Name: _____ Date: _____

11.3 Probability in Society

Show You Know

Group	Swimming	Rock Climbing	Watching Movies	Bowling	Total
Red	14	9	40	37	100
Blue	11	19	59	11	100
Green	27	12	57	4	100
Yellow	13	24	44	19	100

a) What is the experimental probability that a member will choose each of the following?

Watching Movies: Bowling:

b) Pretend you are a youth coordinator planning the activities.
How would you figure out the members' favourite activity? Give 1 reason for your answer.

_____

_____

Check Your Understanding

Communicate the Ideas

1. Look at the cartoon. Explain how this sample could result in a false prediction.

_____

_____

Name: _____ Date: _____

2. You need to choose what flavours of ice cream to sell at a soccer tournament.
How could you use experimental probability and theoretical probability to help choose?

_____

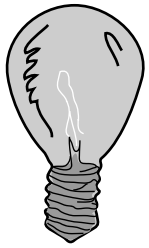
_____

_____

_____

Practise

3. A light bulb factory samples light bulbs as they come off the assembly line.
A random sample shows that 1 bulb out of every 20 does not work.
The manager predicts that 50 bulbs out of 1000 will not work.



a) How did the manager make his prediction?

1 ÷ 20 = ?

$\frac{1}{20} \times$ _____

= _____ × _____

= _____ bulbs

b) What assumption did the manager make?

_____

_____

4. A toothpick factory samples every 100th toothpick for damage.
The sample shows a 1% probability of damage.
How many toothpicks out of 2 million toothpicks do you predict will be damaged?

$\frac{1}{100} \times$ _____

= _____ toothpicks

Name: _____ Date: _____

5. A movie rental company has 5 types of movies: drama, comedy, horror, action, and science fiction.

a) What is the theoretical probability that a person will choose a comedy?

$$P(\text{comedy}) = \frac{\text{number of favourable outcomes}}{\text{number of choices}}$$

b) What assumptions did you make?

_____

c) The table shows the movie preferences from a random survey of 50 customers.
Predict the probability that a customer will choose a comedy movie.

Movie Type	Responses
Drama	15
Comedy	5
Horror	12
Action	16
Science fiction	2

$$P(\text{comedy}) = \frac{\text{number of favourable outcomes}}{\text{number of responses}}$$

The probability that a customer will choose a comedy movie is _____ out of 50 or _____%.

d) Give 1 reason why the theoretical probability is different from the experimental probability.

_____

_____

Name: _____ Date: _____

Apply

6. Jack wants to know the weekly part-time earnings of grade 9 students.
He randomly surveys 5 grade 9 students.
The results are: $75, $125, $25, $250, and $25.

a) Is this a biased sample? Circle YES or NO. Give 1 reason for your answer.

_____

b) Jack says that grade 9 students who work part-time earn an average of $100 per week.
Do you agree? Explain and show your thinking.

_____

7. Miya received these scores from 10 judges in a skating competition. The scores are out of 10.

Judge	1	2	3	4	5	6	7	8	9	10
Score	8.5	6	6.5	6.5	6.5	7	6	6.5	4.5	7

a) Use all 10 judges' scores to find Miya's mean score.

b) Use the first 3 judges' scores as a sample. Calculate the mean.

c) Use the last 3 judges' scores as a sample. Calculate the mean.

d) Compare the mean from each sample to the mean for all judges.
Are the samples good predictors for Miya's overall score? Circle YES or NO.
Give 1 reason for your answer.

_____

_____