

1.7 Modeling with Functions

Target 1E: Model real world situations and use regressions with the use of functions

Review of Prior Concepts

1. Write as a mathematical expression: five less than twice a number
2. A small company has \$1000 to distribute to its employees as a bonus. Write a mathematical expression for how much money each employee will get.

More Practice**Writing Mathematical Expressions**

<https://www.khanacademy.org/math/algebra-basics/core-algebra-expressions/core-algebra-variables-and-expressions/v/writing-expressions-1>

http://www.learnnc.org/lp/media/uploads/2008/08/9writing_expressions.pdf

<https://www.youtube.com/watch?v=CfUvzKZgPJQ>

SAT Connection**Heart of Algebra**

1. Create, solve, or interpret a linear expression or equation in one variable

Example:

If $16 + 4x$ is 10 more than 14, what is the value of $8x$?

- A) 2
- B) 6
- C) 16
- D) 80

Solution**Change English Statements into Mathematical Expression**

- Write a mathematical expression for the quantity described verbally.
(An expression has no equal sign, and, therefore, can NOT be solved.)

Example 1:

- a) A number x decreased by six and then doubled.
- b) A salary after a 4.4% increase, if the original salary is x dollars.

- c) Jackie has \$25,000 to invest. She invests part of the money at 5.5% annual interest and the remaining balance at 8.3% annual interest. How much is invested at each rate if Jackie receives a 1-year interest payment of \$1571?
- d) The chemistry lab at the University of Ellanoy keeps two acid solutions on hand. One is 20% acid and the other is 35% acid. How much 20% acid solution and how much 35% acid solution should be used to prepare 25 liters of a 26% acid solution?

More Practice**Modeling with Functions**

http://cims.nyu.edu/~kiryl/Precalculus/Section_1.6-

[Modeling%20with%20Equations/Modeling%20with%20Equations.pdf](http://cims.nyu.edu/~kiryl/Precalculus/Section_1.6-Modeling%20with%20Equations/Modeling%20with%20Equations.pdf)

<https://socratic.org/precalculus/functions-defined-and-notation/modeling-with-functions>

Homework Assignment

p.148 #5,6,15,16,18,19,33,37

SAT Connection
Solution

Choice C is correct. The description “ $16 + 4x$ is 10 more than 14” can be written as the equation $16 + 4x = 10 + 14$, which is equivalent to $16 + 4x = 24$. Subtracting 16 from each side of $16 + 4x = 24$ gives $4x = 8$. Since $8x$ is 2 times $4x$, multiplying both sides of $4x = 8$ by 2 gives $8x = 16$. Therefore, the value of $8x$ is 16.

Choice A is incorrect because it is the value of x , not $8x$. Choices B and D are incorrect; those choices may be a result of errors in rewriting $16 + 4x = 10 + 14$. For example, choice D could be the result of subtracting 16 from the left side of the equation and adding 16 to the right side of $16 + 4x = 10 + 14$, giving $4x = 40$ and $8x = 80$.