

Name: Key

**Unit 3c: Introduction to survey-taking**  
**Math 9 – Wolfe**

This section gives you a very, very brief introduction to some of the principles of gathering statistical data. The text for this section can be found at <https://www.mathsisfun.com/data/survey-conducting.html>. It is worth reading, but you can do this activity without reading or understanding all of it.

**Writing a good question**

Perhaps the most important – and most difficult part – of getting data is writing the question. Good questions get you good data; poor questions get you inaccurate or misleading data.

For our purposes, we want to find out what types of pets the students in a (hypothetical) Math 9 class have. We will use a list of possible answers. People can check off their types of pets on the list. Since we are asking what *type*, we don't need to record how many – just whether they have that pet or not.

Of course, some people have no pets at all or lots of different pets, so you need to have room for people to give more than one answer. For this reason, your total number of pet types might not add up to exactly the number of people you asked.

The categories are: *dog, cat, bird, fish, reptile* (such as a snake or lizard), *small mammal* (such as a rat, hamster, guinea pig, etc.). Some people might have a pet that doesn't fit into these categories, and in this survey we have just left those out. There is no "other."

What are two reasons for someone to give a "null" or no answer response?

No pets, animals not on the list, or just not answering / not understanding the question

Will anyone check off more than one category? Why? Yes, almost certainly

Some people will have more than one species of pet

If you do this survey in real life, you will be asked some questions. One of the most common is whether their horse or chickens count. You can use your judgement on whether livestock is a pet – perhaps they think of the horse more as a pet, but don't count the chickens they get eggs from. Part of your good question design was to try to sidestep this question by only including animals that are generally kept as pets and not livestock, but lots of people have chickens – which are birds! Whatever you decide to do, the important thing is to think about it ahead of time and have a response prepared.

So how should we phrase our question? Look at the section on writing questions Read the section <https://www.mathsisfun.com/data/survey-questionnaire.html>. Then fill out the chart on the next page giving reasons why you think the question is good, bad, or ok. There is usually more than one way to write a good question and lots of ways to write one that isn't very good!

Question	Good, bad, or ok?	Reason(s)
Do you have a cat or a dog?	BAD	- phrased as either/or so might confuse people with both or neither - leaves out a lot of categories
How many pets do you have?	BAD	irrelevant - we want to know type, not how many
Do you have an awesome dog or a crappy, stupider pet?	BAD	Leading / biased
Which of the following pets do you have? (list the options)	Good	Relevant Neutral Gives room to answer
Why do you have pets?	BAD	irrelevant - we don't want to know this.
What different kinds of pets do you have?	ok/ Good	might get extra info you don't need (i.e., pet horse) but is relevant + neutral

## Displaying your data

Let's jump right to the end of the line and talk about displaying our data in a graph or chart. You can find out information about doing this in the section:

<https://www.mathsisfun.com/data/survey-results.html>

Let's say you asked a hypothetical class of 28 students, and these are your results:

Dog	Cat	Bird	Fish	Reptile	Small mammal
14	10	2	3	1	4

There is an easy tool to create a graph at <https://www.mathsisfun.com/data/data-graph.php>

Enter your data as follows. The commas separate the categories so it's important to write it exactly like the example.

## Data Graphs (Bar, Line, Dot, Pie, Histogram)

*Make a Bar Graph, Line Graph, Pie Chart, Dot Plot or Histogram, then Print or Save it.*

Title: Types of Pets X: Type of pet Y: # of people  
Values: 14, 10, 2, 3, 1, 4  
Labels: Dog, Cat, Bird, Fish, Reptile, Small mammal

Bar Line Dot Pie Histogram

Clrs Nums % Print Save

1. Make a bar graph of your data. This is a great way to graph data that compares things.

You can easily see things such as:

How many people have at least one cat? 10

What's the least common pet? reptile

What is the most common pet? dog

2. Try making a line graph. Why would you NOT use a line graph for this data? What does a line graph show? Change over time of one thing leading to another

3. Click the dot graph. This is a very simplified pictograph and is another good way of representing data that you would use a bar graph for.

4. Click the pie graph. A pie graph is a terrible choice for this data – it gives a very misleading picture. Why? Needs to add to 100%. People can have more than one answer.