

Drill 5

1. 4 You want to isolate x . If you stack the equations and subtract, the y terms will cancel and you will be left with x :

$$\begin{array}{r} 3x + y = 11 \\ -[2x + y = 7] \\ \hline x = 4 \end{array}$$

2. B In order to solve this system of linear equations, one of the equations must be re-arranged so that it can be plugged in to the other equation. Therefore, start with the first equation, solving for x results in $x = 9 - y$. Now, plug this expression of x into the second equation and solve for y :

$$8(9 - y + 3y) = 120$$

Divide both sides by 8:

$$9 - y + 3y = 15$$

Subtract 9 from both sides:

$$-y + 3y = 6$$

$$2y = 6$$

$$y = 3$$

Thus, if $y = 3$, then $x = 6$. Finally, since the question asks to solve for the expression $x - y$, we can plug in the values for x and y , respectively, to get $6 - 3 = 3$. Therefore, (B) is the correct answer.

3. B First, start by translating the problem from English into Math. The first equation can be written as $a + 10 = 2b$. We can use this information to now potentially eliminate some answer choices before proceeding in the problem.

For (A), if $b = 6$, then $a = 2$. The sum of a and b , or 8, IS divisible by 4, so eliminate this answer choice.

For (B), if $b = 8$, then $a = 6$. The sum of a and b , or 14, is NOT divisible by 4, so this is the correct answer choice.

For (C), if $b = 10$, then $a = 10$. The sum of a and b , or 20, IS divisible by 4, so (C) is eliminated.

For (D), if $b = 14$, then $a = 18$. The sum of a and b , or 32, IS divisible by 4, so (D) is also eliminated.

4. C This is a great question to illustrate process of elimination (POE). Since the question states that a total of 14 skeins of yarn are purchased, some of alpaca and some of s , then $a + s = 14$. Thus, eliminate (B) and (D). The problem then states that each skein of alpaca was purchased for \$3.49, and each skein of silk was purchased for \$5.52. This leaves (C) as this information is reflected in the second equation of that answer choice. Choice (A) has the values corresponding to the incorrect type of yarn.

5. A To most effectively solve this problem, employ the Stack-and-Solve method by stacking the equations. Once stacked, the equations can either be added or subtracted. We see that, by stacking, the variable f can be eliminated if we add the two equations together as follows:

$$\begin{array}{r} 4e - f = 9 \\ + \quad -2e + f = 5 \\ \hline 2e = 14 \end{array}$$

Dividing both sides of the resulting equation $2e = 14$ gives us $e = 7$. Thus, (A) is correct.

6. B Again, stacking and adding these questions will result in the following solution:

$$\begin{array}{r} 7x + 12y = 10 \\ + \quad 3x - 2y = 5 \\ \hline 10x + 10y = 15 \end{array}$$

Since the question asks for the value of $5x + 5y$, divide both sides by 2 to get $5x + 5y = 7.5$. Thus, (B) is correct.

7. C Start by isolating one of the variables. If you add the two equations together, the y terms will cancel and you can solve for x :

$$\begin{array}{r} x + 3y = -7 \\ + \quad [2x - 3y = 13] \\ \hline 3x = 6 \end{array}$$

You can divide both sides by 3, and you find that $x = 2$. Next, to determine the value of y , substitute $x = 2$ in the first equation and solve:

$$\begin{array}{r} 2 + 3y = -7 \\ -2 \quad -2 \\ \hline 3y = -9 \\ y = -3 \end{array}$$

If $x = 2$ and $y = -3$, then $\frac{x}{y} = -\frac{2}{3}$, (C).

$$\frac{7}{2}x + \frac{4}{3}y = 4$$

$$21x = 8(3 - y)$$

8. D In the first equation, we have denominators of 2 and 3, so cancel the fractions by multiplying everything by the product of 2 and 3, which is 6:

$$6\left(\frac{7}{2}x + \frac{4}{3}y\right) = 6(4)$$

$$21x + 8y = 24$$

For the second equation, distribute the right side:

$$21x = 24 - 8y$$

Add $8y$ to both sides, so that the two equations will be in the same form:

$$21x + 8y = 24$$

As you can see, the two equations are identical. If two equations are the same, there will be an infinite number of solutions, which is (D).