

Warm-Up

May 31, 2016

Multiple Choice Identify the choice that best completes the statement or answers the question.

1. The last three days Alexa had a test and ate an energy bar on her way to school that morning, she did well on the test. Today she had a test, so she ate an energy bar on her way to school. Was her decision based on theoretical probability, experimental probability, or subjective judgment?
- a. A combination of theoretical probability and subjective judgment
 b. Theoretical probability
 c. Subjective judgment
 d. Experimental probability
2. Haley will not go on a cruise because the boat may sink even though cruise ships are very rarely involved in accidents. Is her decision based on theoretical probability, experimental probability, or subjective judgment?
- a. Subjective judgment
 b. Experimental probability
 c. A combination of theoretical and experimental probability
 d. Theoretical probability
3. The chance of winning a prize in a lottery was 15%. Claudia was having a lucky day, so she bought a ticket. Was her decision based on theoretical probability, experimental probability, or subjective judgment?
- a. Subjective judgment
 b. Experimental probability
 c. Theoretical probability
 d. A combination of experimental probability and subjective judgment

4. A school principal reads a study with this information.

Only 40% of teenage boys and 20% of teenage girls consume enough dairy products to maintain good health.

The principal decides to provide students with a free glass of milk each day and to add chocolate milk, cheese, and yogurt to the cafeteria menu.

- a) What assumptions has the principal made?
 b) Why may there not be any change in the students consumption?

- 1) More dairy will = healthy life
 2) School afford it
 3) Info is true for school
 4) No students are lactose intolerant
 5) Students will drink if available
 6) Free means more will eat dairy
 7) Students will go to cafeteria
 8) Students like dairy

Factors that could lead to problems when **collecting data**:

1. **Bias**--Don't you think 16 year olds should be allowed to leave school at lunch?

Question is worded to influence the answer

2. **Use of language**--Don't you think 16 year olds should be allowed to leave school at lunch?

Better Question: Who do you think should be allowed to leave school at lunch?

All grades, if you are over 16, or no one

3. **Timing**--You just get 90% on a math test and you are asked to say which class is your favorite.

When the data is collected could influence the answer.

4. **Privacy**-- If the topic is too personal a person may not want to participate or give untrue answers on purpose. Anonymous surveys may help.

How many math tests did you fail?

What is your weight?

5. **Cultural Sensitivity**--be aware of other cultures and avoid asking offensive questions.

What is your favorite holiday? Christmas or Easter [this question may not apply to everyone because they may not celebrate either]

Better Question: If you celebrate Christmas and Easter which one is your favorite?

6. **Ethics**  **Right or Wrong**-- the data collected must not be used for purposed other than those told to the participants.

Ask which class you like best?

Information will be given to all teachers.

7. **Cost**--the cost of collecting the data must be considered
Do you have to pay to print the questions? hire people to do the survey?

8. **Time**--how long it takes to collect the data

If 10 min vs 1 hour [probably have more willing to complete a 10 minute survey]

A survey is conducted to determine the level of school spirit. It is conducted as students leave the gym where their High School Basketball team has just won the championship.

What is the problem with collecting data this way?

Timing

How could this problem be avoided?

- * The first school year
- * Random day second term

Do you think that small dogs make good pets even though they are yappy?

Giving Reason/opinion

Bias, Use of Language

Create a biased question about the use of technology among teenagers

* Don't you think teenagers are always on their phones and should put them down?

* Don't you think teenagers should all have cell phones?

Jane wants to find out if there is a relationship between household income and how much people spend on Christmas presents.

What are some problems she may encounter?

Privacy → people don't like to tell how much they spend

Timing → if ask in Nov. maybe not all shopping done

Cultural
sens.



Which of the following questions are biased? Explain.

i) Is it appropriate to use a tanning bed before taking a trip to a tropical destination to avoid getting a bad sunburn?

Bias.

ii) Should tanning beds be banned because they can cause skin cancer?

Bias

iii) Should the government regulate the use of tanning beds?

Good Question

Check

3. Indicate whether each decision is based on theoretical probability, experimental probability, or subjective judgment. Explain how you know.
- a) The last two times Andrei won a prize at a coffee shop, he ordered a medium hot chocolate. Andrei never won when he ordered a large hot chocolate, so today he orders a medium hot chocolate.
 - b) Instead of buying her own lottery ticket, Martha pools her money with the people at work to buy more tickets and increase her chances of winning.
 - c) Anita boards the last car of a train because, in the past, the last car always had available seats.
 - d) Doug will not travel by airplane even though experts say it is safer to fly than drive.

4. What assumptions is each person making?
- a) Based on past math quizzes, Claudia says she has a 90% chance of getting a perfect score on her next math quiz.
 - b) Six times out of ten, Omar gets stuck in traffic when he leaves work. So, he calculates that his chances for getting stuck in traffic today after work are 60%.

Apply

5. The weather forecast is 70% chance of rain. Winona had planned to go canoeing. Explain how the decision she makes may be based either on probability or on subjective judgment.
6. The student council has a draw for a prize during the school dance. Lei decides not to enter the draw because all of his classmates have entered and he feels unlucky today. Is Lei's decision based on probability, on subjective judgment, or both? Explain.
7. One year, the probability of *not* recovering a stolen vehicle in Montreal was 44%. How could politicians use this fact to argue that:
- a) more money should be allotted to searching for stolen vehicles
 - b) more money should not be allotted, and instead should go to different causes

Check

3. Name a problem with each data collection.
 - a) After the first week of school, your principal asks you and your friends how you are enjoying school.
 - b) An online magazine asks readers either to agree or disagree with the statement: "If you find a \$20-bill, you turn it in."
 - c) Brenda asks her classmates if they think girls should not be allowed to cover their heads in school.
 - d) To discover the most popular kind of movie at his school, Carlos plans to ask each student what her or his favourite kind of movie is.

Apply

4. For each scenario in question 3:
 - a) Describe the effect each problem would have on the data collection.
 - b) How could each problem be overcome?
5. Parinder wanted to find out how often the computers in her school were being used. She asked students the question: "How much time do you spend on the computer each week?"
 - a) How do you think her schoolmates will interpret this question?
 - b) How could the question be rewritten so it would more accurately reflect what Parinder wants to know?
 - c) Who might be interested in her findings? Why?
6. Andrew went to each class in his school and asked for a show of hands to find out how many students had ever been bullied at school. Only 2 students raised their hands.

Andrew concluded that bullying was not a major problem at his school.

 - a) Is this a reasonable conclusion? Explain.
 - b) Describe a better method for conducting Andrew's survey.
7. Trinity wants to find out how football fans feel about building a new indoor football stadium for a Canadian Football League team. She goes to the stadium to survey fans after a winning game on a warm August evening.
 - a) Describe how the timing of her question may influence the responses.
 - b) In what setting might the responses be different than those Trinity received?