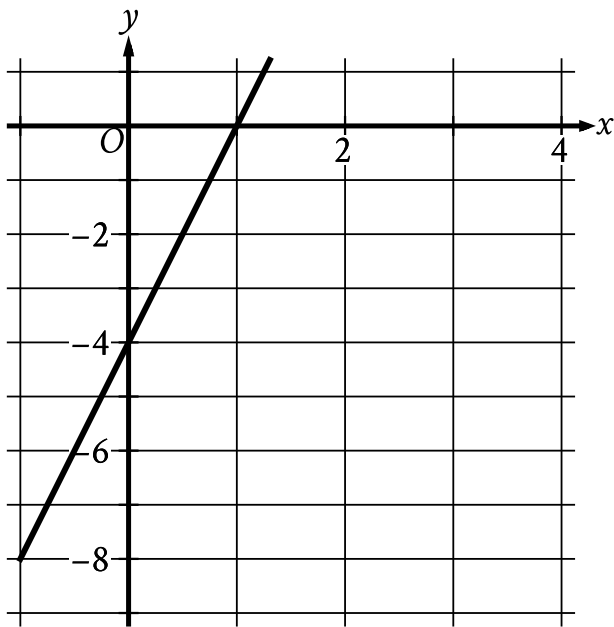


Question ID c23858ae

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: c23858ae



The graph of the function f is shown, where $y = f(x)$. What is the y -intercept of the graph?

- A. $(0, -1)$
- B. $(0, -4)$
- C. $(0, 1)$
- D. $(0, 4)$

ID: c23858ae Answer

Correct Answer: B

Rationale

Choice B is correct. The y -intercept of a graph is the point where the graph intersects the y -axis. The graph of function f shown intersects the y -axis at the point 0, - 4. Therefore, the y -intercept of the graph is 0, - 4.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID ca256141

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: ca256141

The function f is defined by the equation $f(x) = 100x + 2$. What is the value of $f(x)$ when $x = 9$?

- A. 111
- B. 118
- C. 900
- D. 902

ID: ca256141 Answer

Correct Answer: D

Rationale

Choice D is correct. Substituting 9 for x in the given equation yields $f9 = 1009 + 2$, or $f9 = 902$. Therefore, the value of $f x$ when $x = 9$ is 902.

Choice A is incorrect. This is the value of $f x$ when $x = 1.09$.

Choice B is incorrect. This is the value of $f x$ when $x = 1.16$.

Choice C is incorrect. This is the value of $f x$ when $x = 8.98$.

Question Difficulty: Easy

Question ID df6593de

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: df6593de

If $y = 5x + 10$, what is the value of y when $x = 8$?

ID: df6593de Answer

Correct Answer: 50

Rationale

The correct answer is 50. Substituting 8 for x in the given equation yields $y = 5(8) + 10$, or $y = 50$. Therefore, the value of y is 50 when $x = 8$.

Question Difficulty: Easy

Question ID cd929760

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: cd929760

To repair a refrigerator, a technician charges **\$60** per hour for labor plus **\$120** for parts. Which function f represents the total amount, in dollars, the technician will charge for this job if it takes x hours?

- A. $f(x) = x + 120$
- B. $f(x) = 60x$
- C. $f(x) = 60x + 120$
- D. $f(x) = 60x - 120$

ID: cd929760 Answer

Correct Answer: C

Rationale

Choice C is correct. It’s given that the technician charges \$ 60 per hour for labor. Therefore, if the job takes x hours, the technician will charge $\frac{\$ 60}{1 \text{ hour}}x$ hours, or \$ $60x$, for labor. It’s also given that the technician charges \$ 120 for parts. Therefore, $f(x) = 60x + 120$ represents the total amount, in dollars, the technician will charge for this job if it takes x hours.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect. This function represents the total amount, in dollars, the technician charges for labor only, not the total amount charged for labor and parts.

Choice D is incorrect. This function represents the total amount, in dollars, the technician would charge if the charge for parts were subtracted from, rather than added to, the charge for labor.

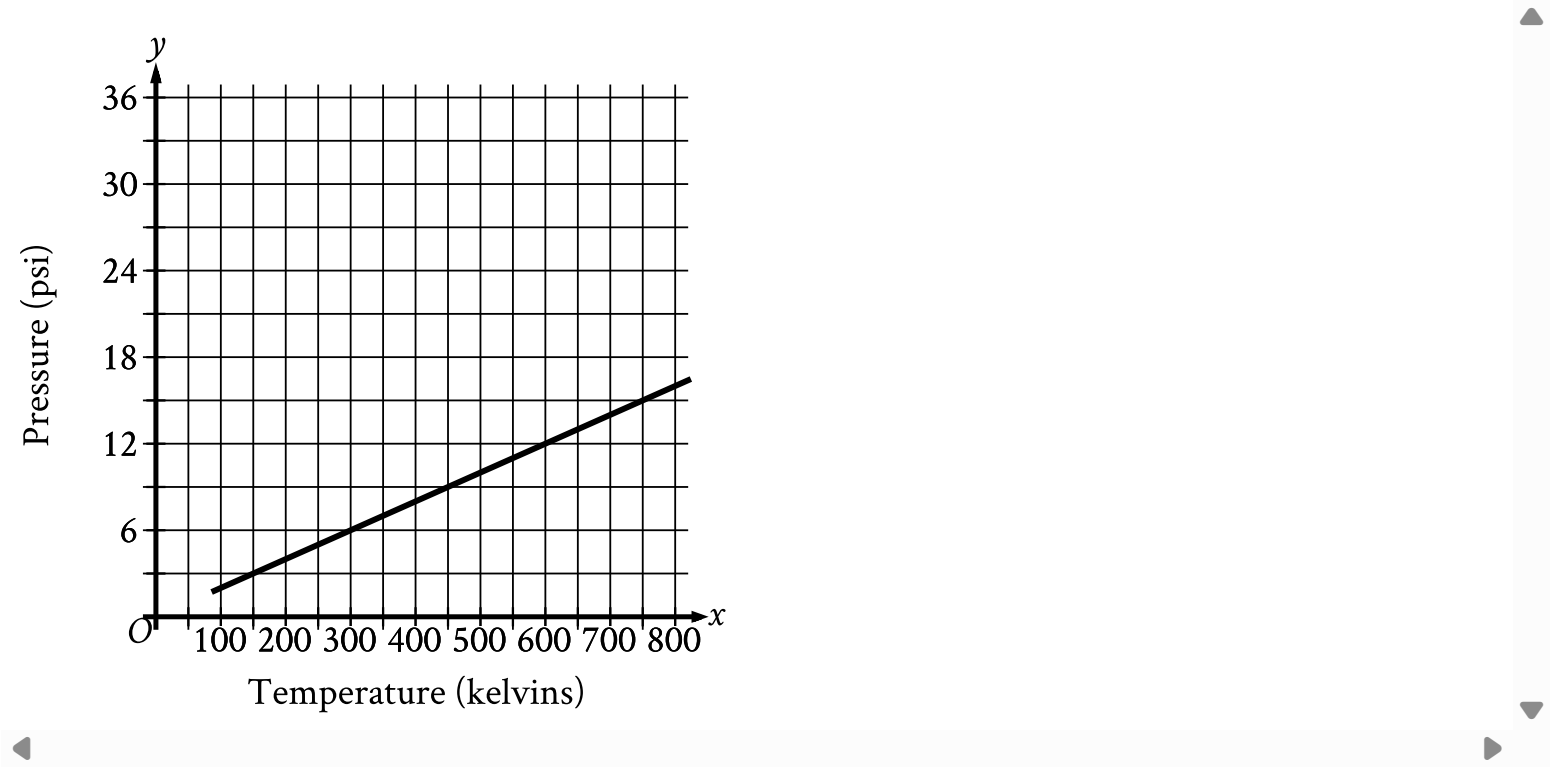
Question Difficulty: Easy

Question ID 129bfd10

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 129bfd10

Argon is placed inside a container with a constant volume. The graph shows the estimated pressure y , in pounds per square inch (psi), of the argon when its temperature is x kelvins.



What is the estimated pressure of the argon, in **psi**, when the temperature is **600** kelvins?

- A. 6
- B. 12
- C. 300
- D. 600

ID: 129bfd10 Answer

Correct Answer: B

Rationale

Choice B is correct. For the graph shown, the x -axis represents temperature, in kelvins, and the y -axis represents the estimated pressure, in pounds per square inch psi. The estimated pressure of the argon when the temperature is 600 kelvins can be found by locating the point on the graph where the value of x is equal to 600. The graph passes through the point 600, 12. This means that when the temperature is 600 kelvins, the estimated pressure is 12 psi.

Choice A is incorrect. This is the estimated pressure, in psi, of the argon when the temperature is 300 kelvins, not 600 kelvins.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect. This is the temperature, in kelvins, of the argon.

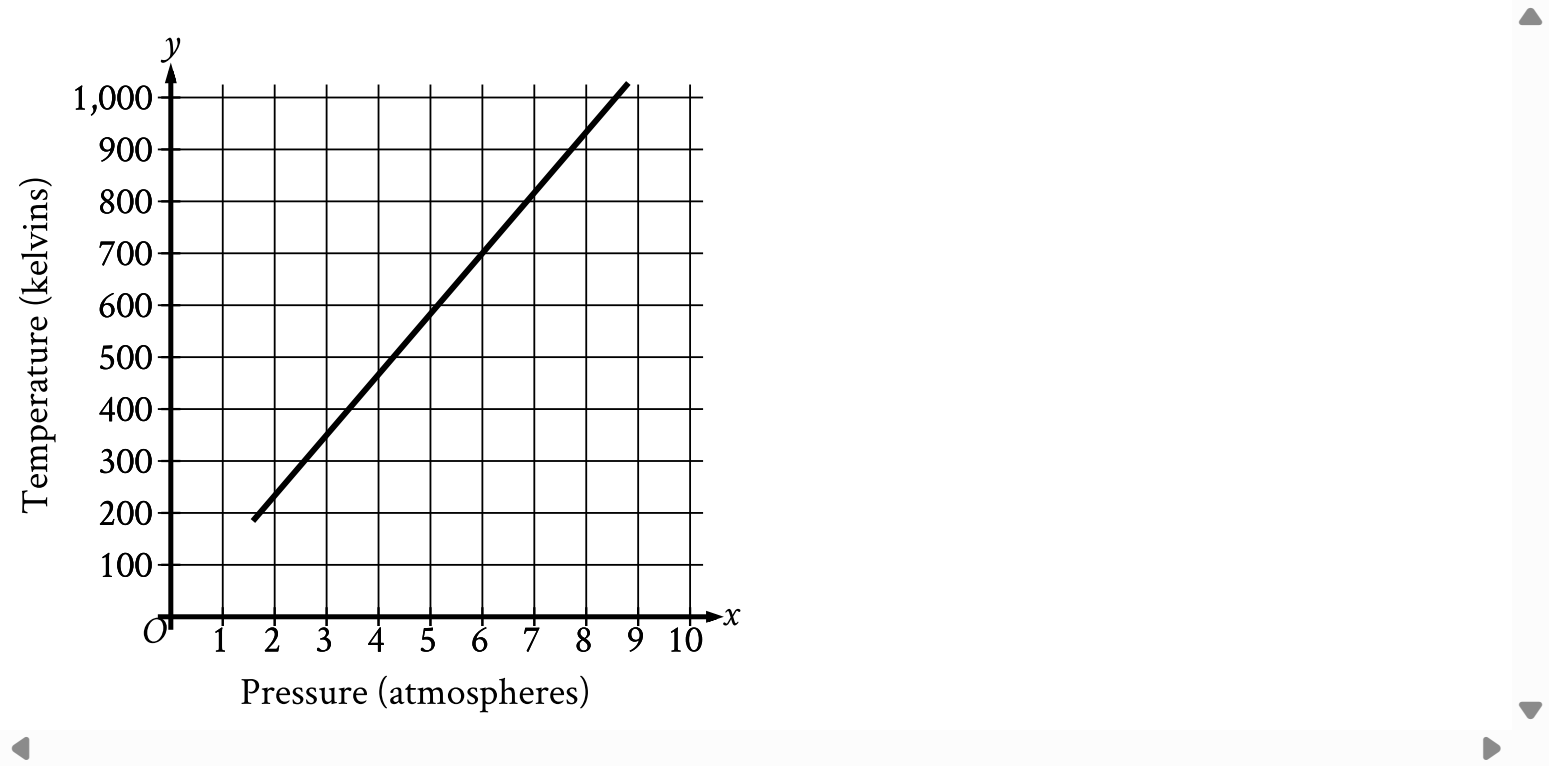
Question Difficulty: Easy

Question ID 31739d83

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 31739d83

Oxygen gas is placed inside a tank with a constant volume. The graph shows the estimated temperature y , in kelvins, of the oxygen gas when its pressure is x atmospheres.



What is the estimated temperature, in kelvins, of the oxygen gas when its pressure is **6** atmospheres?

- A. 6
- B. 60
- C. 700
- D. 760

ID: 31739d83 Answer

Correct Answer: C

Rationale

Choice C is correct. For the graph shown, the x -axis represents pressure, in atmospheres, and the y -axis represents temperature, in kelvins. Therefore, the estimated temperature, in kelvins, of the oxygen gas when its pressure is 6 atmospheres is represented by the y -coordinate of the point on the graph that has an x -coordinate of 6. The point on the graph with an x -coordinate of 6 has a y -coordinate of approximately 700. Therefore, the estimated temperature, in kelvins, of the oxygen gas when its pressure is 6 atmospheres is 700.

Choice A is incorrect. This is the pressure, in atmospheres, not the estimated temperature, in kelvins, of the oxygen gas when its pressure is 6 atmospheres.

Choice B is incorrect and may result from conceptual or calculation errors.

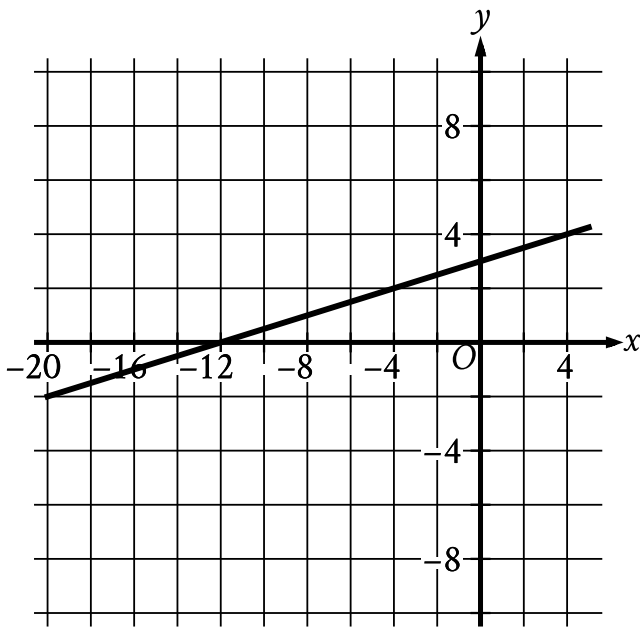
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID cc81b32d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: cc81b32d



The graph of the linear function f is shown, where $y = f(x)$. What is the x -intercept of the graph of f ?

- A. $(-12, 0)$
- B. $(0, 0)$
- C. $(\frac{1}{4}, 0)$
- D. $(12, 0)$

ID: cc81b32d Answer

Correct Answer: A

Rationale

Choice A is correct. The x -intercept of a graph is the point where the graph intersects the x -axis. The graph of function f , where $y = f(x)$, intersects the x -axis at $-12, 0$. Therefore, the x -intercept of the graph of f is $-12, 0$.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

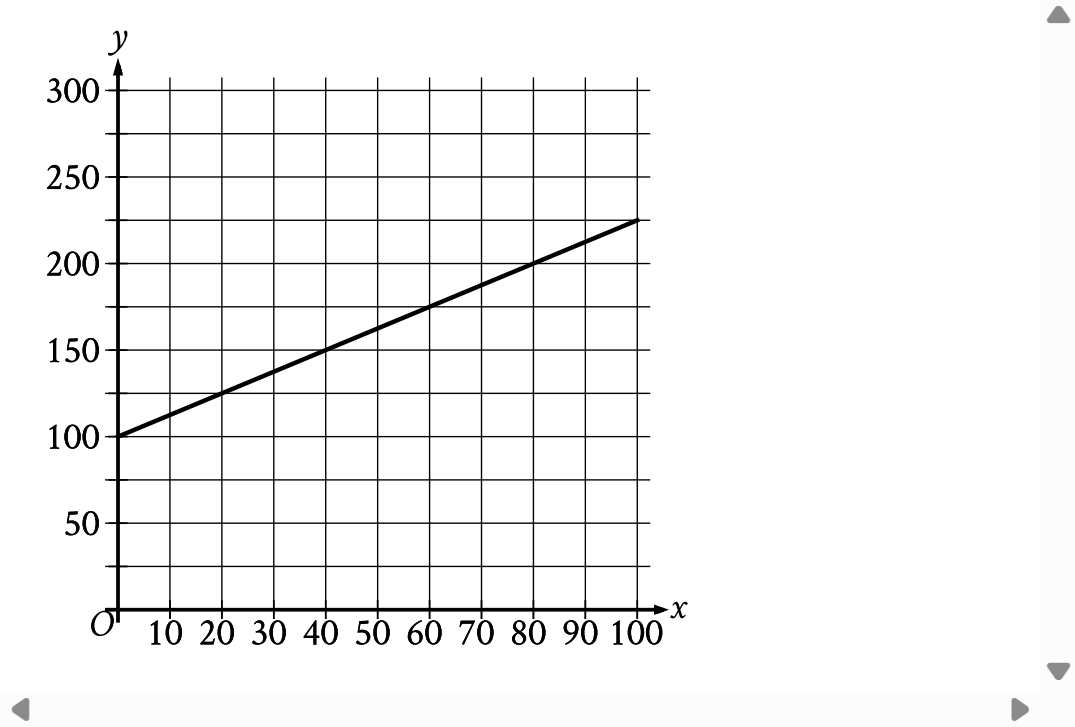
Question Difficulty: Easy

Question ID 073954f4

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 073954f4

The cost y , in dollars, for a manufacturer to make x rings is represented by the line shown.



What is the cost, in dollars, for the manufacturer to make **60** rings?

- A. 100
- B. 125
- C. 175
- D. 225

ID: 073954f4 Answer

Correct Answer: C

Rationale

Choice C is correct. The line shown represents the cost y , in dollars, for a manufacturer to make x rings. For the line shown, the x -axis represents the number of rings made by the manufacturer and the y -axis represents the cost, in dollars. Therefore, the cost, in dollars, for the manufacturer to make 60 rings is represented by the y -coordinate of the point on the line that has an x -coordinate of 60. The point on the line with an x -coordinate of 60 has a y -coordinate of 175. Therefore, the cost, in dollars, for the manufacturer to make 60 rings is 175.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect. This is the cost, in dollars, for the manufacturer to make 20 rings.

Choice D is incorrect. This is the cost, in dollars, for the manufacturer to make 100 rings.

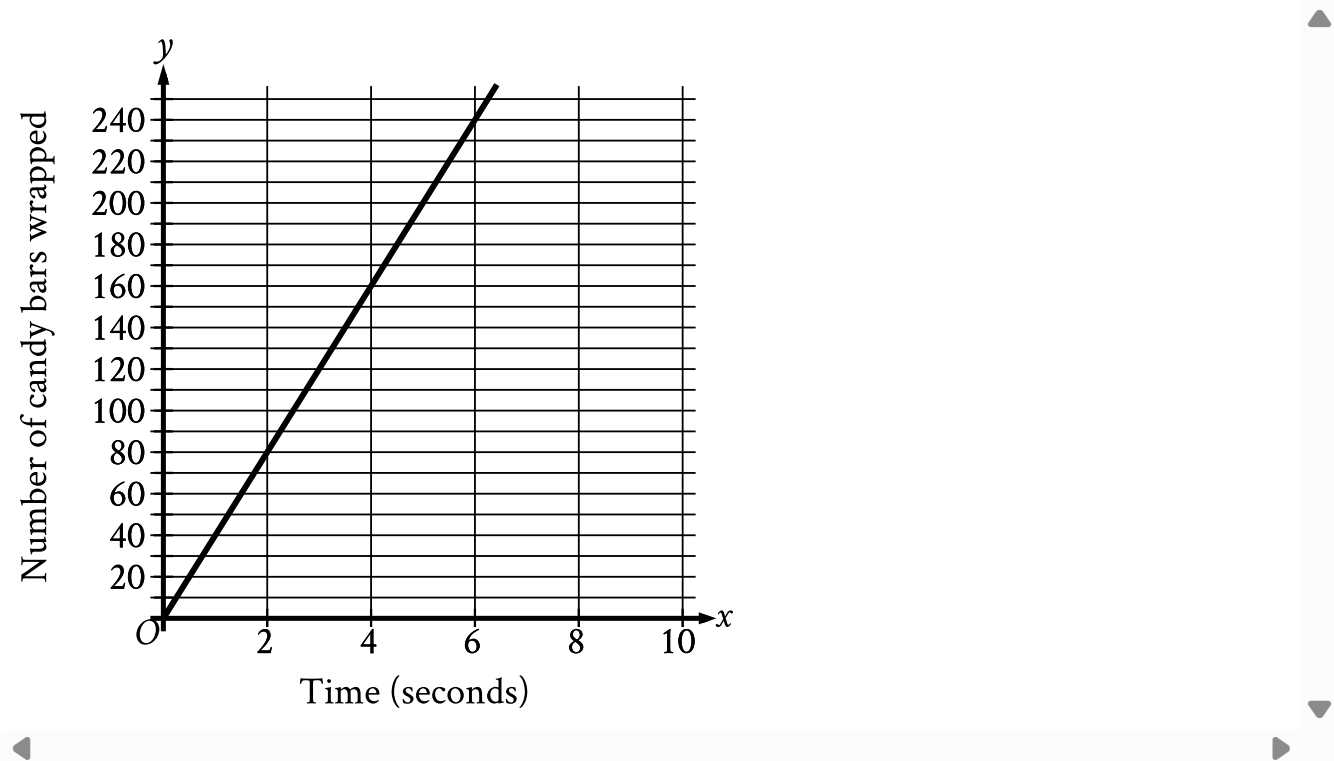
Question Difficulty: Easy

Question ID 797aa129

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 797aa129

The graph shown models the number of candy bars a certain machine wraps with a label in x seconds.



According to the graph, what is the estimated number of candy bars the machine wraps with a label per second?

- A. 2
- B. 40
- C. 78
- D. 80

ID: 797aa129 Answer

Correct Answer: B

Rationale

Choice B is correct. For the graph shown, the x -axis represents time, in seconds, and the y -axis represents the number of candy bars wrapped. The slope of a line in the xy -plane is the change in y for each 1-unit increase in x . It follows that the slope of the graph shown represents the estimated number of candy bars the machine wraps with a label per second. The slope, m , of a line in the xy -plane can be found using any two points, x_1, y_1 and x_2, y_2 , on the line and the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. The graph shown passes through the points 0, 0 and 2, 80. Substituting these points for x_1, y_1 and x_2, y_2 , respectively, in the slope formula yields $m = \frac{80 - 0}{2 - 0}$, which is equivalent to $m = \frac{80}{2}$, or $m = 40$. Therefore, the estimated number of candy bars the machine wraps with a label per second is 40.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID f22de2ba

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: f22de2ba

A bus is traveling at a constant speed along a straight portion of road. The equation $d = 30t$ gives the distance d , in feet from a road marker, that the bus will be t seconds after passing the marker. How many feet from the marker will the bus be **2** seconds after passing the marker?

- A. **30**
- B. **32**
- C. **60**
- D. **90**

ID: f22de2ba Answer

Correct Answer: C

Rationale

Choice C is correct. It’s given that t represents the number of seconds after the bus passes the marker. Substituting 2 for t in the given equation $d = 30t$ yields $d = 30(2)$, or $d = 60$. Therefore, the bus will be 60 feet from the marker 2 seconds after passing it.

Choice A is incorrect. This is the distance, in feet, the bus will be from the marker 1 second, not 2 seconds, after passing it.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect. This is the distance, in feet, the bus will be from the marker 3 seconds, not 2 seconds, after passing it.

Question Difficulty: Easy

Question ID 3a999574

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 3a999574

The length, y , of a white whale was **162 centimeters (cm)** when it was born and increased an average of **4.8 cm** per month for the first **12** months after it was born. Which equation best represents this situation, where x is the number of months after the whale was born and y is the length, in **cm**, of the whale?

- A. $y = 162x$
- B. $y = 162x + 162$
- C. $y = 4.8x + 4.8$
- D. $y = 4.8x + 162$

ID: 3a999574 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the length of the whale was 162 cm when it was born and that its length increased an average of 4.8 cm per month for the first 12 months after it was born. Since x represents the number of months after the whale was born, the total increase in the whale's length, in cm, is 4.8 times x , or $4.8x$. The length of the whale y , in cm, can be found by adding the whale's length at birth, 162 cm, to the total increase in length, $4.8x$ cm. Therefore, the equation that best represents this situation is $y = 4.8x + 162$.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Easy