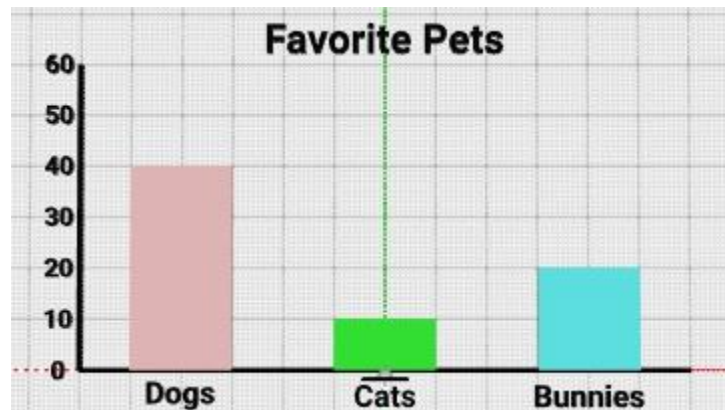




## Bar Graphs



Bar graphs are a popular way to visually represent data. For example, the bar graph above shows people's favorite pets. Along the horizontal x-axis are the three options and along the vertical y-axis are the numbers that show you how many people picked each pet.

In this exploration you will:

- 1) Draw conclusions from several bar graphs
- 2) Make your own bar graph to represent data
- 3) Create a customizable bar graph in BlocksCAD

Check these boxes when you've completed each step:

## Part I: Reading Bar Graphs

Open “Bar Graphs Student File” and make sure only “Bar Graph #1” is enabled. **Press render** so that you see the bar graph from the front page:



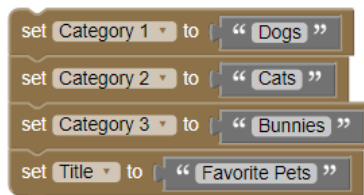
Use this graph to help you **answer the questions below**:

- 1) How many people picked bunnies as their favorite pet?
- 2) How many people total voted on their favorite pet for this bar graph?
- 3) How many more people voted for Dogs than for the other two categories combined?

Now **disable** (right click → disable blocks) the “Bar Graph #1” block and **enable** “Bar Graph #2”. Click **Render**.



You can change the labels by typing new words into the *variables* blocks. Variables help you store information in your code that you want to be able to change quickly.

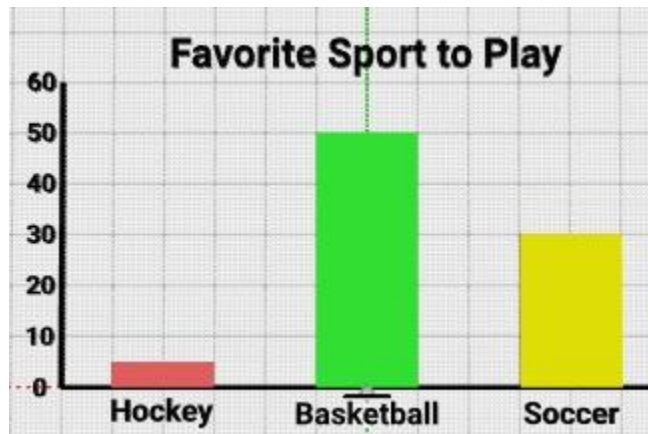


**Change these variables** by typing the new ones below into the grey boxes:

Category 1: Hockey  
Category 2: Basketball  
Category 3: Soccer  
Title: Favorite Sport to Play



All of the bars are currently grey. **Change the colors** so that your bar graph looks like the picture below by expanding (right click → expand blocks) the Bar Graph #2 block and clicking the color blocks. Then **answer the questions** below:



1) Complete the following table that represents the data in this bar graph:

Category	# of People
Hockey	
Basketball	
Soccer	

2) How many people voted for either hockey or soccer?

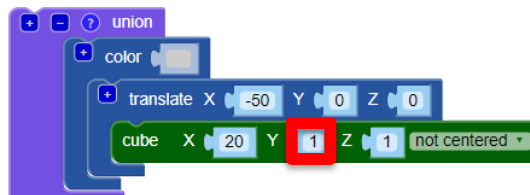
3) Did twice as many people vote for basketball than soccer? How can you see your answer visually in the bar graph?

## Part II: Build Your Own Bar Graph

**Collapse and disable** your “Bar Graph #2” and **enable** “Bar Graph #3”. When you render, you’ll still see the old labels from #2 and the bars will only be one unit tall, so you’ll barely be able to see them!

It is now your job to create your own Bar Graph! **Pick a title that is “Favorite \_\_\_\_\_”** and then **choose three categories** that people could choose. **Change your variables** so they show up.

To get your bars taller, **expand** the Bar Graph #3 block. The bar heights depend on the y-coordinate of the green cube blocks:



**Change these heights** and the colors of the bars so that you have a whole new graph that you think accurately represents how people would answer your “Favorite \_\_\_\_\_” question.

Share your bar graph with a partner or a group and describe that data that you represented.

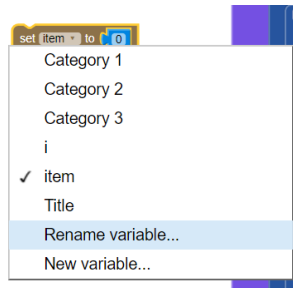
### Part III: Customizable Bar Graph

Imagine that you were going to ask your “Favorite \_\_\_\_\_” question to lots of different groups, and you wanted to make a bar graph for each. It would be a hassle to keep opening your code and changing the Y-values of the cubes. Instead, you can create new variables to do it for you!

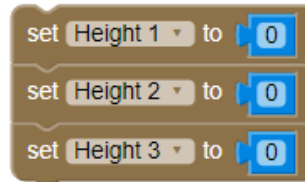
Start by **grabbing a “Set item to...” block** from the Variables menu. **Put a number block** from the Math menu in the blank space:



Click on the word “item” and then select **“Rename Variable”**:

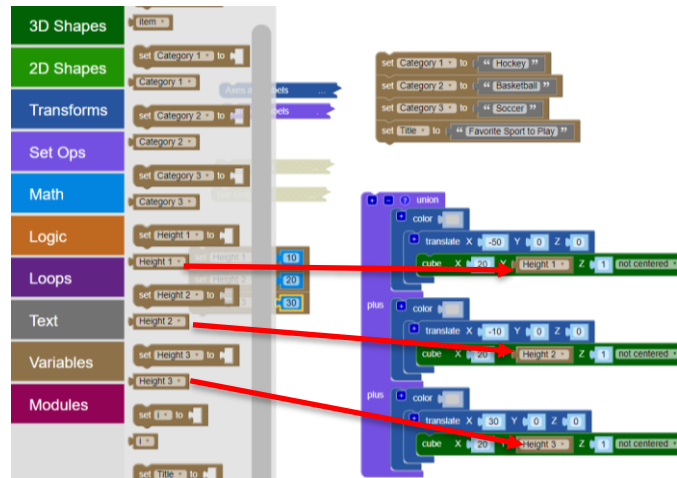


**Type in “Height 1”** as your variable name. **Repeat this process** until you have three new variables, Height 1, Height 2, and Height 3:



You almost have a customizable graph! You just need to build these variables into your code. From the Variables menu you can **pull out brown variables blocks** for each of these three, and **put them in the y-boxes** for your three cubes:





You can now **collapse** the big purple “Bar Graph #3” and **change the heights** of your bar graph just by using the variables! Try making a whole new graph using this method.