

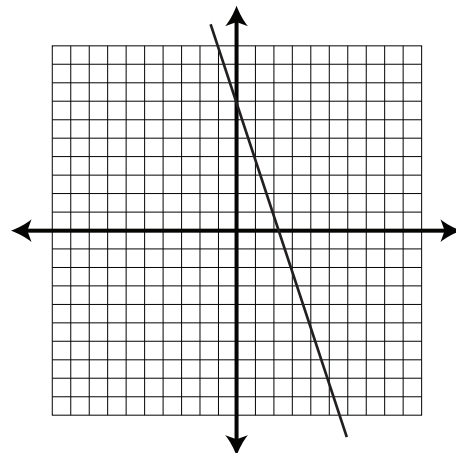
# Math 10C: Linear Functions

## PRACTICE EXAM

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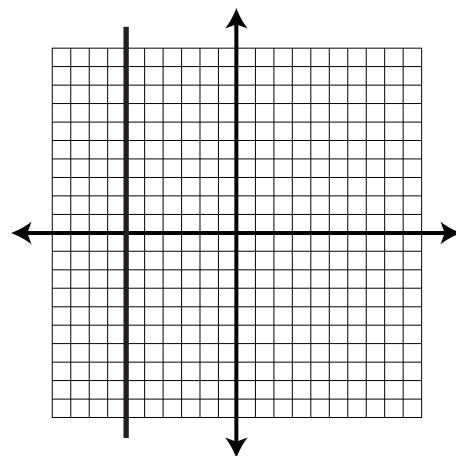
1. The slope of the line is:

- A. -3
- B.  $-\frac{1}{3}$
- C.  $\frac{1}{3}$
- D. 3



2. The slope of the line is:

- A. -6
- B.  $-\frac{1}{6}$
- C. 0
- D. Undefined



3. A line has a slope of  $\frac{1}{3}$  and the point  $(-4, -5)$  exists on the line.

Another point on the line is:

- A.  $(-6, -7)$
- B.  $(-3, -4)$
- C.  $(-1, -4)$
- D.  $(1, -4)$

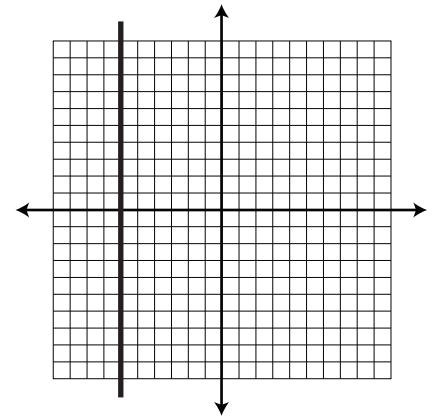
4. A line has points located at  $(a, 3)$  and  $(2, 9)$ . What is the value of  $a$  if the slope is  $\frac{3}{5}$  ?

- A. -8
- B. -4
- C. 3
- D. 5

5. The speed of a toy car is 0.18 m/s, and the equation relating distance and time is  $d = 0.18t$ . How many hours would it take for the car to travel 1 km?
- A. 0.18 hours
  - B. 1.5 hours
  - C. 5.6 hours
  - D. 5556 hours

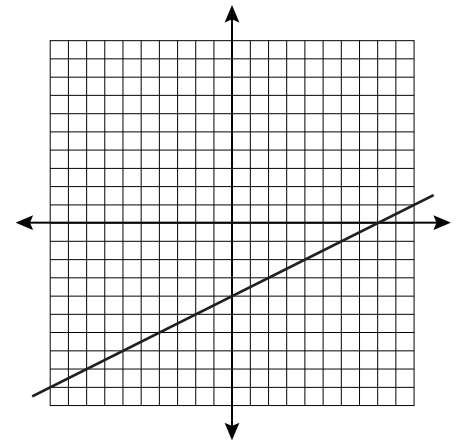
6. The equation of the line is:

- A.  $x = -6$
- B.  $y = -6$
- C.  $x = 0$
- D.  $y = 0$



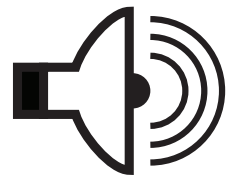
7. The slope-intercept equation of the line is:

- A.  $y = -\frac{1}{2}x - 4$
- B.  $y = \frac{1}{2}x - 4$
- C.  $y = \frac{1}{2}x + 4$
- D.  $y = 2x - 4$



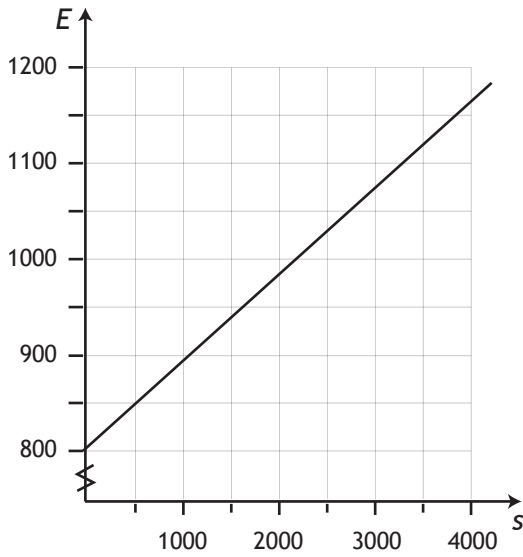
8. The speed of sound at  $0^\circ\text{C}$  is 331 m/s. At  $15^\circ\text{C}$ , the speed increases to 340 m/s. The function relating the speed of sound ( $s$ ) to the temperature ( $T$ ) is:

- A.  $s(T) = 15T$
- B.  $s(T) = 15T + 331$
- C.  $s(T) = 0.6T + 331$
- D.  $s(T) = 0.6T + 340$

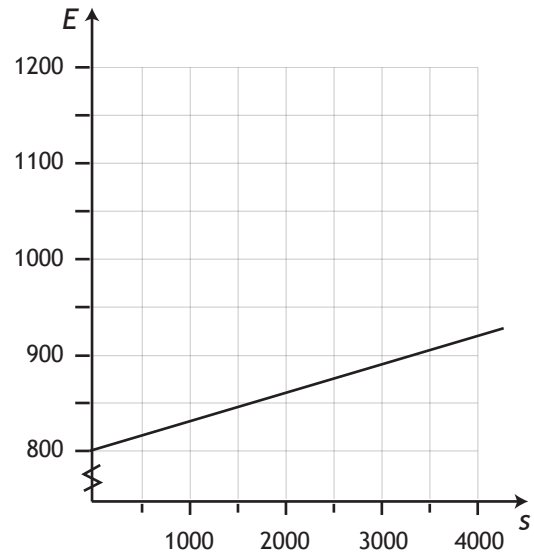


9. John is a salesman earning \$800 per week plus a 9% commission. The function relating John's earnings ( $E$ ) to the amount of sales ( $s$ ), along with the corresponding graph, is:

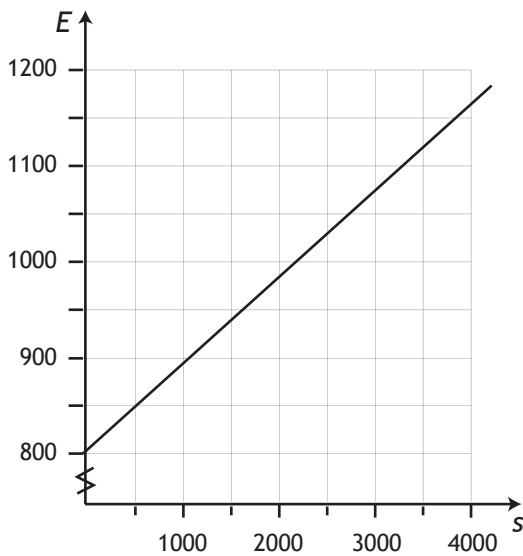
A.  $E(s) = 0.9s + 800$



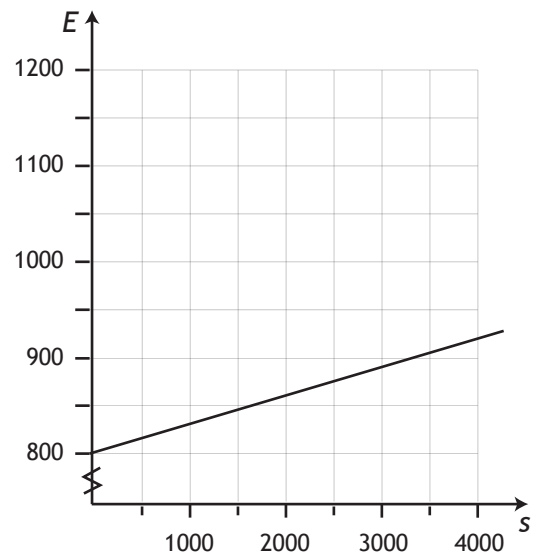
B.  $E(s) = 0.9s + 800$



C.  $E(s) = 0.09s + 800$



D.  $E(s) = 0.09s + 800$



10. The steps required to graph the slope-point equation  $y - 3 = -\frac{1}{2}(x + 5)$  are:

A. Draw a point at  $(-3, 5)$ . Follow the slope down one unit and left two units to get a second point at  $(-4, 3)$ . Draw a line between the two points.

B. Draw a point at  $(-5, 3)$ . Follow the slope down one unit and right two units to get a second point at  $(-3, 2)$ . Draw a line between the two points.

C. Draw a point at  $(-3, 5)$ . Follow the slope down one unit and right two units to get a second point at  $(-1, 4)$ . Draw a line between the two points.

D. Draw a point at  $(-5, 3)$ . Follow the slope down one unit and left two units to get a second point at  $(-7, 2)$ . Draw a line between the two points.

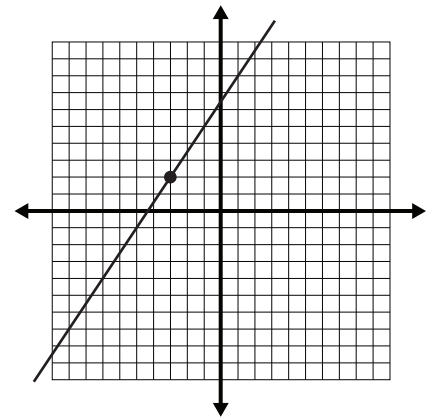
11. The slope-point equation of the line is:

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

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

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

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



12. The slope-point equation of a line passing through the points  $(-3, -1)$  and  $(2, -6)$  is:

A.  $y - 1 = -(x - 3)$

B.  $y + 1 = -(x + 3)$

C.  $y - 1 = x - 3$

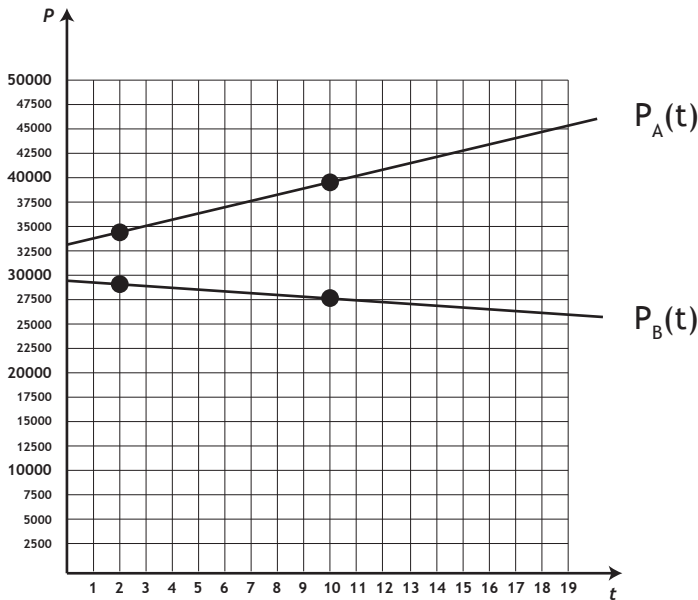
D.  $y + 1 = x + 3$

13. The following table shows population data for two small cities.



Year	Population of City A	Population of City B
2012	34000	29170
2020	38960	27410

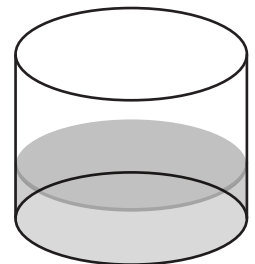
If  $t$  represents the number of years since 2010, and  $P$  is the population, then the population for each city can be graphed as shown.



The function corresponding to the population of City B is:

- A.  $P_B(t) = -220t + 29610$
- B.  $P_B(t) = -220t + 29640$
- C.  $P_B(t) = -220t + 29680$
- D.  $P_B(t) = -220t + 29800$

14. A cylindrical tank contains an unknown amount of water. If water is added to the tank at a rate of 5 L/min for 12 minutes, the volume of the water will be 89 L. The equation for the volume of the tank as a function of time is:



- A.  $V(t) = 5t + 12$
- B.  $V(t) = 5t + 89$
- C.  $V(t) = \frac{1}{5}t + 29$
- D.  $V(t) = 5t + 29$

15. The general form equation  $\frac{3}{4}x - \frac{3}{2}y - 6 = 0$  can be written in slope-intercept form as:

A.  $y = -\frac{1}{4}x - 2$

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

C.  $y = -\frac{1}{2}x + 4$

D.  $y = \frac{1}{2}x - 4$

16. The x- and y-intercepts of  $7x - 8y - 56 = 0$  are:

A. x-intercept: (-7, 0); y-intercept: (0, 8).

B. x-intercept: (0, -7); y-intercept: (8, 0).

C. x-intercept: (8, 0); y-intercept: (0, -7).

D. x-intercept: (0, 8); y-intercept: (-7, 0).

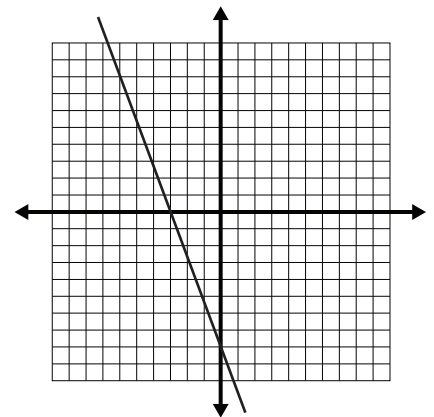
17. The general form equation of the line is:

A.  $3x + 8y + 12 = 0$

B.  $3x + 8y - 24 = 0$

C.  $8x + 3y + 24 = 0$

D.  $8x + 3y - 12 = 0$



18. Two positive real numbers,  $a$  and  $b$ , have a sum of 5. This can be expressed algebraically as  $a + b = 5$ . The true statement regarding the graph of  $a + b = 5$  is:

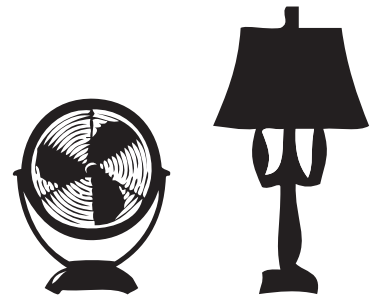
A. The dependent variable is  $a$ , so the relation must be graphed as  $a = -b + 5$ .

B. The dependent variable is  $b$ , so the relation must be graphed as  $b = -a + 5$ .

C. There is no cause-and-effect relationship between  $a$  and  $b$ , so the graph may be represented with either  $a = -b + 5$  or  $b = -a + 5$ .

D. This relation cannot be graphed.

19. A small appliance store is having a sale on fans and lamps. A fan costs \$10, and a lamp costs \$20. At the end of the day, the revenue from these items is \$120. If the quantity of fans sold is  $f$ , and the quantity of lamps sold is  $l$ , the general form equation that relates the variables is:



- A.  $f + l - 6 = 0$
- B.  $f + 2l - 12 = 0$
- C.  $2f + l - 12 = 0$
- D.  $2f + l - 6 = 0$

20. There are 400 Calories in one bowl of dry cereal. The equation  $C = 400b$  relates the amount of Calories ( $C$ ) to the number of bowls ( $b$ ). The true statement regarding the graph of this relation is:



- A. There is no cause-and-effect relationship between the variables, so it can be graphed as  $C = 400b$  or  $b = \frac{C}{400}$ .
  - B. The dependent variable is  $b$  and the independent variable is  $C$ .
  - C. The dependent variable is  $C$  and the independent variable is 400.
  - D. There is a cause-and-effect relationship between the variables, so they should only be graphed as  $C = 400b$ . The dependent variable is  $C$  and the independent variable is  $b$ , so we can express this as the function  $C(b) = 400b$ .
21. Two lines have slopes of  $-\frac{2}{a}$  and 3. If the lines are parallel, the value of  $a$  is:
- A.  $a = -\frac{3}{2}$
  - B.  $a = -\frac{2}{3}$
  - C.  $a = \frac{2}{3}$
  - D.  $a = 3$

22. A line with points at  $(-7, 3)$  and  $(1, -3)$  is perpendicular to a line with points at  $(-1, -3)$  and  $(a, 5)$ . The value of  $a$  is:

- A. 2
- B. 3
- C. 4
- D. 5

23. The slope-intercept equation of a line parallel to  $6x - 2y + 10 = 0$  and passing through the point  $(-2, -7)$  is:

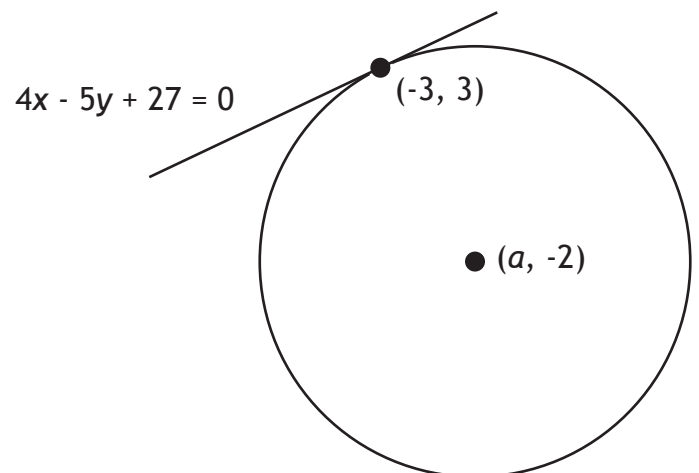
- A.  $y = \frac{1}{6}x - 1$
- B.  $y = \frac{1}{3}x + 2$
- C.  $y = 3x - 1$
- D.  $y = 6x + 2$

24. The equation of a line perpendicular to  $y + 4 = 0$  and passing through the point  $(-8, 9)$  is:

- A.  $x = -8$
- B.  $y = 0$
- C.  $y = -8$
- D. Undefined

25. The line  $4x - 5y + 27 = 0$  comes into contact with a circle at the point  $(-3, 3)$ . The centre of the circle is at the point  $(a, -2)$ . The value of  $a$  is:

- A. -1
- B. 0
- C. 1
- D. 2





## Linear Functions - ANSWER KEY

*Video solutions are in italics.*

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1. **A** *Slope of a Line, Introduction (b)*
2. **D** *Slope of a Line, Introduction (d)*
3. **C** *Slope of a Line, Example 2a*
4. **A** *Slope of a Line, Example 3b*
5. **B** *Slope of a Line, Example 4e*
6. **A** *Slope-Intercept Form, Introduction (d)*
7. **B** *Slope-Intercept Form, Example 2a*
8. **C** *Slope-Intercept Form, Example 3b*
9. **C** *Slope-Intercept Form, Example 4a*
10. **B** *Slope-Point Form, Introduction (a)*
11. **A** *Slope-Point Form, Example 2b*
12. **B** *Slope-Point Form, Example 3a*
13. **A** *Slope-Point Form, Example 4*
14. **D** *Slope-Point Form, Example 5*
15. **D** *General Form, Example 1b*
16. **C** *General Form, Example 2a*
17. **C** *General Form, Example 3b*
18. **C** *General Form, Example 4*
19. **B** *General Form, Example 5b*
20. **D** *General Form, Example 8*
21. **B** *Parallel and Perpendicular, Example 1b*
22. **D** *Parallel and Perpendicular, Example 2b*
23. **C** *Parallel and Perpendicular, Example 3a*
24. **A** *Parallel and Perpendicular Example 4b*
25. **C** *Parallel and Perpendicular, Example 7*

## Math 10C Practice Exam: Tips for Students

- Every question in the practice exam has already been covered in the Math 10C workbook. It is recommended that students refrain from looking at the practice exam until they have completed their studies for the unit.
- Do not guess on a practice exam. The practice exam is a self-diagnostic tool that can be used to identify knowledge gaps. Leave the answer blank and study the solution later.