Economics 101 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Summer 2013

Answers to Quiz #0

Please write your answers neatly and legibly.

1. (Checking on your facility with percentages.) Joe initially has $100 that he places in a savings account at his local bank. During the first year he earns 10% on this account. (That is, at the end of the year the amount in his savings account will be 10% greater than the amount he had at the beginning of the year.) At the end of the second year he earns 5% on this account for the year. At the end of the second year what is the level of Joe’s saving. Please show how you calculated your answer.

Answer:

At end of first year Joe has ($100)(1 + 10%) = (100)(1.1) = $110

At end of the second year Joe has ($110)(1 + 5%) = (110)(1.05) = $115.50

1. Suppose you are given the line Y = 100 – 2X where Y is the variable measured on the vertical axis and X is the variable measured on the horizontal axis. You are then told that something happens to this line such that at every Y value the X value is now 50 units greater. Write the equation for this new line. Show how you found this equation.

Answer:

From the given information we know that the new line is shifting to the right and will be parallel to the first line. We need to find at least one point on this new line. For example, when Y = 0, X = 50 on the given line: we know that the new line will therefore contain the point ((100, 0) since we are told that at every Y value the X value is now 50 units greater. Use this new point to determine the y-intercept of the new line:

Y = b – 2X

0 = b – 2(100)

b = 200

The new line can therefore be written as Y = 200 – 2X

1. Suppose you are told that the points (X, Y) = (10, 20) and (30, 10) sit on the same straight line. Write an equation for this line in slope intercept form given this information.

Answer:

To find the equation for this line start by calculating the slope:

Slope = (change in Y)/(change in X) = (20 – 10)/(10 – 30) = -1/2

Then, use the general slope intercept form and a given point to find the y-intercept:

Y = mX + b

Y = (-1/2)X + b

20 = (-1/2)(10) + b

b = 25

Y = 25 – (1/2)X

1. Suppose you are told that the points (X, Y) = (10, 20) and (20, 10) sit on the same straight line. Determine whether the following points sit on this line, sit below the line, or set above the line.
   1. (X, Y) = (10, 10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. (X, Y) = (50, -20)
   3. (X, Y) = (15, 18)
   4. (X, Y) = (-960, 1000)

Answer:

Given the two points we can write the equation for the straight line as Y = 30 – X. Then, we can substitute the X value for each of the points we need to locate into this equation to see if the calculated Y value is equal to the given Y value. Thus, in (a), Y = 30 – 10 = 20. The Y value that sits on the line when X is equal to 10 is 20 and not 10: if you plot the point (10, 10) you will see that it must sit below the point (10, 20).

For (b), Y = 30 – (50) = -20. Thus when X is equal to 50 then the Y value on the line is -20: this point (50, -20) sits on the line.

For (c), Y = 30 – 15 = 15. Thus when X is equal to 15 then the Y value on the line is 15: this point (15, 18) sits above the line.

For (d), Y = 30 – (-960) = 990. Thus when X is equal to -960 then the Y value on the line is 990: this point (-960, 1000) sits above the line.

To recap:

1. Below the line
2. On the line
3. Above the line
4. Above the line