J7 2011-2012 Trimester 2 Exam 1

J7 Chapter 4. Linear equations with one unknown. You will be expected to solve equations that include fractions and decimals and work problems leading to a linear equation with one unknown.

The answers to the word problems on the exam will *not* be the numeric value of the unknown. Instead, you will be asked to answer by writing the equation in ***one*** unknown that would produce, if solved, the numeric value of the unknown.

EXAMPLE.

[1] Write, but do *not* solve, the equation in *one* unknown, including units, that would provide the answer to the following question. John bought a certain number of apples at 30 cents each and had \$3 left. If he bought the same number of pears at 40 cents each instead of apples, he would be \$1 short. How many apples did he buy?

SOLUTION.

Let x represent the number of apples John bought.
Then
$x =$ the number of pears.
$30\,x =$ the cost of the apples in cents.
$40\,x =$ the cost of the pears in cents.
John's money = $30\,x + 300$ cents.
John's money = $40\,x - 100$ cents.

So,
$30\,x + 300 = 40\,x - 100$

ANSWER: $\therefore\ 30\,x + 300 = 40\,x - 100$, x in units of apples.

Note: (1) any equation equivalent to $30\,x + 300 = 40\,x - 100$ that includes correct units will receive full credit, and (2) *if you write a numeric answer, that numeric answer will be ignored.*

Item (2) means that:
- if you wrote no equation, but the numeric answer "John bought 40 apples", you would receive no credit what-so-ever.
- if you wrote a correct equation with units followed by "John bought 40 apples", you would receive full credit.
- if you wrote a correct equation with units followed by "John bought 10 apples", you would receive full credit.
- if you wrote an incorrect equation or no units, you could receive partial credit, depending on the reasoning leading to the equation you wrote for the answer.

Keep in mind that since you are not supposed to solve the equation you obtain for a word problem, I will make no attempt to make the arithmetic easy. This means that if you go ahead to solve the equa-

tion, you will waste limited exam time performing arithmetic computations, some of which could be complicated.

Examples of other incorrect answers

The following equation contains two unknowns, so it would receive no credit:
"$30\,x + 300 = 40\,y - 100$, where $x =$ number of apples and $y =$ number of pairs."