# MicroEconomics

- Introduction

# Understanding Economics and Scarcity

- Economics is the study of choice under conditions of scarcity. As individuals, and as a society, Economics is the study of how society manages its scarce resources. In most societies, resources are allocated not by a single central planner but through the combined actions of millions of households and firms
- Scarcity means that there are never enough resources to satisfy all human wants. Every society, at every level, must make choices about how to use its resources.

# Concept of Opportunity Cost

Opportunity Cost: Is what we give up when we choose one thing over another, the value of the next best alternative.

Individual Decisions: In some cases, recognizing the opportunity cost can alter personal behavior.

Societal Decisions: Opportunity cost comes into play with societal decisions. Universal health care would be nice, but the opportunity cost of such a decision would be less housing, environmental protection, or national defense. These trade-offs also arise with government policies.

# Goods and Services

- Goods and services are the outputs offered by businesses to satisfy the demands of consumer and industrial markets. They are differentiated on the basis of four characteristics:

- *Tangibility:* Goods are tangible products such as cars, clothing, and machinery. They have shape and can be seen and touched. Services are intangible. Hair styling, pest control, and equipment repair, for example, do not have a physical presence.

- *Perishability:* All goods have some degree of durability beyond the time of purchase. Services do not; they perish as they are delivered.

- *Separability:* Goods can be stored for later use. Thus, production and consumption are typically separate. Because the production and consumption of services are simultaneous, services and the service provider cannot be separated.

- *Standardization:* The quality of goods can be controlled through standardization and grading in the production process. The quality of services, however, is different each time they are delivered

# Goods and Resources

- Economic Goods: goods or services a consumer must pay to obtain; also called scarce goods.
- Free Goods: goods or services that a consumer can obtain for free because they are abundant relative to the demand.
- Productive Resources: the inputs used in the production of goods and services to make a profit: land, economic capital, and labor; also called “factors of production”

# Productive Resources

Four productive resources also called factors of production:

- Land: any natural resource, including actual land, but also trees, plants, livestock, wind, sun, water, etc.
- Economic capital: anything that's manufactured in order to be used in the production of goods and services. Note the distinction between financial capital (which is not productive) and economic capital (which is).

While money isn't directly productive, the tools and machinery that it buys can be.

- Labor: any human service—physical or intellectual. Also referred to as *human capital*.

# Economic agent

- An economic agent is an individual or a group that makes choices. Let’s start with a few types of individual economic agents. For example, a consumer chooses to eat cheeseburgers or pizza. A student chooses to attend his classes or to skip them. A worker chooses to do her job or pretend to work while texting. A business leader chooses to open a new factory in Chile or China. Of course, you are also an economic agent because you make an enormous number of choices every day.

# Trade-offs and Budget Constraints

- To understand optimization, you need to understand trade-offs. **Trade-offs** arise when some benefits must be given up in order to gain others. Think about Facebook. If you spend an hour on Facebook, then you cannot spend that hour doing other things. For example, you cannot study at most part-time jobs at the same time you are editing your Facebook profile. Economists use budget constraints to describe **trade-offs**. A budget constraint is the set of things that a person can choose to do (or buy) without breaking her budget.

- Here's an illustration. Suppose that you can do only one of two activities with your free time: study at a part-time job or surf the Web. Suppose that you have 8 free hours in a day (once we take away necessities like sleeping, eating, bathing, doing problem sets). Think of these 8 free hours as your budget of free time. Then your budget constraint would be: 8 hours = Hours surfing the Web + Hours studying at part-time job. This budget constraint equation implies that you face a trade-off. If you spend an extra hour surfing the Web, you need to spend one less hour studying at the university. Likewise, if you spend an extra hour studying, you need to spend one less hour surfing the Web. More of one activity implies less of the other. Budget constraints are useful economic tools because they quantify trade-offs. When economists talk about the choice that an economic agent faces, the economist first specifies the budget constraint.

# Markets, and Trade

- **What Is a Market?**
- A market is a place where parties can gather to facilitate the exchange of goods and services. The parties involved are usually buyers and sellers. The market may be physical, like a retail outlet, where people meet face-to-face, or virtual, like an online market, where there is no physical presence or contact between buyers and sellers.
- Some key characteristics help define a market, including the availability of an arena, buyers and sellers, and a commodity that can be purchased and sold.

# Price :

- **price**, the amount of **money** that has to be paid to acquire a given product, price is also a measure of value. Insofar as the amount people are prepared to pay for a product represents its value,

# Microeconomics and Macroeconomics

Micro vs. Macro

- Macroeconomics: the branch of economics that focuses on broad issues such as growth, unemployment, inflation, and trade balance.
- Microeconomics: the branch of economics that focuses on actions of particular agents within the economy, like households, workers, and businesses. We learn about the theory of consumer behavior and the theory of the firm.

# Understanding Macroeconomics

Macroeconomics: Macroeconomic policy pursues its goals through monetary policy and fiscal policy.

- Monetary Policy: policy that involves altering the level of interest rates, the availability of credit in the economy, and the extent of borrowing

- Fiscal Policy: economic policies that involve government spending and

# . Positive Economics and Normative Economics

- We now have an idea of what economics is about: people’s choices. But what is the reason for studying choices? Part of the answer is that economists are just curious, but that’s only a small part of the picture. Understanding people’s choices is practically useful for two key reasons. Economic analysis:

1. Describes what people actually do (positive economics). Positive Economics Describes What People Actually Do Descriptions of what people actually do are objective statements about the world. Such factual statements can be confirmed or tested with data. For instance, it is a fact that in 2010, 50 percent of U.S. households earned less than $52,000 per year. Describing what has happened or predicting what will happen is referred to as positive economics or positive economic analysis.

# Normative economics

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- Recommends what people ought to do (normative economics). The first application is descriptive and the second is advisory. Normative Economics Recommends What People Ought to Do Normative economics, the second of the two types of economic analysis, advises individuals and society on their choices. Normative economics is about what people ought to do. Normative economics is almost always dependent on subjective judgments, which means that normative analysis depends at least in part on personal feelings, tastes, or opinions. So whose subjective judgments do we try to use? Economists believe that the person being advised should determine the preferences to be used

# . Why study economics ?

- You now have a sense of what economics is about. But you might be wondering what distinguishes it from the other social sciences, including, anthropology, history, political science, psychology, and sociology. All of the social sciences study human behavior, so what sets economics apart? Economists emphasize three key concepts.

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# . Why study economics (cont.)?

1. **Optimization**: We have explained economics as the study of people's choices. The study of all human choices may initially seem like an impossibly huge topic. And at first glance, choosing a double-bacon cheeseburger at McDonalds does not appear to have much in common with a corporate executive's decision to build a $500 million laptop factory in China.

2. **Equilibrium**: The second principle of economics holds that economic systems tend to be in equilibrium, a situation in which no agent would benefit personally by changing his or her own behavior. The economic system is in equilibrium when each agent feels that he or she cannot do any better by picking another course of action. In other words, equilibrium is a situation in which everyone is simultaneously optimizing.

3. **Empiricism**: The third principle of economics is an emphasis on empiricism—analysis that uses data or analysis that is evidence-based. Economists use data to test theories and to determine what is causing things to happen in the world.

# Using Economic Models

Economic Model: a simplified version of reality that allows us to observe, understand, and make predictions about economic behavior.

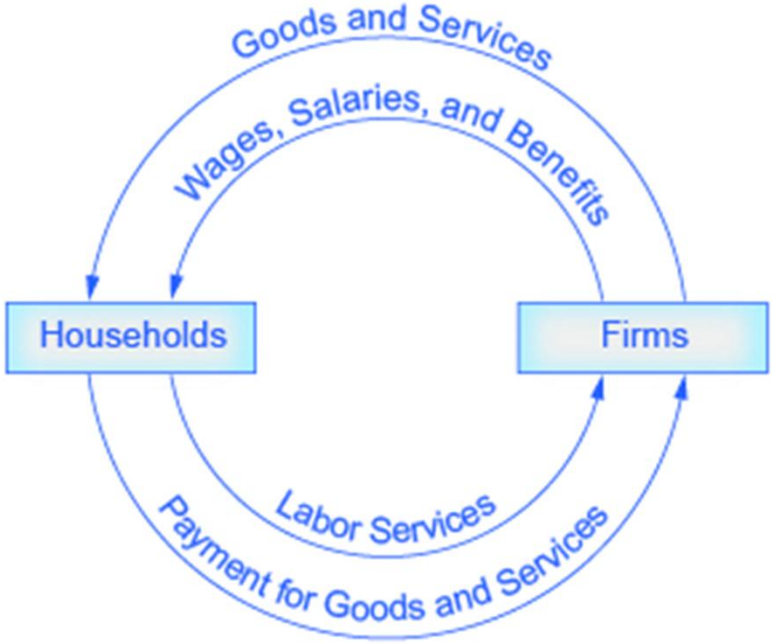
Economic Models and Math

- Economic models can be represented using words or using mathematics.
- Algebra and graphs are utilized to explain economic models.

# Using Economic Models: Examples

Circular Flow Diagram: a diagram indicating that the economy consists of households and firms interacting in a goods-and-services market and a labor market.

- goods-and-services market (also called the *product market)*, in which firms sell and households buy.
- labor market, in which households sell labor to business firms or other employees.
- real world, there are many different markets for goods and services and markets for many different types of labor. The circular flow diagram simplifies these distinctions in order to make the picture easier to grasp.




*Note: Economists don't figure out the solution to a problem and then draw the graph. Instead, they use the graph to help them discover the answer.*

# Purpose of Functions

- Function: a relationship or expression involving one or more variables.
  - In economics, functions frequently describe cause and effect.
  - The variable on the left-hand side is what is being explained (“the effect”).
  - On the right-hand side is what’s doing the explaining (“the causes”).
- Economic models tend to express relationships using economic variables, such as:
  - Budget = money spent on econ books + money spent on music

# Solving Simple Equations

## Order of Operations

- When you solve an equation it's important to do each operation in the following order:
  - Simplify inside parentheses and brackets.
  - Simplify the exponent.
  - Multiply and divide from left to right.
  - Add and subtract from left to right.

## Lines

- In this course the most common equation you will see is for a line in graphs: y = b+mx

## Understanding Variables

- Variable: a quantity that can assume a range of values represented by a letter or a symbol.
  - For example: y=9+3x

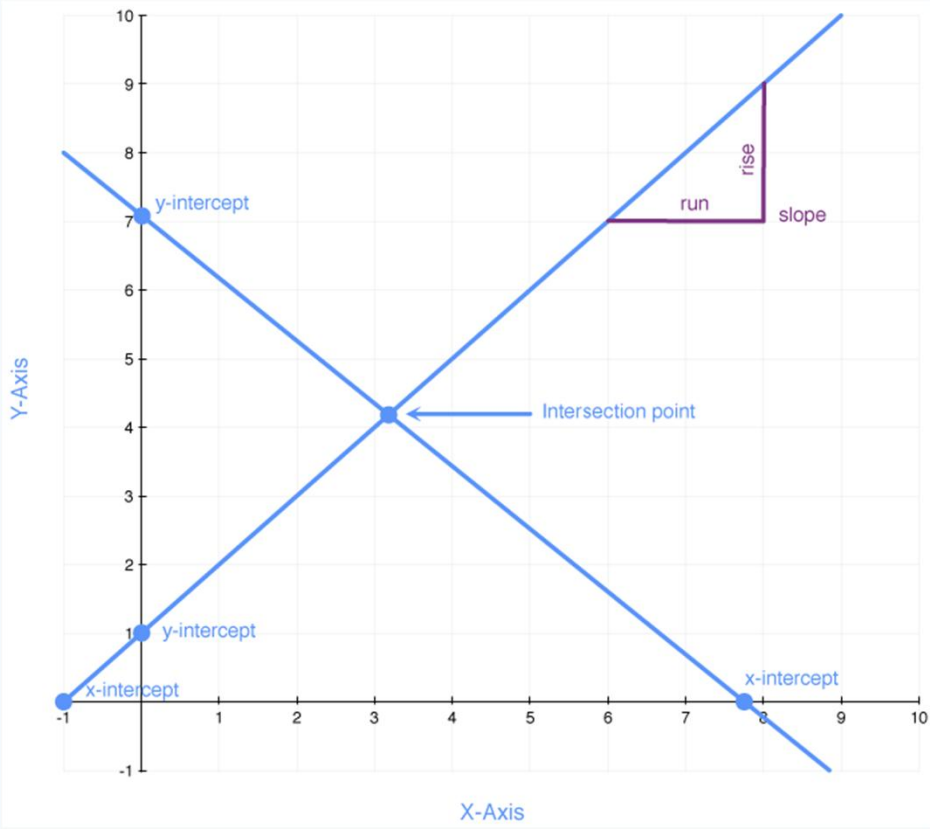
## Working with Variables

- When you're trying to solve an equation with one or more variables, you need to isolate the variable.
- What does *x* equal if y=12?

$$12 = 9 + 3x$$
$$-9 = -9$$
$$3 = 3x$$
$$\frac{3}{3} = \frac{3x}{3}$$
$$1 = x$$

# Creating and Interpreting Graphs

- intercept: the point on a graph where a line crosses the vertical axis or horizontal axis.
- slope: the change in the vertical axis divided by the change in the horizontal axis.
- variable: a quantity that can assume a range of values.
- x-axis: the horizontal line on a graph, commonly represents quantity (q) on graphs in economics.
- y-axis: the vertical line on a graph, commonly represents price (p) on graphs in economics.



# Creating and Interpreting Graphs (cont.)

Equation for a Line: $y = mx + b$

- In any equation for a line, *m* is the slope and *b* is the y-intercept.

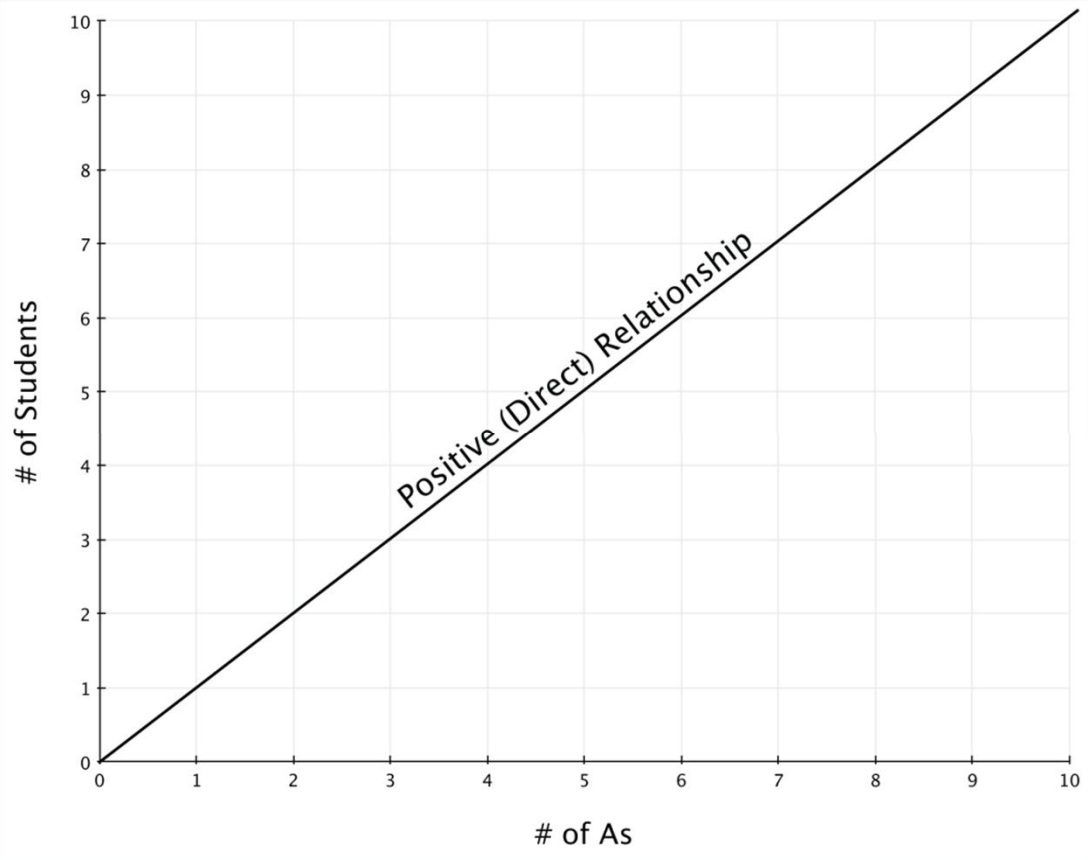
Interpreting Graphs in Economics

- It is rare for real-world data points to arrange themselves as a perfectly straight line.
- It often turns out that a straight line can offer a reasonable approximation of actual data.

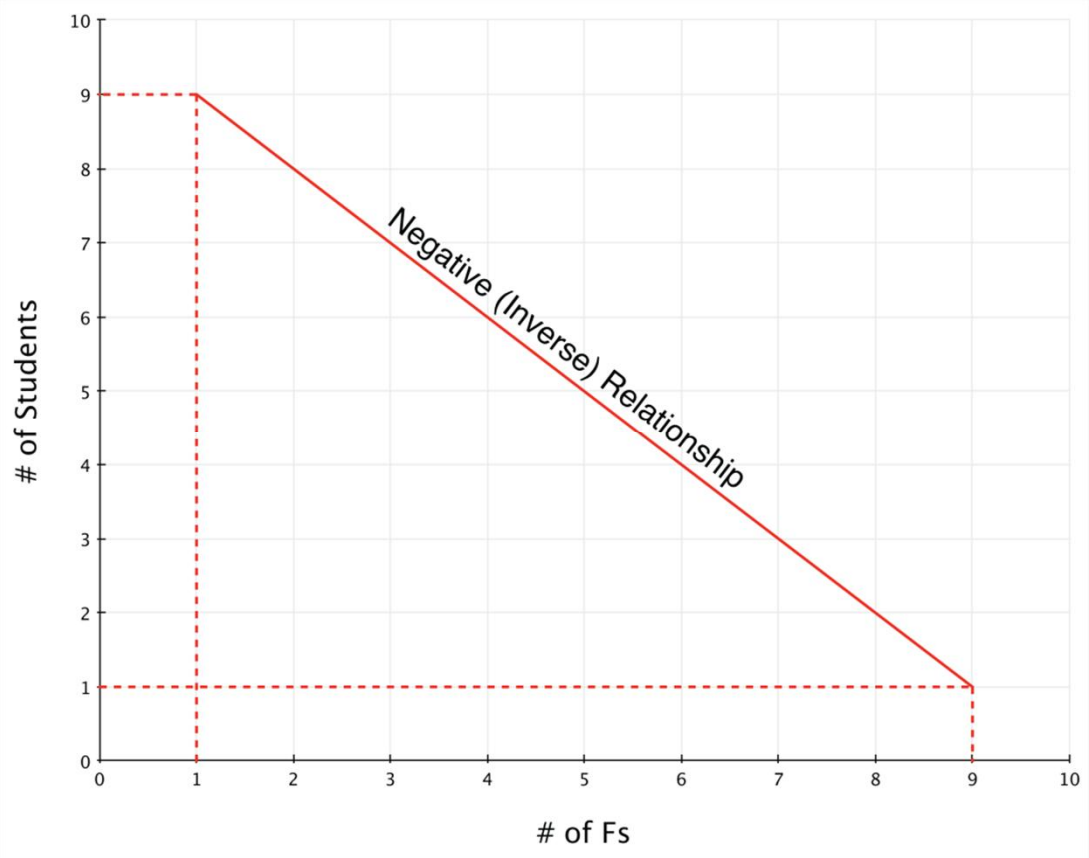
# Interpreting Slope

What the Slope Means: the change in the vertical axis divided by the change in the horizontal axis.

- positive slope indicates that two variables are positively related; when one variable increases, so does the other, and when one variable decreases, the other also decreases.



# Interpreting Slope: Negative Slope



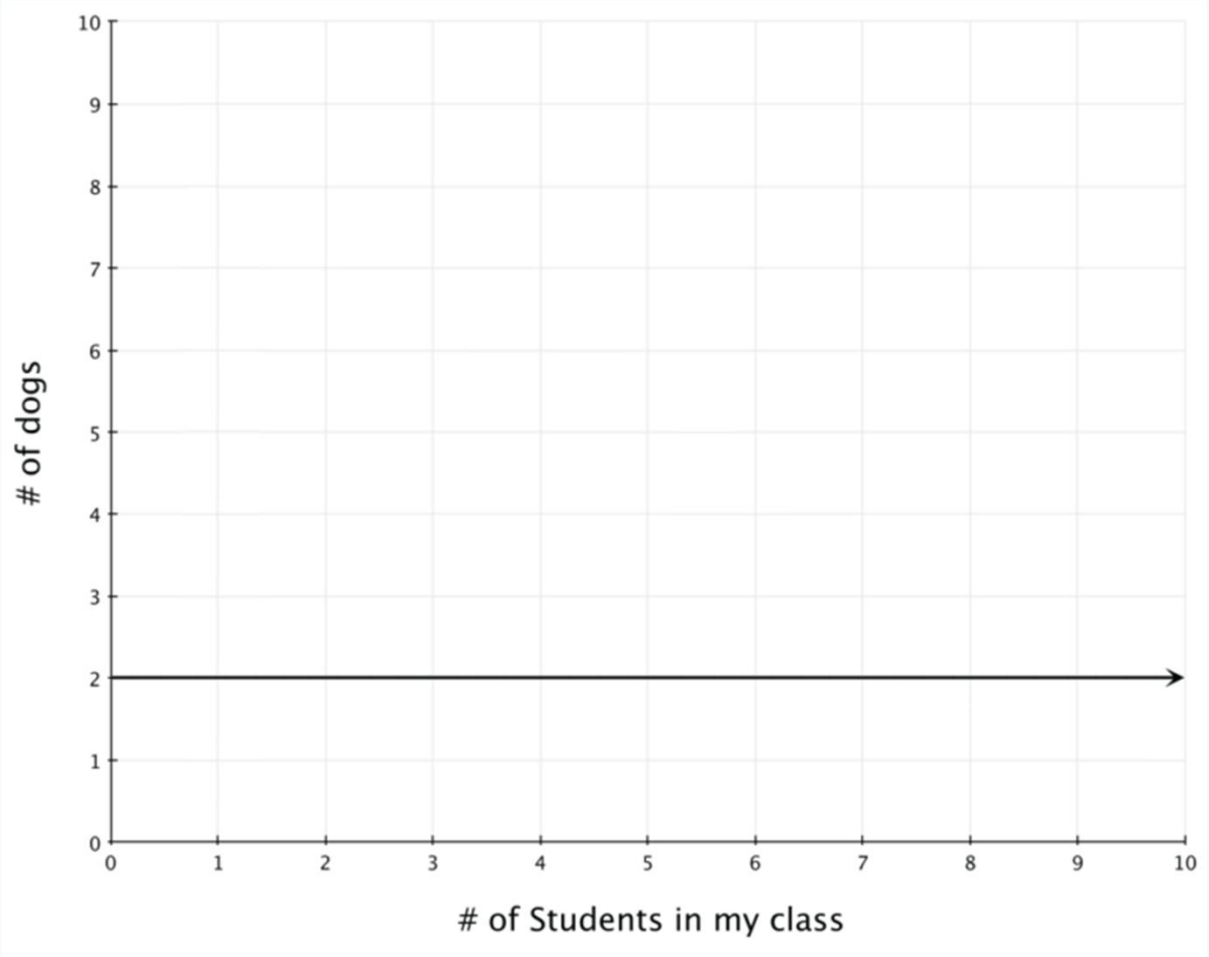

What the Slope Means: the change in the vertical axis divided by the change in the horizontal axis.

- negative slope indicates that two variables are negatively related; when one variable increases, the other decreases, and when one variable decreases, the other increases.

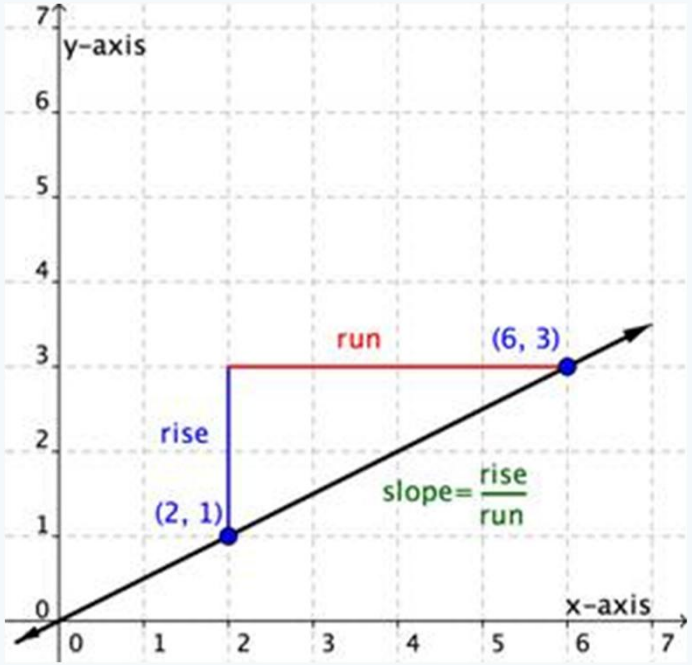
# Interpreting Slope: Slope of Zero

What the Slope Means: the change in the vertical axis divided by the change in the horizontal axis.

- Slope of zero indicates that there is a constant relationship between two variables: when one variable changes, the other does not change.



# Interpreting Slope: Calculating Slope



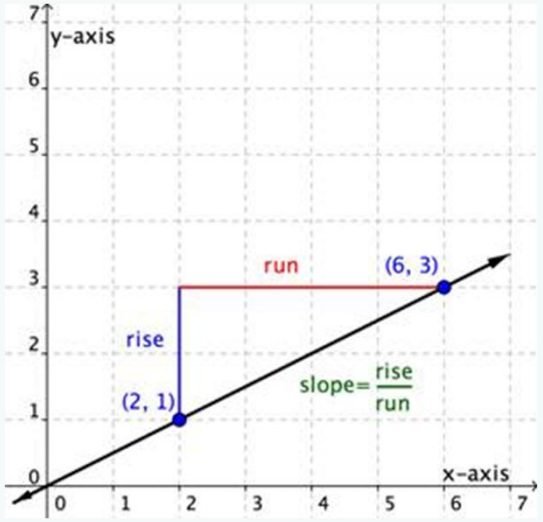

Calculating Slope

- The slope of a straight line between two points can be calculated in numerical terms.
- To calculate slope, begin by designating one point as the “starting point” and the other point as the “end point” and then calculating the rise over run between these two points.

# Interpreting Slope: Calculating Slope (cont.)

Calculating Slope

- Graphs of economic relationships are not always straight lines but often nonlinear (curved) lines.
  - Can interpret nonlinear relationships similarly to the way we interpret linear relationships.
  - Their slopes can be positive or negative. We can calculate the slopes similarly also, looking at the rise over the run of a segment of a curve.



# Interpreting Slope: Nonlinear Relationships

Nonlinear relationships can be interpreted similar to linear relationships.

- Their slopes can be positive (as in Figure 5) or negative.
- We can calculate the slopes similarly also, looking at the rise over the run of a segment of a curve.
- A higher positive slope means a steeper upward tilt to the curve, which you can see at higher output levels.
- A negative slope that is larger in absolute value (that is, more negative) means a steeper downward tilt to the line.

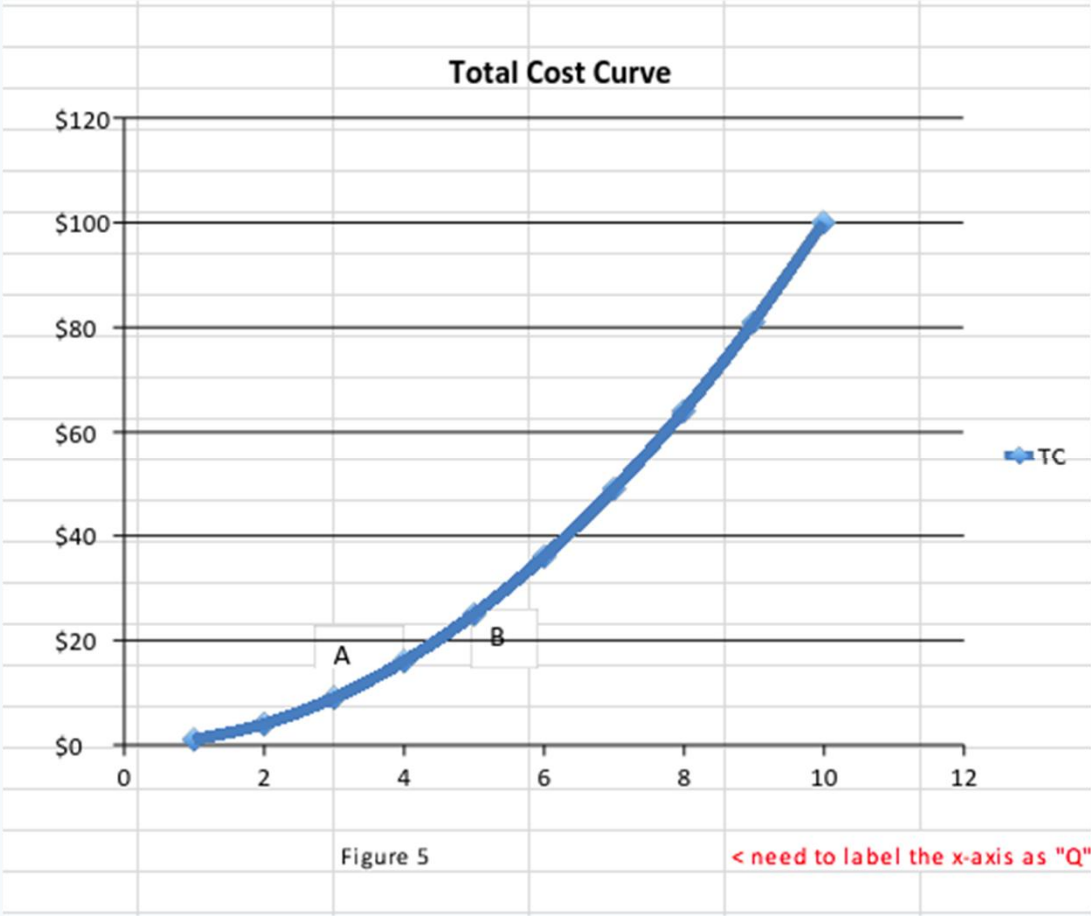
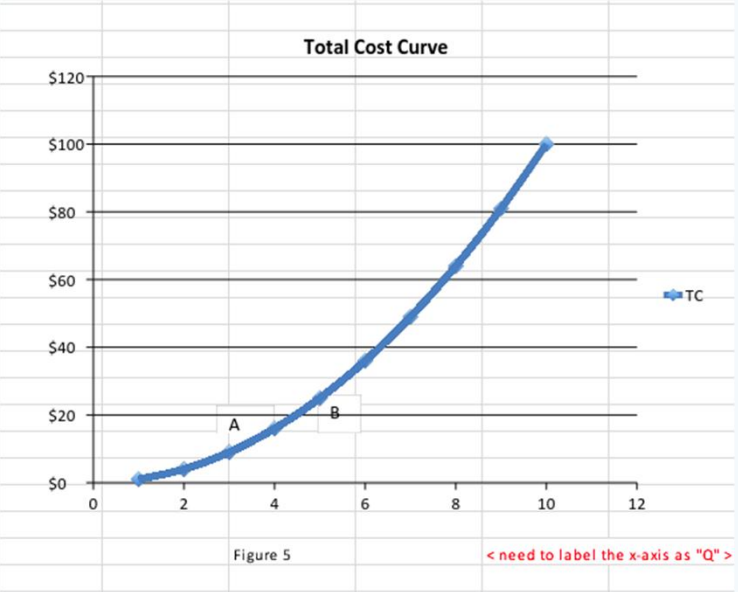



Figure 5

< need to label the x-axis as "Q"

# Interpreting Slope: Nonlinear Relationships (cont.)




Nonlinear relationships can be interpreted similar to linear relationships.

- A slope of zero is a horizontal line.
- A vertical line has an infinite slope.
- If a line has a larger intercept, graphically, it would shift out (or up) from the old origin, parallel to the old line.
- If a line has a smaller intercept, it would shift in (or down), parallel to the old line.

# Types of Graphs: Line

Line Graphs: show a relationship between two variables: one measured on the horizontal axis and the other measured on the vertical axis.

- Sometimes it's useful to show more than one set of data on the same axes.
- The data in the table, below, is displayed in Figure 1, which shows the relationship between two variables: length and median weight for American baby boys and girls during the first three years of life.

**Length-to-Weight Relationship for American Boys and Girls**

| Boys from Birth to 36 Months | | Girls from Birth to 36 Months | |
|---|---|---|---|
| Length (inches) | Weight (pounds) | Length (inches) | Weight (pounds) |
| 20.0 | 8.0 | 20.0 | 7.9 |
| 22.0 | 10.5 | 22.0 | 10.5 |
| 24.0 | 13.5 | 24.0 | 13.2 |
| 26.0 | 16.4 | 26.0 | 16.0 |
| 28.0 | 19.0 | 28.0 | 18.8 |
| 30.0 | 21.8 | 30.0 | 21.2 |
| 32.0 | 24.3 | 32.0 | 24.0 |
| 34.0 | 27.0 | 34.0 | 26.2 |
| 36.0 | 29.3 | 36.0 | 28.9 |
| 38.0 | 32.0 | 38.0 | 31.3 |

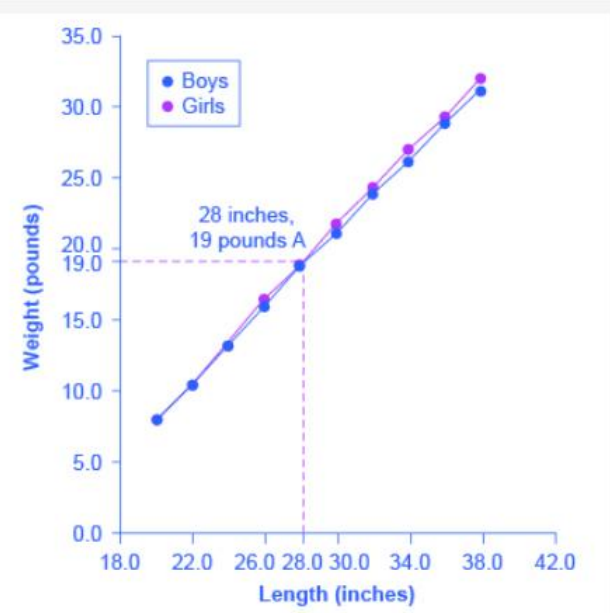



**Figure 1.** The Length-Weight Relationship for American Boys and Girls.

# Types of Graphs: Line (cont.)

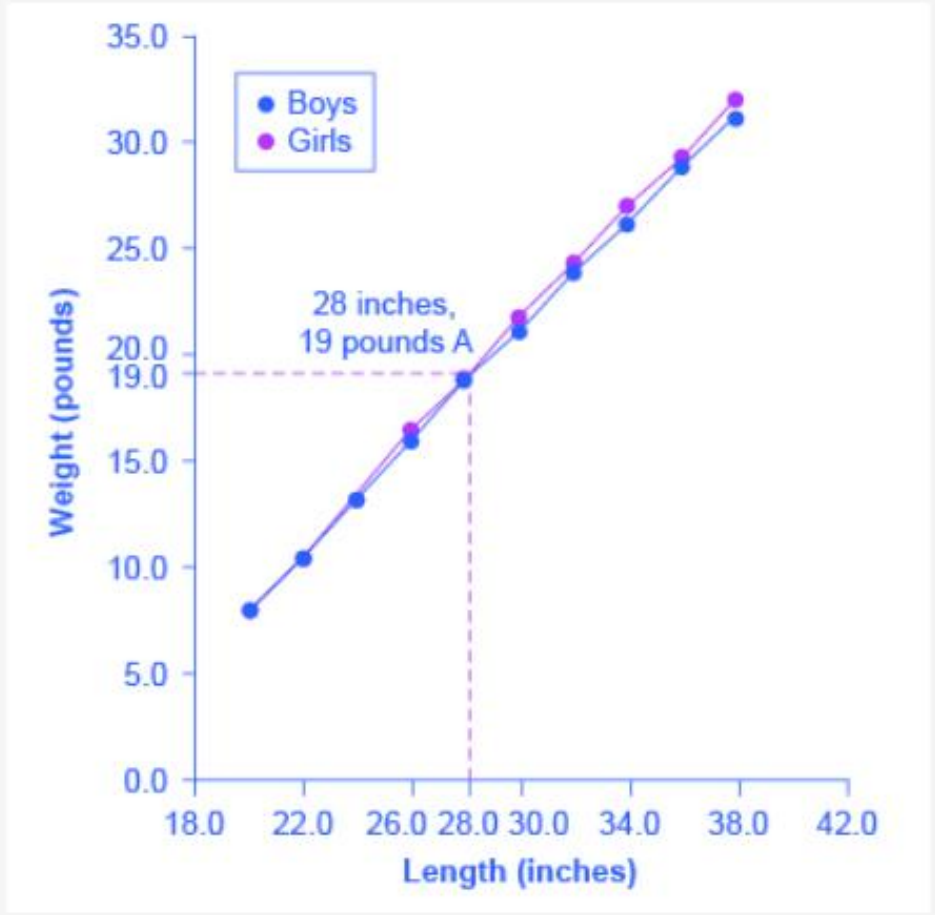



**Figure 1.** The Length-Weight Relationship for American Boys and Girls.

Line Graphs:

- The line graph measures length in inches on the horizontal axis and weight in pounds on the vertical axis. For example, point A on the figure shows that a boy who is 28 inches long will have a median weight of about 19 pounds.
- One line on the graph shows the length-weight relationship for boys, and the other line shows the relationship for girls.
- This kind of graph is widely used by health-care providers to check whether a child's physical development is roughly on track.

# How do you know which graph to use for your data?

- Line graphs are often the most effective format for illustrating a relationship between two variables that are both changing.
  - For example, time-series graphs can show patterns as time changes, like the unemployment rate over time.
  - Line graphs are widely used in economics to present continuous data about prices, wages, quantities bought and sold, the size of the economy.

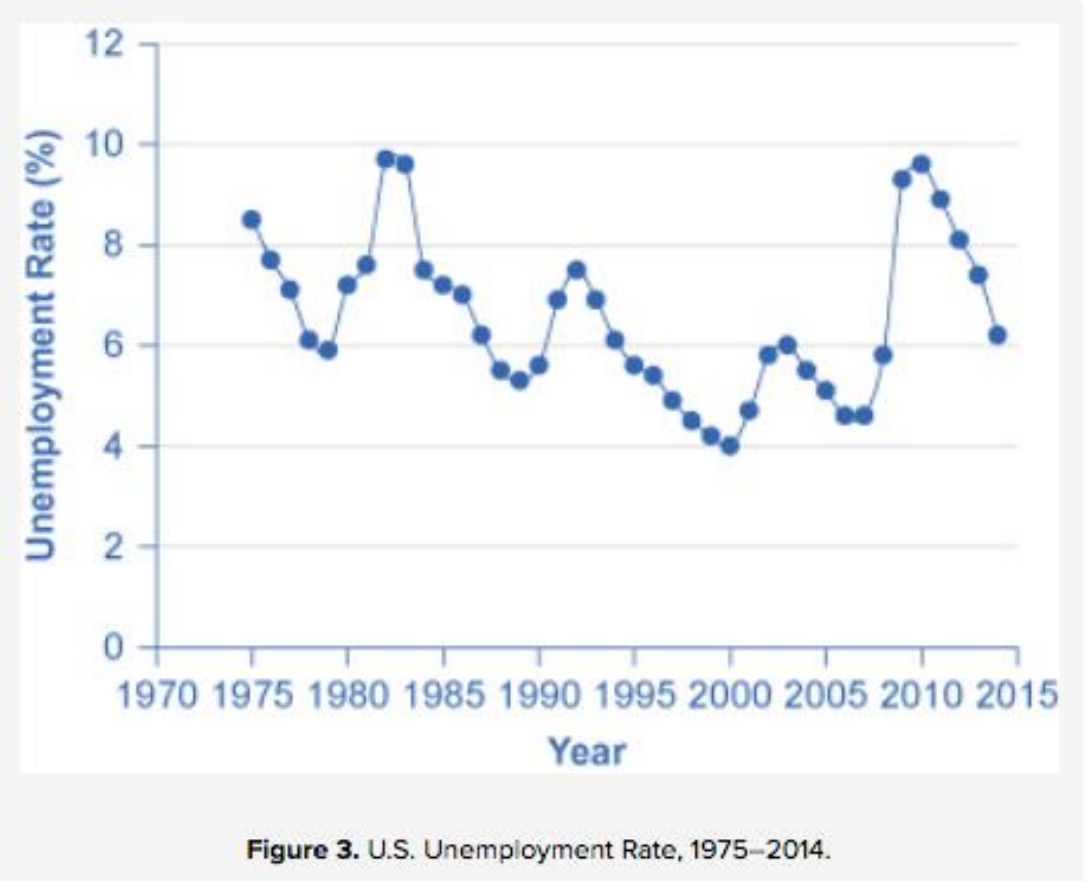



**Figure 3.** U.S. Unemployment Rate, 1975–2014.

# Quick Review

- What if scarcity? Explain its economic impact.
- What are productive resources?
- What is opportunity cost and its importance in decision-making?
- Why do trade and markets exist?
- What is the difference between macroeconomics and microeconomics?
- Why are economic models are useful to economists?
- What are common economic models?
- How are equations and functions used to describe relationships? What are the cause and effects?
- What proper order of operations is used while solving simple equations with variables?
- How does a graph shows the relationship between two variables?
- How do you differentiate between a positive relationship and a negative relationship?
- How do you interpret economic information on a graph?

# Understanding Microeconomics

## Questions to Ask with Microeconomics

- What determines how households and individuals spend their budgets?
- What combination of goods and services will best fit their needs and wants, given the budget they have to spend?
- How do people decide whether to work, and if so, whether to work full time or part time?
- How do people decide how much to save for the future, or whether they should borrow to spend beyond their current means?

# Understanding Microeconomics (cont.)

## More Microeconomics Questions

- What determines the products, and how many of each, a firm will produce and sell?
- What determines what prices a firm will charge?
- What determines how a firm will produce its products?
- What determines how many workers it will hire?
- How will a firm finance its business?
- When will a firm decide to expand, downsize, or even close?