## Collecting Data to Make a Fair Questionnaire:

## Vocabulary:

Data: The results you gather from a questionnaire or an experiment.
Fair Question: A question that is asked in a questionnaire that does not lead any person to choose a specific answer.
Biased Question: A question in a questionnaire that might influence a person to choose a specific answer.

## Background:

- Companies around the world collect data from consumers on products and services they offer. People also collect data so they can prepare for specific events or to get a better understanding of others.
- Companies use the data they collect to help them adjust their products and services so consumers will buy what they are selling.


## Points to Consider:

- When creating a questionnaire, it is important that all questions are written clearly and be understood by all. Think about the wording of your questions. Is there any words used that may be interpreted in different ways?
- Questions need to be fair and not biased. Basically, make sure everyone that you are giving the survey to has an option to choose from. For example: if you were doing a questionnaire on favorite types of ice-cream, you should also include an option that states "I do not like ice-cream" or "none", as not everybody likes ice-cream. Providing that option makes your questionnaire fair.


## Creating a Questionnaire:

- Once you have a question for your questionnaire, you need to think of possible answers for people to give their input.
- For example you may be given a question like this: What is your favorite animal?
- Now that you know the question, think of 4 to 6 possible answers to go with it. Remember, your answers should be fair and everyone who you give the questionnaire to should be able to find something to check off


## What is your favorite animal?

a) $\operatorname{Dog}$
b) Cat
c) Bunny
d) Fish
e) Reptile
f) None of the Above

You may also be given questions that ask you to determine an appropriate question, based on the answers given.

1. Create a questionnaire that will collect data on the following:
a) What is the favorite sport of Grade 6 students?
b) Which electronic device do Grade 6 students want the most?
c) Which school event do you look forward to the most?
d) What is your favorite tourist attraction in New Brunswick?
2. Please use the graph below to help you answer the following questions:
a) Determine an appropriate question for the graph based on the responses given.
b) Determine the number of students who participated in the questionnaire.

Lunch Options in Cafeteria

3. Billy and Bob would like to open a computer store. They want to know what types of computers they should stock.
a) Do you think a questionnaire would be helpful? Explain.
b) Create a questionnaire to help Billy and Bob figure out which stock to get.
4. Create a questionnaire that you could have the whole school answer.
a) Determine your question.
b) Is your question fair? How do you know?
5. Bella was interested in knowing what her Grade 6 peers thought should be added to the community to promote fun and wellness for teenagers. She wrote the following question.
Which of the following do you think would best promote fun and wellness for teenagers?
a) Skateboard/Roller blade park
b) Community Pool
c) Arcade
d) Other

Bella gave this question to 60 Grade 6 students. Thirty students replied to her question. Bella concluded that an arcade was the best choice. How valid is Bella's
conclusion? Why?

| Type of Activity | Tally |
| :---: | :---: |
| Skateboard/Roller blade park | 1111 |
| Community pool | HH H+1 |
| Arcade | +HH HH 111 |
| Other | 1 |

## Experimental Data

- We can also collect data by doing experimental trials.
- Based on the data we collect from these trials we can make conclusions.

1. Flip 2 quarters 20 times. Make a tally chart like the one below and record how many times both quarters landed on heads, tails, or one of each. What did you find out?

2. Roll a Loonie across the floor 15 times. Record in a tally chart record how far (distance) the Loonie went for each trial.
3. Design 2 paper airplanes, using 2 different types of paper material. For example, one airplane could be made out of paper and the other out of construction paper. Once your paper airplanes have been made, test each out 5 times to see which flew the farthest. Make a tally chart that shows the distance of each plane for the 5 different trials. (Make sure you throw you airplanes from the same starting point each time).
Example Tally Chart:

| Type of Airplane | Trial 1 | Trial 2 | Trial 3 | Trial 4 | Trial 5 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Paper Airplane |  |  |  |  |  |
| Construction Paper <br> Airplane |  |  |  |  |  |

4. Which product occurs the most often when you roll two dice labelled 1-6? Roll the dice 30 times.
a) Record your results in a tally chart.
b) Which product occurred most often?

| Product | Tally | Total |
| :---: | :---: | :---: |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |



## Interpreting Graphs:

In Grade 6, we look at 2 different types of graphs.

1. Discrete Graph - Is a graph where data is often counted.

We use a discrete graph when we are counting things, such as tickets, populations, BBQ units sold...etc. For example: You cannot buy $1 \frac{1}{6}$ tickets to a concert. You either buy 1 or 2 tickets.

Dog Show Ticket Sales

| Day | Number of Tickets Sold |
| :--- | :---: |
| 1 | 76 |
| 2 | 59 |
| 3 | 55 |
| 4 | 62 |
| 5 | 70 |
| 6 | 98 |
| 7 | 94 |

Dog Show Ticket Sales

2. Line Graph (Continuous Data): Data that can fall under any value between two specific points.

We use a line graph when we are graphing data that may have values between two specific points, such as temperature, measurements, time and money.

For example:
Bella's Mass Over Her First Year (Ibs)

| Age | Weight (lbs) |
| :--- | :---: |
| Month 1 | 0.7 |
| Month 2 | 1.3 |
| Month 3 | 1.8 |
| Month 4 | 2.5 |
| Month 5 | 3.2 |
| Month 6 | 4.0 |
| Month 7 | 5.2 |
| Month 8 | 6.2 |
| Month 9 | 6.8 |
| Month 10 | 7.5 |
| Month 11 | 7.9 |
| Month 12 | 8.5 |



## Questions for Discrete (series of points) and Continuous Graphs (line graph):

1. In the following situations, would you use a series of points graph or line graph? Explain?
a) the mass of a child over it's first year
b) the number of BBQ's sold at a local department store over the summer months.
c) the number of baskets scored by Jane Smith over the last 6 weeks of the 2017-2018 season.
d) the temperature of Mrs. Norton's cup of tea as it cools.
2. Tell me the following information about each graph below:

- Provide the title of the graphs.
- Why are the lines joined in one graph and not in the other?
- What conclusions can you draw from looking at each graph?
a)

b)


3. 



Valerie measured her computer battery (from 100\%) every two hours for 12 hours. To show her data, Valerie created a line graph.
a) What do you think is happening between hours 0 and 2?
b) What do you think is happening between hours 4 and 8 ?
c) By looking at the graph, how often do you think Valerie
may have used her computer? Explain.
d) How much battery time was left after 12 hours?
4.


The above graph shows the population of Miramichi from years 2005-2010.
a) What was the population for the following years: 2006, 2008, 2010?
b) According to the graph, Miramichi displayed significant growth 2 different times. Which years did this happen?

