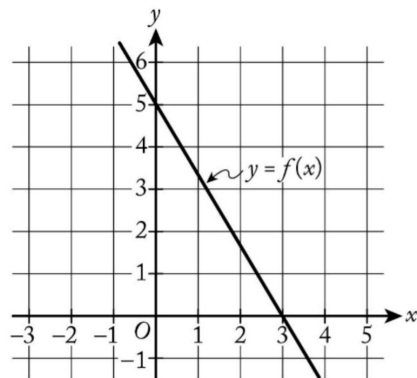Based on the graph in the xy-coordinate plane, what is the value of $f(2)$?

Question

A scientist uses exactly three chemicals in the ratio $2 : 5 : n$ by weight. If the second chemical is $\frac{3}{8}$ of the total weight, what is the value of n?

Answer Choices

A) 6
B) $\frac{19}{3}$
C) 5
D) $\frac{7}{3}$
E) 10

$$y = -\frac{1}{2}x + 3$$

$$y = 3x - 4$$

In the xy-coordinate plane, what is the solution to the system of equations above?

Question

Given the equation

$$kx^2 - (2k + 3)x - 8 = 0,$$

if one solution to this equation is $x = 4$, what is the value of k?

Answer Choices:

A) 1
B) $\frac{5}{2}$
C) 3
D) 4
E) 6

Point G bisects the line segment $\overline{FH}$. The length of $\overline{FG}$ is 16 less than 3 times the length of $\overline{GH}$. What is the length of $\overline{FH}$?

If x and y are positive numbers, $\dfrac{x^8}{y^2} = 180$ and $x^6 = 5$, what is the value of $\dfrac{x}{y}$?

−2, 0, 2, 0, −2, 0, 2, 0, …

In the sequence above, −2 is the first term. If the pattern −2, 0, 2, 0 repeats itself indefinitely, which of the following terms has a value of −2 ?

Question

In the sequence $7, 14, 21, \ldots, 120$, each term is 7 more than the previous term. How many times does the digit 7 appear in the sequence?

Question

In a survey of 80 households, 50 households reported having a dog and 40 households reported having a cat. If $\frac{3}{4}$ of all households having a cat also have a dog, how many households reported having neither a dog nor a cat?

Answer Choices

A) 15
B) 18
C) 20
D) 22
E) 25