

# Basic Statistics

We know when students are just beginning their study of algebra and statistics, the basic concepts can be difficult to grasp. These activities are written for teachers to use in their basic algebra and statistics classes.

When you find other helpful exercises, add these to your own eActivities.

## Good exercises encourage students!

This file includes eActivities on:

**Bar Graph** – Displaying data in a simple bar graph.

**Circle Graph** – How big is each slice of the pie?

**Histogram** – Graph how many of each number you have.

**Boxplots** – Another way to organize your data.

**Mean/Median/Mode** – Use each of these to find more information on your data.

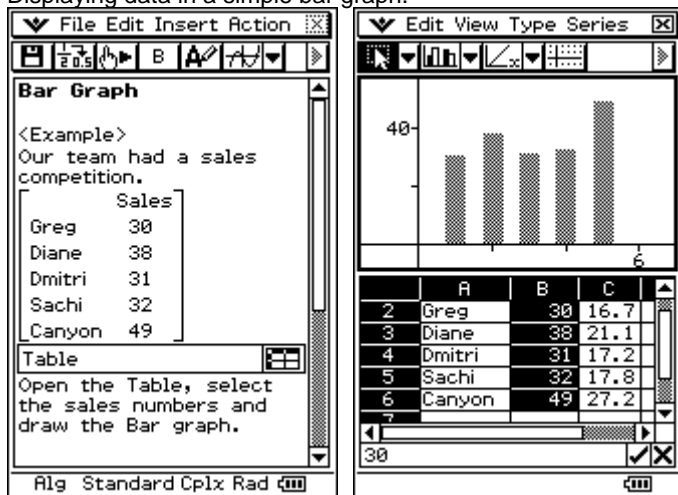
**Probability (Coin)** – What are the odds?

**Probability (Dice)** – Just a roll of the dice...?

**Permutation and Combination** – Find out how many combinations exist.

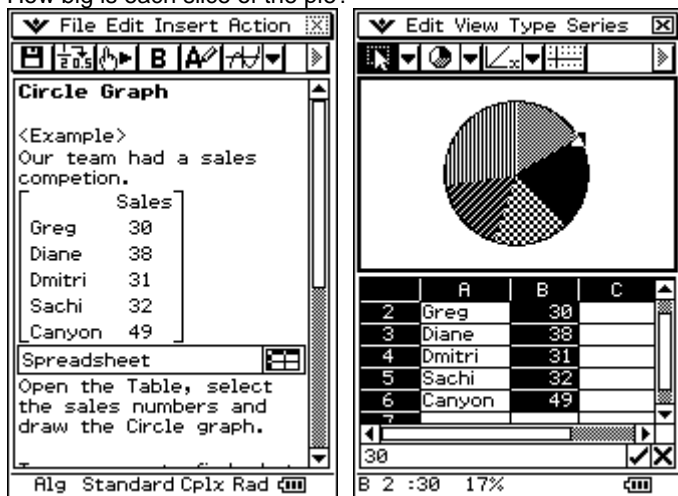
## 01 Bar Graph

Displaying data in a simple bar graph.



## 02 Circle Graph

How big is each slice of the pie?



### 03 Histogram

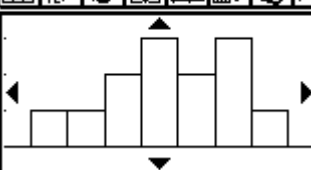
Graph how many of each number you have.

**Histogram**

<Example>  
Data Table  
Open the Data Table and tap the Graph button. Set the interval and tap OK. You will find the frequency with the Trace function.

**Try your own.**  
Experiment with the Histogram by changing the data.

**Zoom Analysis Calc**



	list1	list2	list3
1	1		
2	6		
3	3		
4	3		
5	4		

Cal  
[ 1 ] = 1

### 04 Boxplots

Another way to organize your data.

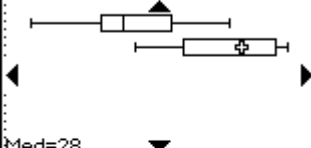
**Boxplots**

<Example>  
Open the Data Table and tap the Graph button.

Data Table  
In the Analysis menu, tap Trace. You will find Min, Q<sub>1</sub>, Med, Q<sub>3</sub> and Max by tapping the cursor button.

Compare the graphs.  
Two Lists of Data  
Open the Data Table and tap the Graph button.

**Zoom Analysis Calc**



Med=28  
StatGraph2

	list1	list2	list3
1	12	28	
2	22	32	
3	21	24	
4	16	19	
5	23	31	

Cal  
[ 1 ] = 12

### 05 Mean/Median/Mode

Use each of these to find more information on your data.

**Mean/Median/Mode**


<Example>  
When the data is {1,2,3,4,5,5,6}  
Box Plot  
Tap the Graph button and then Trace the data.

Calculator

**Try your own.**  
The data is {2,1,3,4,2,5,6,7,3}.

Box Plot  
Calculator

**Zoom Analysis Calc**



Med=4  
StatGraph1

	list1	list2	list3
1	1		
2	2		
3	3		
4	4		
5	5		

Cal  
[ 1 ] = 1

**Edit Action Interactive**

```
sum({1,2,3,4,5,5,6}) 26
mean({1,2,3,4,5,5,6}) 26/7
mode({1,2,3,4,5,5,6}) 5
median({1,2,3,4,5,5,6}) 4
```

## 06 Probability (Coin)

What are the odds?

File Edit Insert Action

**Probability (Coin)**

Change the number of times you toss and tap the EXE key.

50→toss

50

seq(x,x,1,toss)→aNumber  
{1,2,3,4,5,6,7,8,9,10,1}→randList(toss,1,2)→Coin  
{2,2,1,2,1,2,2,2,1,2,2,}→Plot the Data

Open Histogram window and input 1 as HStep.  
Histogram(HStep=1)

Alg Standard Cplx Rad

Zoom Analysis Calc

50→toss

50

seq(x,x,1,toss)→aNumber  
{1,2,3,4,5,6,7,8,9,10,1}→randList(toss,1,2)→Coin  
{2,2,1,2,1,2,2,2,1,2,2,}→Plot the Data

Rad Auto

Zoom Analysis Calc

{1,2,3,4,5,6,7,8,9,10,1}→randList(toss,1,2)→Coin  
{2,2,1,2,1,2,2,2,1,2,2,}→Plot the Data

Open Histogram window and input 1 as HStep.  
Histogram(HStep=1)

Rad Auto

File Edit Insert Action

Open Histogram window and input 1 as HStep.  
Histogram(HStep=1)

Tap Analysis/Trace, finding the frequency of heads or tails to calculate the probability.

In this example,  
Head =  $\frac{21}{50}$   
toss =  $\frac{21}{50}$

Decimal=approx(getright(a)→Decimal=0.42

Alg Standard Cplx Rad

## 07 Probability (Dice)

Just a roll of the dice...?

File Edit Insert Action

**Probability (Dice)**

Change the number of times you throw the dice and then tap the EXE key.

50→n

50

seq(x,x,1,n)→aNumber  
{1,2,3,4,5,6,7,8,9,10,1}→randList(n,1,6)→Dice  
{4,1,2,3,2,6,6,1,6,4,5,}→Plot the Data

Open the Histogram window and input 1 as HStep.

Alg Standard Cplx Rad

File Edit Insert Action

50→n

50

seq(x,x,1,n)→aNumber  
{1,2,3,4,5,6,7,8,9,10,1}→randList(n,1,6)→Dice  
{4,1,2,3,2,6,6,1,6,4,5,}→Plot the Data

Alg Standard Cplx Rad

File Edit Insert Action

Histogram(HStep=1)

Tap Analysis/Trace, finding the frequency of a number appearing after each roll of the dice. Now you can calculate the probability of each number appearing.

Alg Standard Cplx Rad

File Edit Insert Action

Histogram(HStep=1)

Tap Analysis/Trace, finding the frequency of a number appearing after each roll of the dice. Now you can calculate the probability of each number appearing.

In this example,  
Freq =  $\frac{11}{n}$   
n =  $\frac{11}{n}$

Decimal=approx(getright(a)→Decimal=0.22

Alg Standard Cplx Rad

## 08 Permutation and Combination

Find out how many combinations exist.

File Edit Insert Action

**Permutation and Combination**

<Example>  
nPr(10,3)  
$$= \frac{10!}{(10-3)!}$$
  
$$= \frac{10!}{7!}$$
  
$$= 10 \cdot 9 \cdot 8$$
  
$$= 90 \cdot 8$$
  
$$= 720$$
  
nCr(10,3)  
$$= \frac{10!}{3! \cdot (10-3)!}$$
  
$$= \frac{10!}{3! \cdot 7!}$$
  
Alg Standard Cplx Rad

File Edit Insert Action

$$= \frac{10!}{3! \cdot 7!}$$
  
$$= \frac{10 \cdot 9 \cdot 8}{3 \cdot 2}$$
  
$$= 10 \cdot 3 \cdot 4$$
  
$$= 10 \cdot 12$$
  
$$= 120$$
  
Hint for CAS

**Try your own.**  
nPr(12,4) =?  
Ex-1 f(θ)=

nCr(12,4) =?  
Ex-2 f(θ)=

Alg Standard Cplx Rad