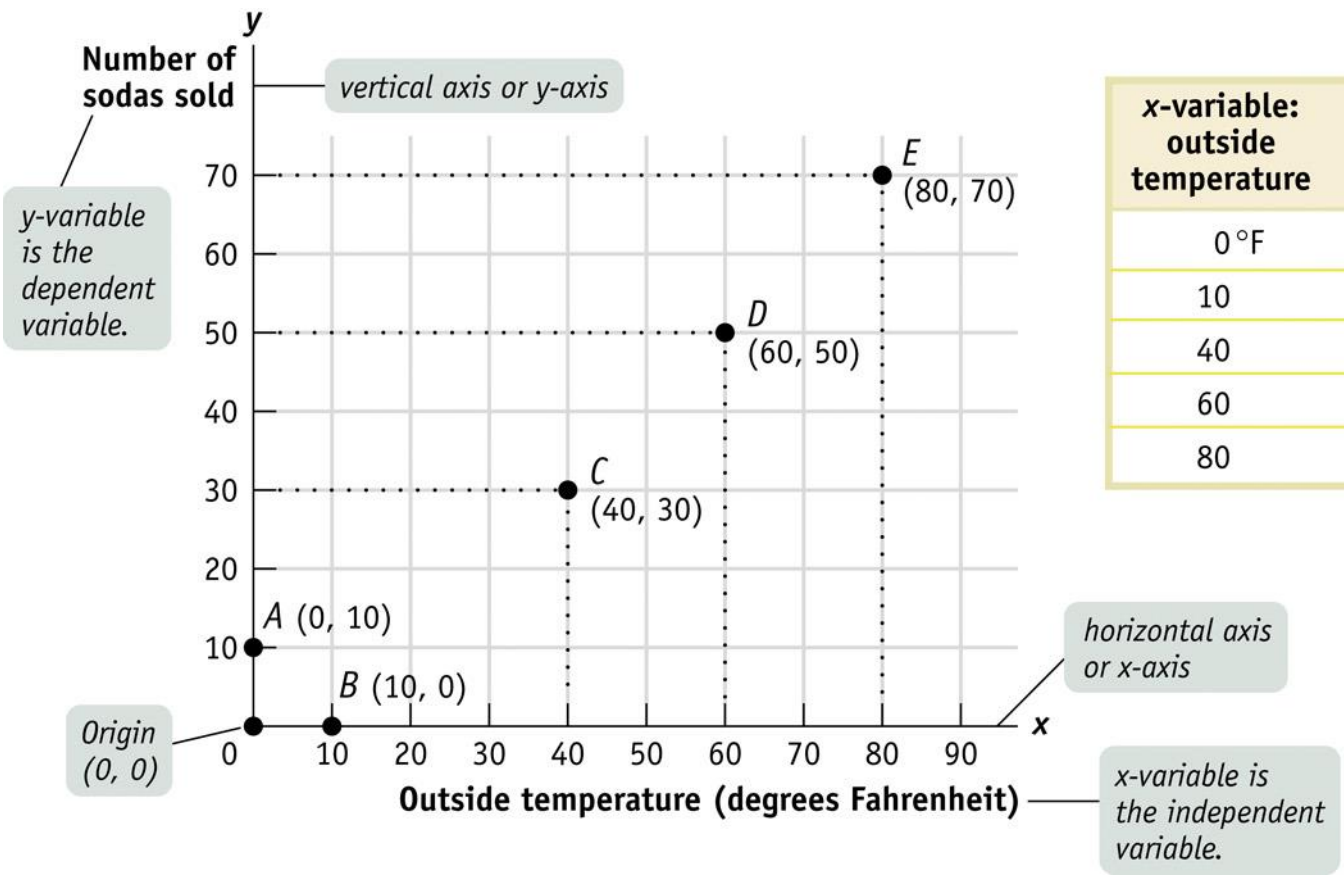
Using Graph - Two Variables



x-variable: outside temperature	y-variable: number of sodas sold	Point
0 °F	10	*A*
10	0	*B*
40	30	*C*
60	50	*D*
80	70	*E*

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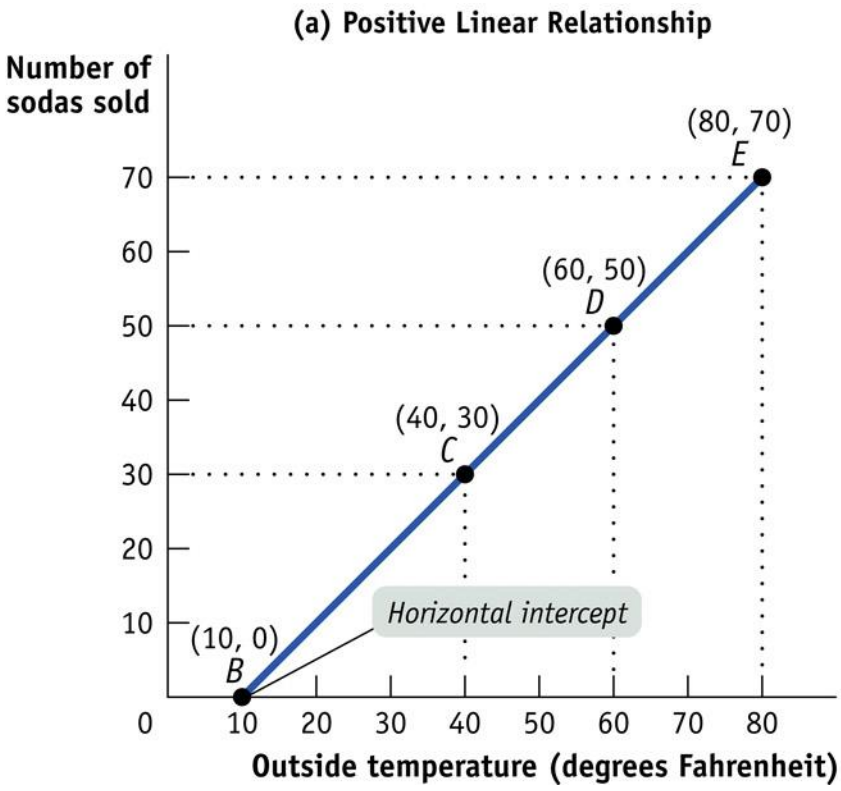

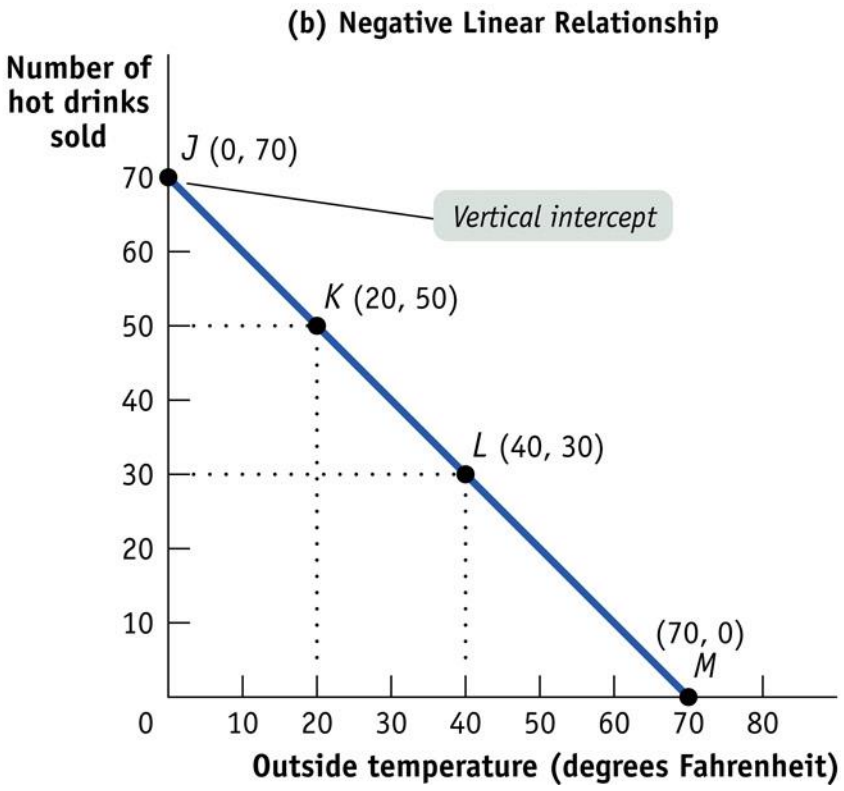

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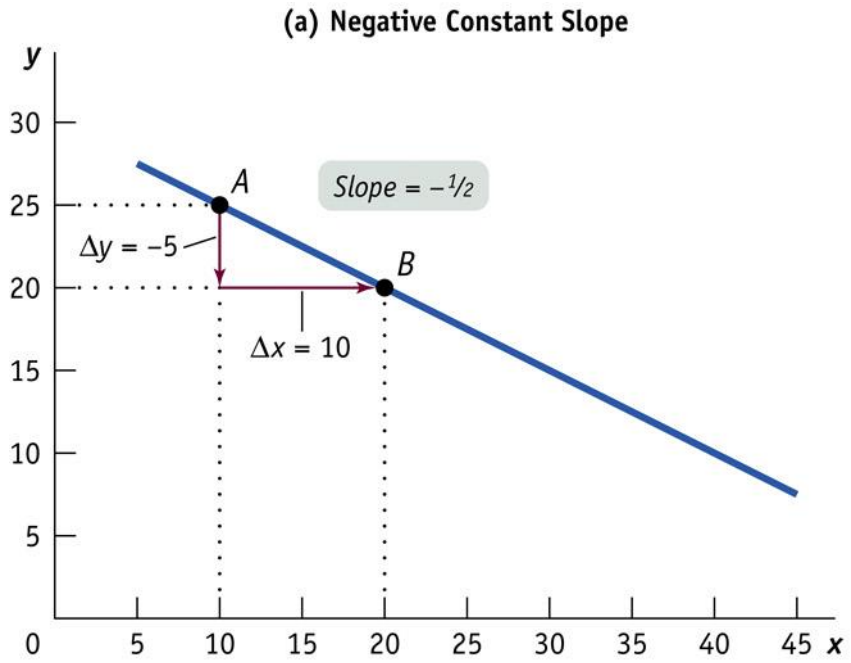

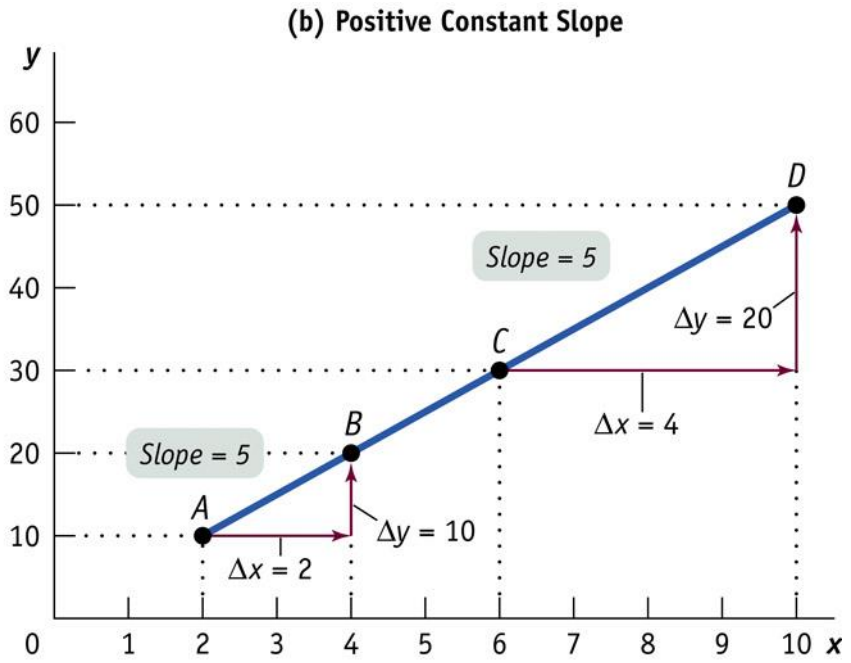

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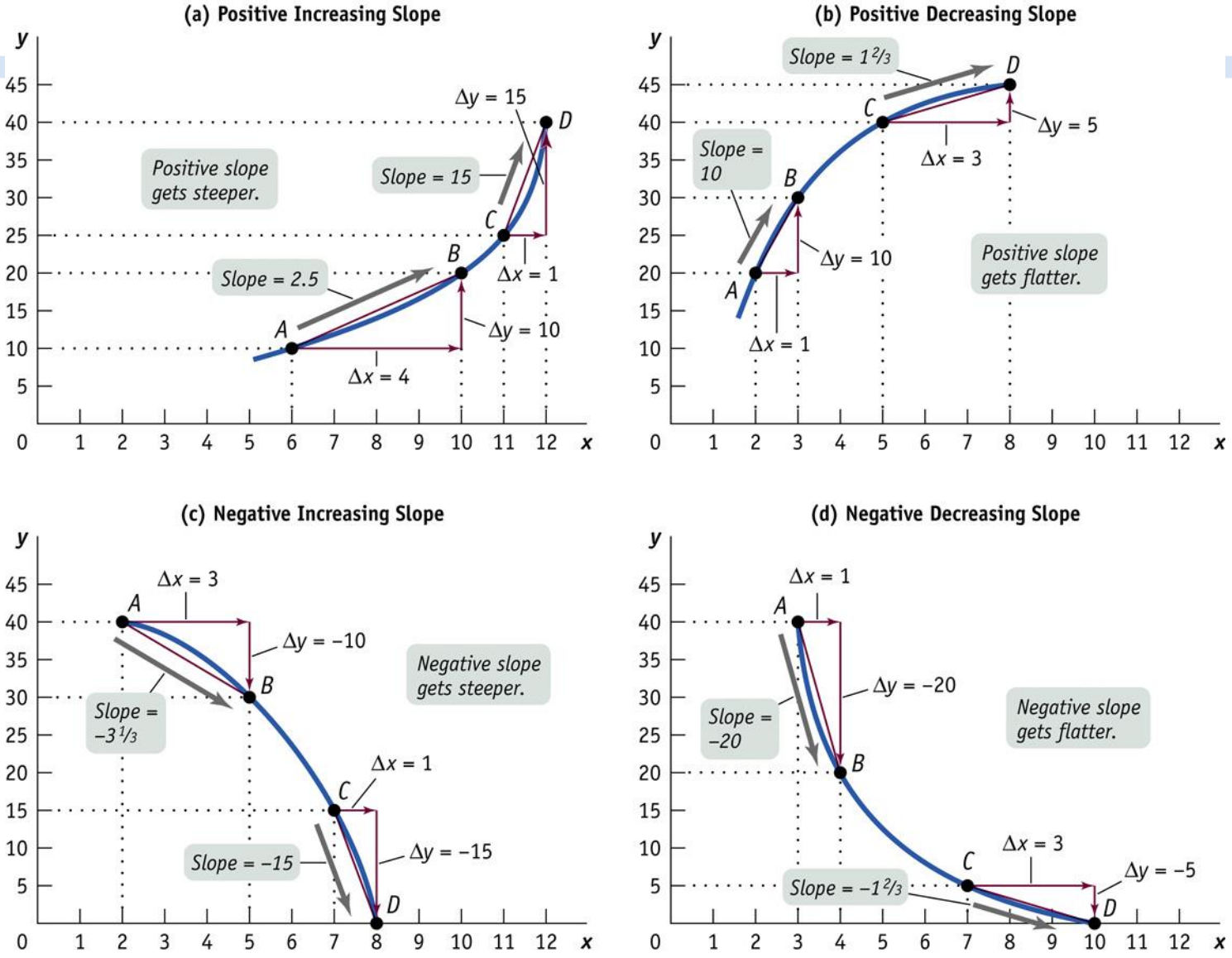

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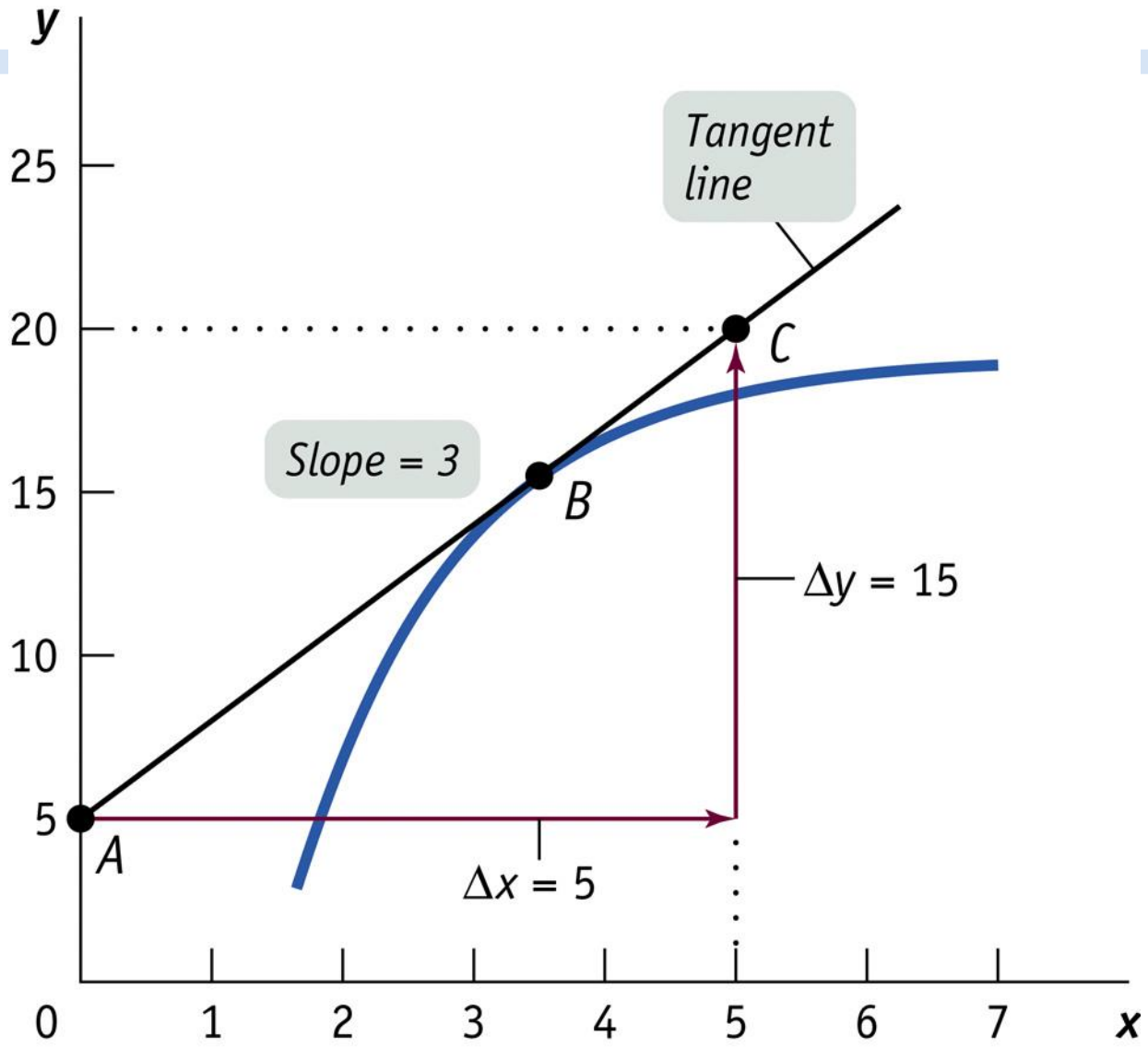

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The Power of Log – for "Growth Accounting"

$\log_{10} 1 = 0$

$\log_{10} 10 = 1$

$\log_{10} 100 = 2$

$\log_{10} 1000 = 3$

$\log_{3} 27 = 3$

$\log_{5} 125 = 3$

$\log_{4} 16 = 2$

Properties of Log:

$\log A.B = \log A + \log B$

$\log A/B = \log A - \log B$

$\log A^{B} = B. \log A$

Examples: take log of the following:

$75\ X^{4}\ Y^{3}$

A^{4} / B^{3}

$4\ K^{0.7}\ L^{0.3}$

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Log normal = Percent change

Log_e = Ln
(e = 2.7182718….) comes from:

X	$(1+ 1/x)^x$	
1		2
10		2.593
100	2.704	
1,000	2.7169	
…		
1,000,000	2.7182718…	

Why "ln x" = "% of x"
Y = ln x
dy/dx = 1/x
dy = dx/x = Δx/x = (x2-x1)/x = percent change!

We use this log to represent the % growth rate in the topic of Econ growth.
Ex:
GDP grows by 5%, and population grows by 1%; what is the growth of GDP per capita?
GDP per capita = GDP/population; since both are in %, we use the property of Log:
Log A/B = Log A - Log B
5% - 1% = 4%

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Example Using Slope

1) Consumption and Income data as follows:

	GDP ($bn) (Y)	Consumption Spending (C)
2009	$10,722	$9,846
2012	$12,931	$11,120

a)Find the equation to represent the consumption function: C = a + b. Y

Consumption is on the y-axis, and GDP is on the x-axis.

The slope = b = (y2-y1)/(x2-x1) = (11,120-9,846) / (12,931-10,722) = 0.577

Plug the slope in back to 2009 data (or 2012 data, either works out the same result) to get a (the constant or y-intercept): C = a + 0.577 Y;

9,846 = a + 0.577 (10,722) → get a = 3,662

Or: 11,120 = a + 0.577 (12,931) → get a = 3,662

b) Predict an estimate for 2014 Spending when the GDP reached $14,000 billion (or $14 trillion).

2)Now do this yourself: Consider the coffee production in Brazil:

	quantity produced ('000 tons)	Price per ton ($)
2009	2,440	$9,846
2012	3,037	$7,120

a)Put the coffee production in graph. Put Price on the y-axis, and Q on the x-axis.

b)Find the equation to represent the coffee market in Brazil.

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Models in Economics

Model: a simplified representation of a real situation that is used to better understand real-life situations.

The danger of Faulty Assumptions:

-include wrong variables

-exclude important variables

Ceteris Paribus: cet. par.

Other things equal assumption: all other relevant factors remain unchanged.

We try to treat economics as close to a laboratory science as possible—with only one variable allowed to change at a time

Setup a model for a "Blockbuster Movie". Find two variables that have positive correlations and two variables that might have negative correlations to the subject.

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Using Models: Positive Versus Normative Economics

Positive economics is the branch of economic analysis that describes the way the economy actually works.

According to Zillow.com, price of houses in Bellevue is relatively stable.

Stock market loses 30% of its last year's value.

Normative economics makes prescriptions about the way the economy should work.

Price of houses in Bellevue is too high.

All children under 15 should get flu vaccine.

Positive economics is about description; **normative economics** is about prescription.

Using Models, Economists can determine correct answers for positive questions and make forecasts, but typically not for normative questions, which involve value judgments.

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Positive statement or Normative?

Stomp your feet for positive statement and meow like a cat for normative statement.

1. The moon is made of green cheese.
2. Rich people should be taxed more.
3. More taxes on the rich will increase tax revenues.
4. Everyone should donate to charity.
5. Everyone needs to work at a bank to see the true value of money.
6. Government intervention in markets is bad.
7. Economics majors earn more on average than sociology majors.
8. Everyone should take Economics course.

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Exercise

1. Positive or Normative economics statement?

a) Inflation is expected to rise following the increase in money supply.
b) Foreign imports are bad for the economy.
c) The price of houses in Seattle is too high.
d) Rent control law should be implemented to help renters.
e) More than 60% of women are in the labor market.

2. Determine the variables of the following situations, sketch a graph to show which is on the x-axis (the independent variable) or on the y-axis (the dependent variable), and show a curve or a line that shows the relationship (positive or negative or anything else):

a) 1. More experienced workers typically have higher incomes than less experienced ones.
b) 2. Whatever the temperature outside, Americans consume the same number of hot dogs per day.
c) 3. Research finds no relationship between the number of diet books purchased with the number of pounds lost by the average dieter.
d) 4. If the price of movies increases, fewer consumers go to see movies.

(note: on the graph, "Price" is always put on the y-axis, a common agreement in economics study)

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