

### Solve It! Final Exam

Situation:

**Billy Bob has to take three tests for his math class this quarter. On the first test, he got a 70%. On the second test, he got a 60%. What grade would he need on his third test to have an average of 75%?**

- 1) Name a variable and state clearly what that variable represents.
- 2) Write an equation that represents the situation.
- 3) Solve that equation for your variable, and explain what the answer means.

Situation:

**Yolando's house is built on a square lot. Suppose we don't know the length of the sides, so we call the length of the side "x". It would probably be helpful if you draw sketches of the plots of land.**

- 4) What is the area of the plot of land that the house is on presently?
- 5) Suppose that Yolando extends his lot 3 feet in one direction and 10 feet in the other direction. What is the area of the plot of land that the house is on now?
- 6) How much bigger is the plot of land now?

Situation:

**You are a teacher and a student hands in the following problem for you to correct. Find the mistake that the student made.**

$$x + 2(3x - 5) = -(8x + 5)$$

$$x + 6x - 10 = -8x + 5$$

$$7x - 10 = -8x + 5$$

$$+ 8x \quad = +8x$$

$$15x - 10 = 5$$

$$+ 10 = + 10$$

$$15x = 15$$

$$\frac{15x}{15} = \frac{15}{15}$$

$$x = 1$$

7) Draw an arrow that points to the student's mistake. Be very clear. The arrow should point exactly to where the problem is!!!!

8) Explain what the student should have done. Write it in a way that a student would understand.

Situation:

**You are studying an algebra textbook and see that the book does not show its work when it is solving equations. Next to each line, tell what the author of the book must have done to move from one line to the next.**

Example:

$$x + 7 = 10$$

$$x = 3$$

**Subtracted 7 from both sides.**

$$5x - 2(3x + 6) = 3x + 14$$

$$5x - 6x - 12 = 3x + 14 \quad 9)$$

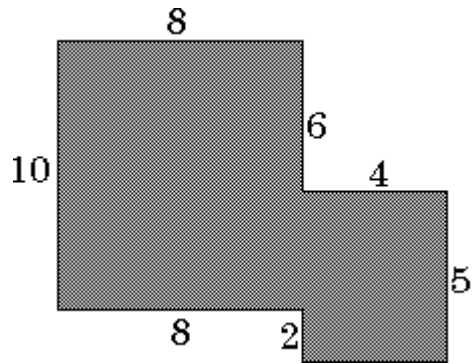
$$-x - 12 = 3x + 14 \quad 10)$$

$$-12 = 4x + 14 \quad 11)$$

$$-26 = 4x \quad 12)$$

$$-6.5 = x \quad 13)$$

14) Find the area of the following figure.



15) Find the area of a rectangle with a width of  $(x + 3)$  and a length of  $(x - 4)$ . It may be helpful to draw the rectangle.

16) Solve for  $y$ :

$$4 + 7y = 4y - 17$$

18) Solve for  $\odot$ :

$$-6(\odot + 3) + 7\odot = 2\odot$$

17) Solve for  $c$ :

$$-(c - 8) + 7c = 26$$

19) Solve for  $\heartsuit$  in terms of  $\diamondsuit$

$$2\heartsuit + 9\diamondsuit = 10$$

20) Find one pair of numbers that belong to the following rule:

$$y = 2x + 4$$

$x$	$y$

21) Find one pair of numbers that belong to the following rule:

$$10x - 5y = 25$$

$x$	$y$

22) Which of the following equations is linear?

- a)  $y = x^2 - 5$
- b)  $y = (x + 2)(x - 5)$
- c)  $y = 2x(x + 5)$
- d)  $y = 2x + 5$

23) You are the teacher. You want to write a distributive property question whose answer is  $4x + 6$ . Write the distributive property question.

24) Extra Credit #1

Solve for  $d$  in terms of  $f$ :

$$-5(2d + 4) - 8(4f + 2) + 3f = d + 4f - 14$$

25) Extra Credit #2

Draw some function  $f$  such that:

$$f(2) = 5$$

AND

$$f(-7) = -4$$

AND

$$f(0) = 0$$

