

# 5.50 - Questions Handout #s 1 - 12

## Key Ideas

- In some real-life games, the probability of things happening can be predicted. Predicted probability can help you make a decision in a game.
- In other real-life situations, like sports and weather, the probability of things happening is based on experimental data.

A 20% chance of rain means that, if you stay in that location, you will get rained on 20 days out of 100.

## Communicate the Ideas

1. How can probability be used to predict the winner in a game or an election?
2. Why do you think that the probability in games is predicted, while the probability in sports and weather is experimental?



I just interviewed 20 grade 8 students chosen at random. 50% of them plan to vote for Victor in the student council elections.

## Check Your Understanding

### Practise

For help with questions 3 to 5, refer to Example 1.

3. The weather report says there is a 50% chance of snow.
  - a) What is the probability of snow as a fraction?
  - b) What is the probability of no snow?
4. The weather report says there is a 100% chance of rain.
  - a) What is the probability of rain?
  - b) What is the probability of no rain?
5. The weather report says there is a 0% chance of precipitation.
  - a) What is the probability of precipitation?
  - b) What is the probability of no precipitation?

For help with questions 6 to 8, refer to Example 2.

Three students are running for student council. 100 students are polled.

Student Council Poll Results

Student	Votes
Connor	20
Gilbert	50
Marilyn	30

Use the poll results to answer questions 6 to 8.

6. What is the probability of Connor winning the election?
7. What percent of the students polled chose Gilbert?
8. Who is least likely to win the election? State the probability.

## Apply

9. Vivian's batting average is .400. This means that she has gotten a hit 40% of her times at bat.
- What is the probability of Vivian getting a hit on her next at-bat?
  - What is the probability of Vivian not getting a hit on her next at-bat?
10. Four students are running for grade 8 class president. In a poll, 8 students chose Pedro, 4 chose Tristan, 6 chose Arielle, and 7 chose Brent.
- What fraction of the students chose Tristan?
  - What percent of the students chose Brent?
  - There are 150 students in grade 8. If the poll is accurate, can you determine the number of votes each student will receive in the election? Explain how.
  - Determine the number of votes each student will receive in the election, based on the poll results.
11. Lorenzo and Wesley are playing backgammon, which uses two number cubes. A player can move two game pieces separately or move one game piece the sum of the numbers shown on the number cubes.
- What is the probability that the sum is 7?
  - What is the probability that the sum is less than 5?
  - Lorenzo needs a 10 or higher on his next roll to win. Explain how to determine the probability of rolling a 10 or higher. State the probability.



12. Gillian and Brandon play "best of three wins" to decide who will speak first at the class assembly. Both Gillian and Brandon count to three and show a number 1 or 2 on their fingers. If the sum is odd, Gillian wins. Otherwise, Brandon wins.
- What is the probability of an even sum? What is the probability of an odd sum?
  - If you were to play this game, would you call odds or evens? Explain why.
  - This was to be a three-round game. Why did Brandon say Gillian won after only 2 rounds?

## Extend

13. In his last 20 times at bat, Torrance hit 8 home runs.
- What is the probability of Torrance hitting a home run at his next at-bat?
  - What is the probability of Torrance not hitting a home run?
  - If Torrance is up to bat twice, what is the probability of him hitting a home run only on his second at-bat?
14. Three people are running for mayor in the city of Riverton. A poll is held 8 weeks before the election. Another poll is held 4 weeks before the election.

Mayoral Race 8 Weeks to Election	
Candidate	Votes
Patrick	120
Georgiana	80
Jessica	50

Mayoral Race 4 Weeks to Election	
Candidate	Votes
Patrick	100
Georgiana	100
Jessica	50

- How do the two polls compare?
- Who do you predict will win the election? Explain.