Math question 1

If $f(x) = x + 7$ and $g(x) = 7x$, what is the value of $4f(2) - g(2)$?

A) −5

B) 1

C) 22

D) 28

Key	C
Domain	Algebra
Skill	*Linear functions* Evaluate a linear function given an input value

Key Explanation: Choice C is correct. The value of $f(2)$ can be found by substituting 2 for x in the given equation $f(x) = x + 7$, which yields $f(2) = 2 + 7$, or $f(2) = 9$. The value of $g(2)$ can be found by substituting 2 for x in the given equation $g(x) = 7x$, which yields $g(2) = 7(2)$, or $g(2) = 14$. The value of the expression $4f(2) - g(2)$ can be found by substituting the corresponding values into the expression, which gives $4(9) - 14$. This expression is equivalent to $36 - 14$, or 22.

Distractor Explanations: Choice A is incorrect. This is the value of $f(2) - g(2)$, not $4f(2) - g(2)$. **Choice B** is incorrect and may result from calculating $4f(2)$ as $4(2) + 7$, rather than $4(2 + 7)$. **Choice D** is incorrect and may result from conceptual or calculation errors.

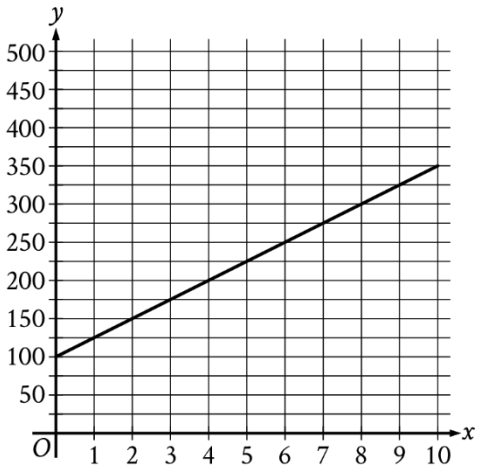
Math question 2

The y-intercept of the graph of $y = -6x - 32$ in the xy-plane is $(0, y)$. What is the value of y?

Key	−32
Domain	Algebra
Skill	*Linear equations in two variables* Make connections between an algebraic representation and a graph

Key Explanation: The correct answer is −32. It's given that the y-intercept of the graph of $y = -6x - 32$ is $(0, y)$. Substituting 0 for x in this equation yields $y = -6(0) - 32$ or $y = -32$. Therefore, the value of y that corresponds to the y-intercept of the graph of $y = -6x - 32$ in the xy-plane is −32.

Math question 3



The graph of the function f, where $y = f(x)$, models the total cost y, in dollars, for a certain video game system and x games. What is the best interpretation of the slope of the graph in this context?

A) Each game costs $25.

B) The video game system costs $100.

C) The video game system costs $25.

D) Each game costs $100.