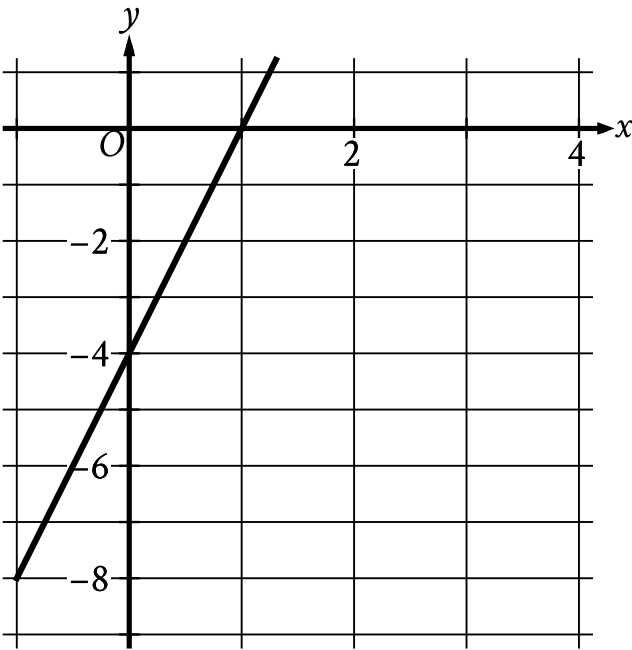


Question ID c23858ae

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

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	Easy

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 $f(9) = 100(9) + 2$, or $f(9) = 902$. 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	Easy

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	Easy

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 $\left(\frac{\$60}{1 \text{ hour}}\right)(x \text{ hours})$, or **\$60 x** , 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.

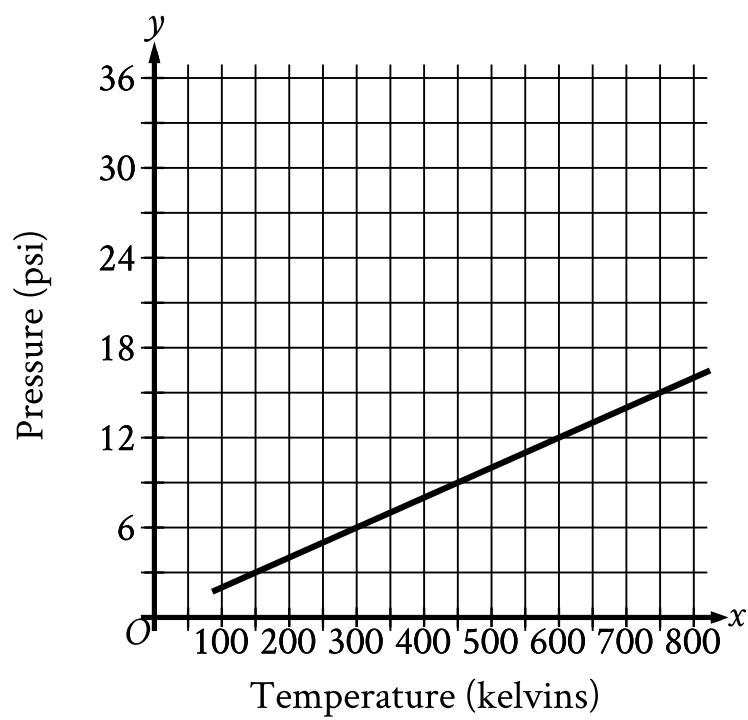
Question Difficulty: Easy

Question ID 129bfd10

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

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.

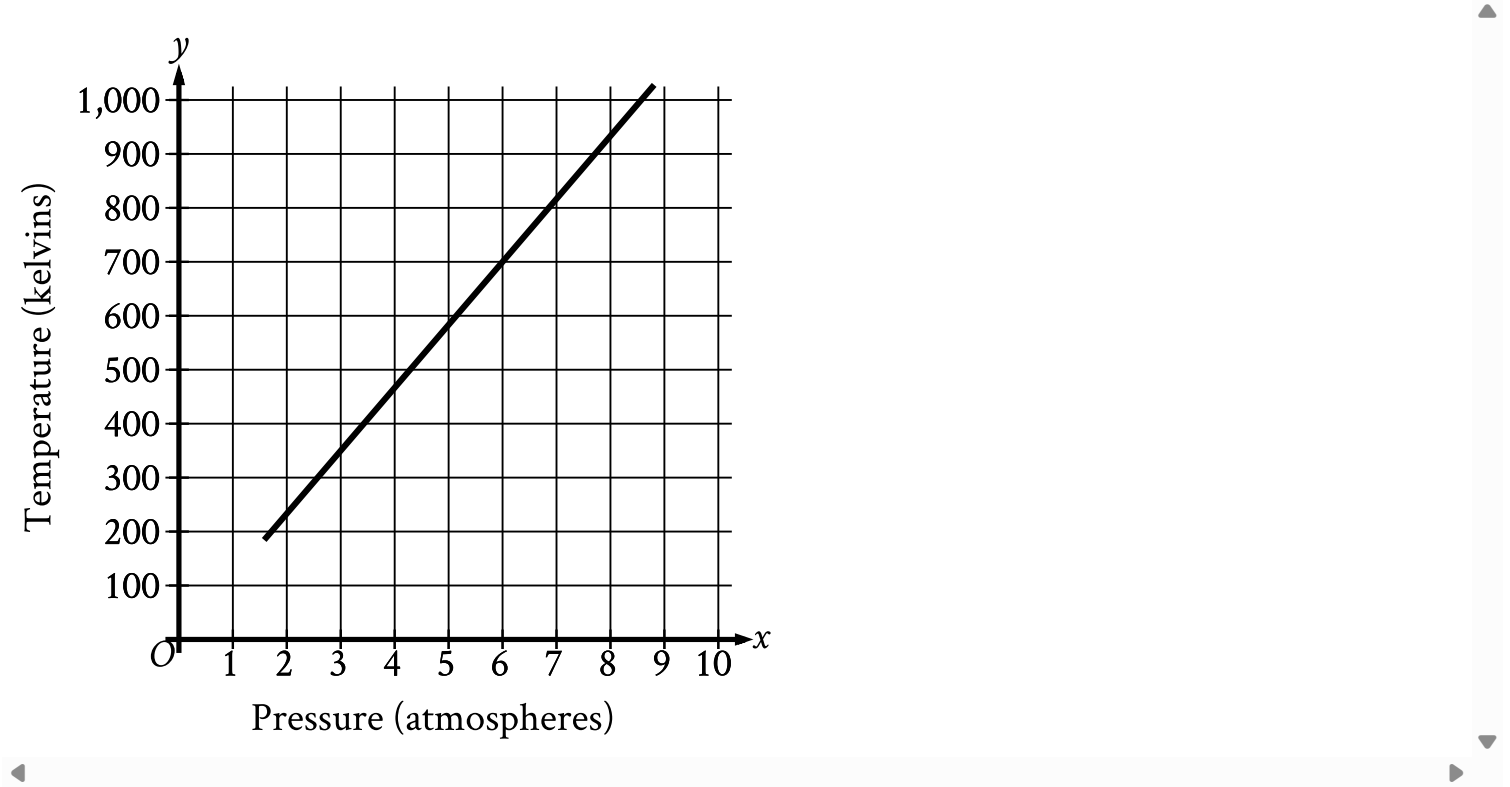
Question Difficulty: Easy

Question ID 31739d83

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

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.

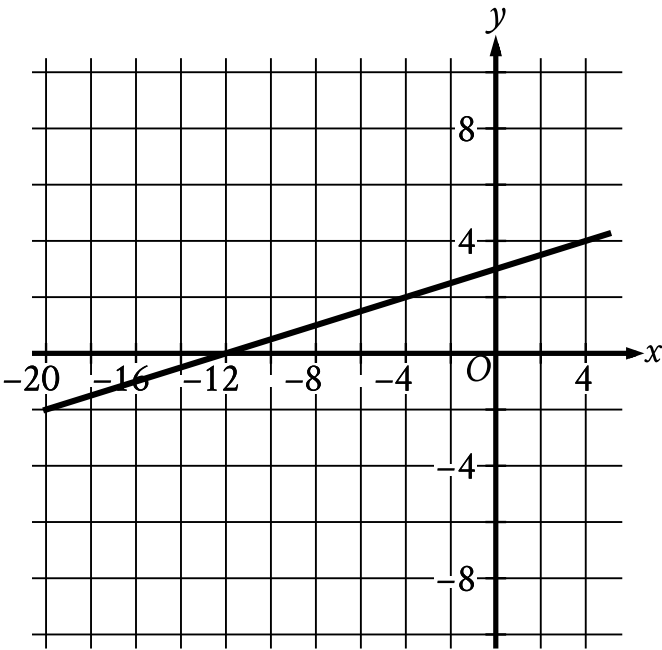
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID cc81b32d

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

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.

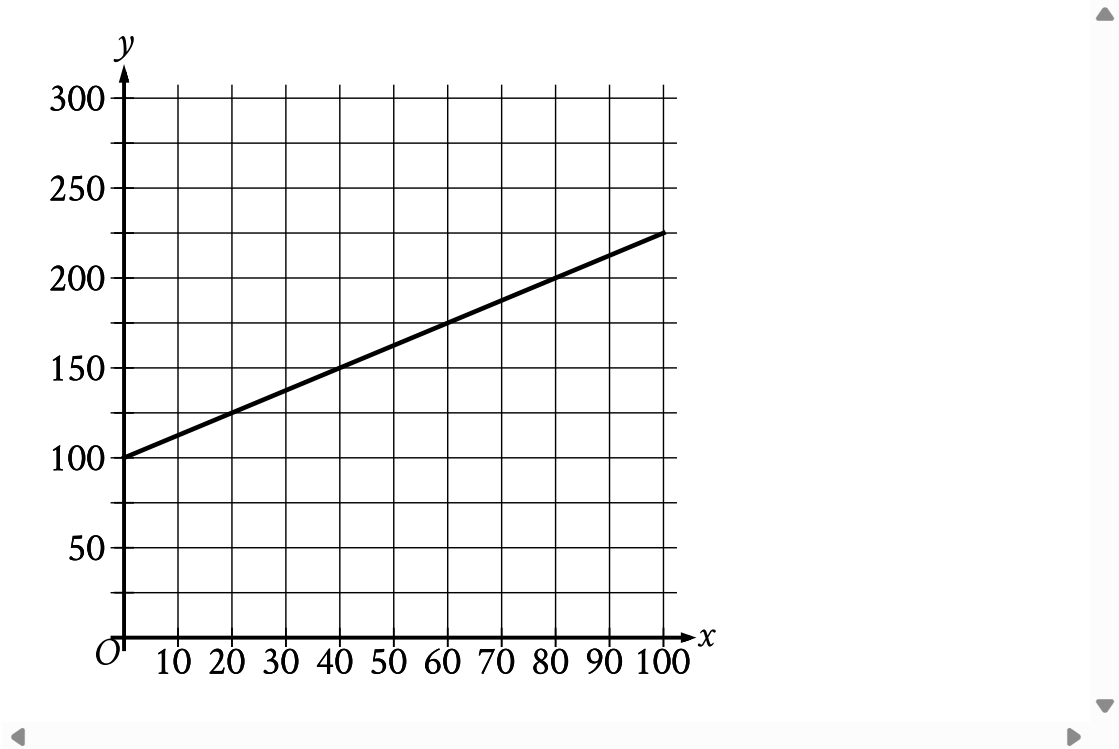
Question Difficulty: Easy

Question ID 073954f4

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

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.

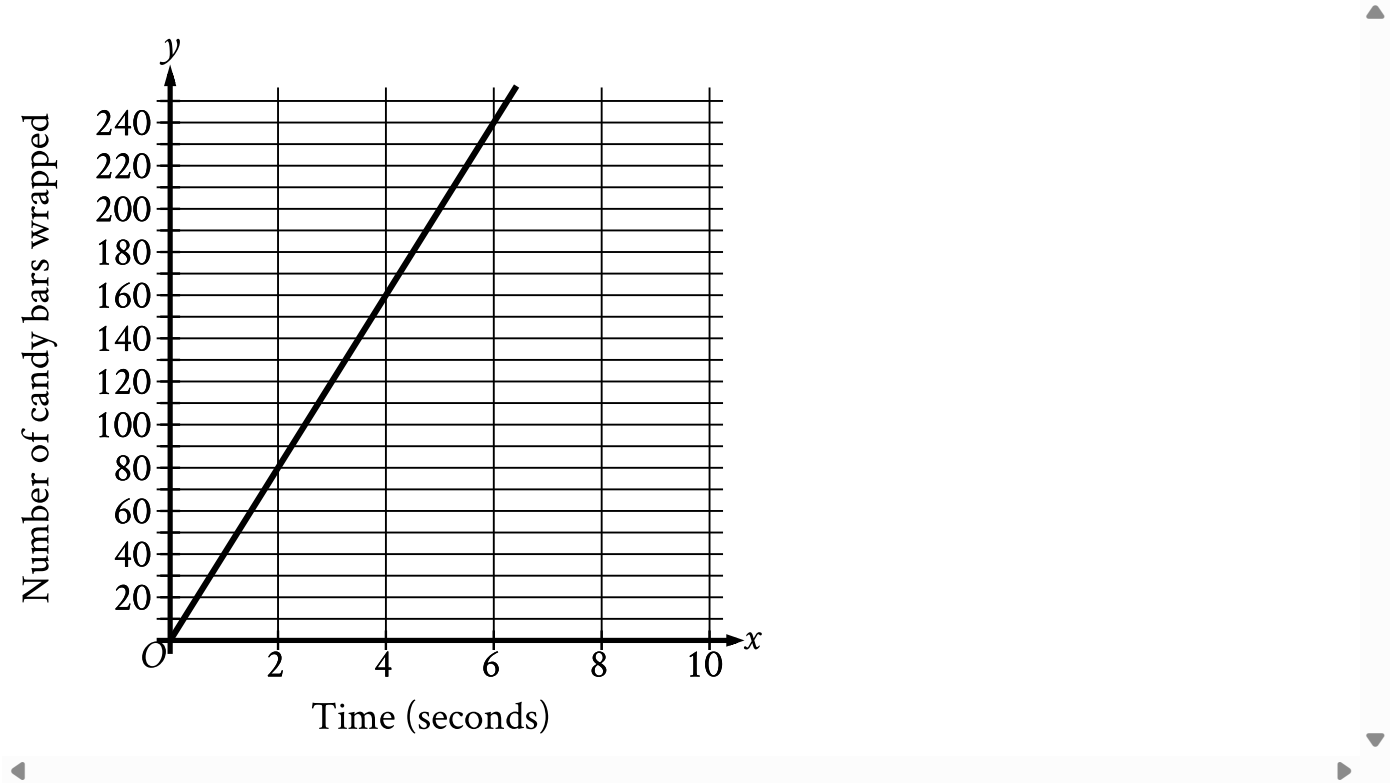
Choice D is incorrect. This is the cost, in dollars, for the manufacturer to make **100** rings.

Question ID 797aa129

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

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	Easy

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	Easy

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