

Math 1010 September 9, 2019
Read sections 2.1 and 2.2 of your text.

Homework 6

Solve the following equations for x . Show work on this paper. Do it yourself.

1) $x + 8 = 30$

2) $2x - 6 = 13$

3) $x + 7 = 7x - 20$

4) $2x + 7 = 14 - 8x$

5) $3x + 7 = 5(2 - 4x)$

6) $3.12x - 7.81 = 9.01$

7) $\frac{3x + Z}{Q} = 19.8y^3 G^5$

8) The sum of three consecutive integers is 186. Find these integers **using algebra**. **Show your work**.

Use a variable like x , and translate the problem into an equation, solve the equation, then state the solution to the question. Try letting x be the smallest of these three integers. If x is the smallest integer, then $x+1$ is the next and so on.

9) \$100,000 is invested in stocks and bonds. Bonds earn 4%, and stock earns 7%. If the combination of investments (portfolio) earns 6.2%, how much was invested each in bonds and stock? **Use algebra**. **Show your work**.

Use one variable, say b for the amount in bonds. Then, the amount in stock must be $100000 - b$. Now, 4% of the amount in bonds + 7% of the amount in stock = 6.2% of the portfolio amount. Write this equation down using variables, also converting percents to decimals. (For example, 4% = .04) Solve this equation for b , then solve for the amount in stock. Answer the question above (underlined) with a sentence in English.

10) 40% alcohol brandy is mixed with 18% alcohol wine to create 1 liter of 25% alcohol punch. How much brandy and how much alcohol must be used? (This problem is essentially identical to the problem above.) **Use algebra!** **Show your work!**

11) $m = \frac{y_2 - y_1}{x_2 - x_1}$ m is the slope of the line through the points (x_1, y_1) and (x_2, y_2) .

Find the slope of the line through the following pairs of points.

a) $(2,3)$ $(5,9)$

b) $(-1,7)$ $(-3,-9)$

c) $(2,8)$ $(-3,8)$

d) $(4,11)$ $(4,17)$

e) $(2.13, 9.83)$ $(14,2, -8.17)$

f) $(x+h, f(x+h))$ $(x, f(x))$

HINT: Just plug in exactly like you did with numbers, then do anything easy like using the fact that $x - x = 0$, then just stop.

12) The slope is m and the y -axis intercept is b for the line: $y = mx + b$

Find the slope of the following lines by solving for y . The slope is then the coefficient of x .

a) $2x + 6y = 9$

b) $3x - 11y = 2$

c) $2.1x + 7.8y = 106.2$

13) The equation of the line through (x_1, y_1) with slope m is:

$$y = m(x - x_1) + y_1$$

Find the equation of the line through the point and slope m given.

a) $m = 2$ $(3,7)$

b) $m = \frac{-2}{3}$ $(24,9)$