, -4)$ and $B(11, 8)$.

$$m = \frac{8 - (-4)}{11 - 3} = \frac{12}{8} = \frac{3}{2}$$

passing thru $(3, -4)$

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

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

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

$$2y + 8 = 3(x - 3)$$

$$2y + 8 = 3x - 9$$

$$-3x + 2y + 8 + 9 = 0$$

$$3x - 2y - 8 - 9 = 0$$

$$3x - 2y - 17 = 0$$

21. For $f(x) = 3x - 2$, find:

$$\begin{aligned} \text{a) } f(4) &= 3(4) - 2 \\ &= 12 - 2 \\ &= 10 \end{aligned}$$

$$\begin{aligned} \text{b) } f(2k) &= 3(2k) - 2 \\ &= 6k - 2 \end{aligned}$$

$$\begin{aligned} \text{c) } f(3x-1) &= 3(3x-1) - 2 \\ &= 9x - 3 - 2 \\ &= 9x - 5 \end{aligned}$$

$$\text{d) } f(x) = 19 \quad f(x) = 3x - 2$$

$$\therefore 3x - 2 = 19$$

$$3x = 19 + 2 \longrightarrow 3x = 21 \longrightarrow x = 7$$

e) Determine $f(x) = mx + b$ from the following information (2 marks)

$$f(2) = 4 \text{ and } f(-1) = -4 \quad (2, 4) \quad (-1, -4)$$

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

$$\text{thru } (2, 4) \quad y - 4 = \frac{8}{3}(x - 2)$$

$$y - 4 = \frac{8}{3}x - \frac{16}{3}$$

$$y = \frac{8}{3}x - \frac{16}{3} + 4 \quad \xrightarrow{\text{THINK...}} \rightarrow 4 = \frac{12}{3}$$

$$y = \frac{8}{3}x - \frac{16}{3} + \frac{12}{3}$$

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