Types of Graphs

READ

A graph is a picture that helps you understand data. Graphs are easier to read than tables of numbers, so they are often used to display data collected during an experiment. The three main types of graphs you will use are line graphs, bar graphs, and pie graphs. With a little practice, you will be able to identify these types of graphs and recognize which type of data best fits which type of graph.

EXAMPLES ▶

Line Graph

A line graph shows how the *independent variable* causes the *dependent variable* to change in value. Use a line graph when your independent variable is continuous, meaning that the data continues uninterrupted in between each of the data points.

If your data is *continuous* and one of your variables causes the other variable to change in value, a line graph is the best type of graph to use.

This line graph shows how far a toy car traveled down a ramp over a period of time. The independent variable is the car's position and the dependent variable is the time it took to travel that far. The position of the car **depends** on how long it has been traveling.


Position of Toy Car Over Time
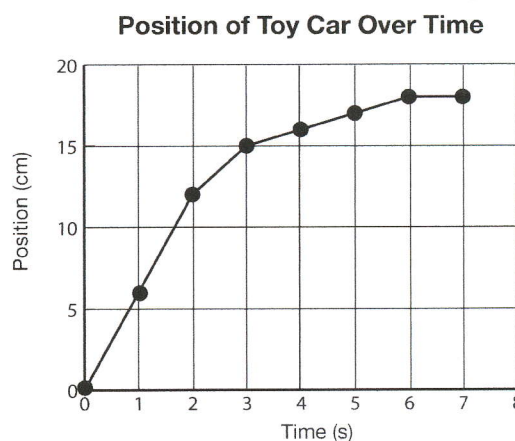
Bar Graphs

A bar graph is best for comparing separate categories of information. The graph is made of a series of "bars" of different values drawn along an axis. Use a bar graph when your independent variable is *discrete*. Discrete means that your data consists of exact values.

The data shown in this bar graph relates how many students are in a science classroom to how many lab tables are needed. As with a line graph, bar graphs have a dependent variable and an independent variable. For this graph, the independent variable is the number of students, and the dependent variable is the number of lab tables needed. The number of lab tables **depends** on how many students are in the classroom.
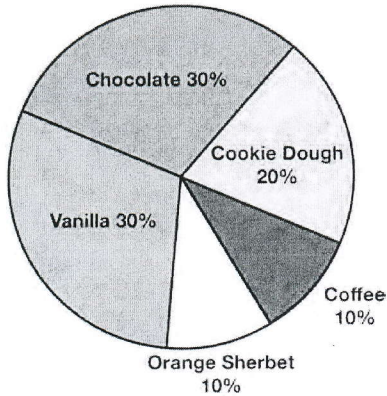
If your data compares separate categories, a bar graph is the best type of graph to use.

Students in Science Class vs. Lab Tables Required
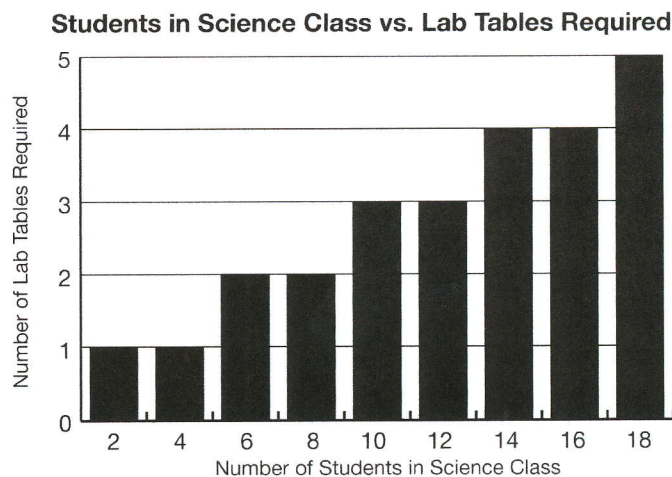
Pie Graphs

Pie Graphs

Favorite Flavor Ice Cream

Chocolate 30%
Cookie Dough 20%
Vanilla 30%
Coffee 10%
Orange Sherbet 10%

A pie graph is a circular graph that compares the parts of something to the whole. The data is usually written in percentages or fractions of the whole. Each part is drawn as a "slice" of the pie, so you can compare the different sizes of the "slices" to each other **and** to the whole pie. Surveys usually give data sets that work well in pie graphs.

For this graph, a class of sixth grade students was given a survey asking them to identify their favorite flavor of ice cream.
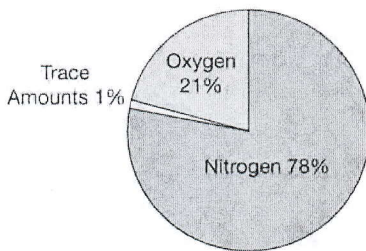
PRACTICE 1

Name the type of graph shown in the following four examples
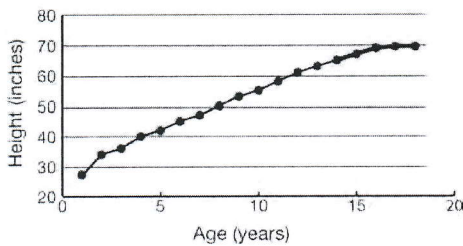
Graph #1:

Gases in Earth's Atmosphere

Trace Amounts 1%
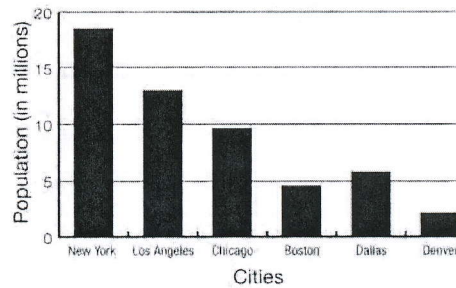Oxygen 21%
Nitrogen 78%

Type of graph _____

Graph #2:

Populations of US Cities
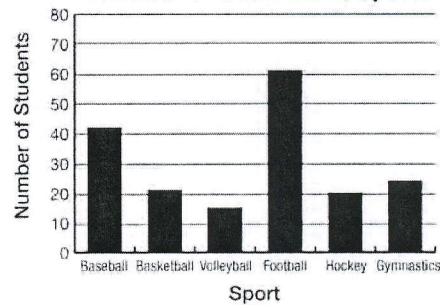

Type of graph _____

Graph #3:

Konstantin's Age vs. Height

Type of graph _____

Graph #4:

Number of Students in Sports

Type of graph _____

PRACTICE 2

Describe which type of graph: line graph, bar graph, or pie graph would be most appropriate for the following data sets. Explain your reason.

Data Set #1: Most Popular Dog Breeds

Dog Breed	Percent of dog owners who own this breed of dog	Type of graph you would use:
Golden Retriever	30%	Reason:
German Shepherd	20%	
Beagle	20%	
Poodle	20%	
Rottweiler	10%	

Data Set #2: Length of Students' First Names

First Name	Number of letters	Type of graph you would use:
Jasmine	7	Reason
Alejandra	9	
Kenji	5	
Lola	4	
Jordan	6	

Data Set #3: Air Temperature

Time	Air Temperature (°F)	Type of graph you would use:
3 pm	86	Reason
4 pm	88	
5 pm	84	
6 pm	80	
7 pm	79	

Data Set #4: How Students Get to School

Method	Number of students who get to school with this method	Type of graph you would use:
Bus	16	Reason
Walk	10	
Car	8	
Taxi	1	
Bicycle	3	