

INTERPRETING INFORMATION INVOLVING PROBABILITY

MEDIA STATISTICS & PROBABILITY

Probability and statistics are presented through the media in a variety of different contexts.

STATISTICS is the collection and analysis of data

STATISTICS are collected from real life events

Like probability, statistics help predict future events.

EXAMPLES OF STATISTICS

Opinion polls, census data, weather reports, gambling odd, sport reports,

- ↑
- every 5 years
- by the government

Hockey team survey:

Team	Tally	
Montreal C.		4
Ottawa S.		3
Toronto ML.		0
Edmonton O.		2
Other		2

a) What fraction are Montreal fans? $\frac{4}{11}$

b) What % are Montreal fans? 36%

"The New" Hot 89.9 surveys 200 high school students to determine their favorite type of music.

Type of music	% of students	fraction
Country	15%	$\frac{15}{100} = \frac{3}{20}$
Pop	45%	$\frac{45}{100} = \frac{9}{20}$
Rock	10%	$\frac{10}{100} = \frac{1}{10}$
Rap	25%	$\frac{25}{100} = \frac{1}{4}$
Other	5%	$\frac{5}{100} = \frac{1}{20}$

If there are 40,000 high school students in the city, how many would you expect to like each type of music?

Country

total #
of people

Pop or Rock

$$\frac{15}{100} (40000)$$

$$= 6000$$

$$\frac{45+10}{100} (40000)$$

$$= \frac{55}{100} (40000)$$

$$= 22000$$

If the radio station relied on asking students to call in to complete the survey, is it possible that the results of the poll will be inaccurate? How so?

yes → people who listen like the type of music played

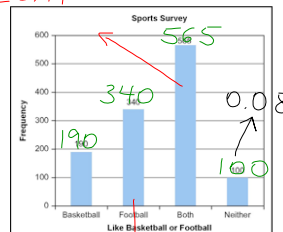
EXAMPLE Statistics and Probability

All students at a high school were surveyed about two sports. The results are shown in the graph.

- a) Express each as a decimal.

Total is 1195

$$P(\text{basketball}) = \frac{190}{1195} = 0.16$$



$$\frac{340}{1195} = 0.28$$

- b) What is the probability that a student chosen at random likes basketball, but not football?

$$P(\text{basketball}) = 0.16$$

- c) What is the probability that a student chosen at random likes either basketball or football, but not both?

$$P(b + f) = \frac{190 + 340}{1195} = 44\%$$

- d) What is the probability that a student chosen at random likes basketball or football or both

$$P(b, f, \text{both}) = 0.16 + 0.28 + 0.47 = 92\%$$

On the Boards...

Seatwork

finish all Board Questions

Text

pg 89 # 1, 3, 5, 7ab, 8

1. Nancy surveyed 100 students to determine their favourite after school snack. Her results are shown in the table.

Snack	% of Students
cereal	8
fruit	28
chips	21
cookies	17
ice cream	26

- a) Express each percent as a fraction in lowest terms.
- b) If there are 1200 students in the school, and Nancy's results were representative of the school population, how many students would prefer each snack?
2. A basketball player made 135 of the 225 foul shots he took in 4 games.
- a) How many shots will he make in his next game if he attempts 30 foul shots?
- b) How many shots will he make this season if he attempts 2400 foul shots?
- c) What assumptions must you make for your answers to be accurate?
3. A study found that 7 out of 9 students surveyed listen to music when they study.
- a) In a survey of 40 students, how many would you expect to listen to music when they study?
- b) How was the ratio of 7 out of 9 students determined? Explain.
4. In a new sport, teams gets 3 points for a regulation win, 2 points for an overtime win, and 1 point for a tie. Teams get no points if they lose. In the first half season, the local team has 15 regulation wins, 11 overtime wins, 8 ties, and 22 losses.
- a) How many points does the team have at the end of the first half season?
- b) How many points will the team have at the end of the season?
- c) What assumptions must you make for your answer to part b) to be accurate?
5. Studies have shown that 3 out of 10 thirteen year olds have a key to their home. Of those who have a key, 22% are alone at home after school.
- a) What is the probability that a 13 year old does not have a key to their home?
- b) What percent of 13 year olds have a key and someone else at home after school?
- c) If a school has 225 students who are 13 years old, how many of them have a key and are alone at home after school?
6. A pitcher has won 75% of his last 12 games.
- a) How many games has he won? lost?
- b) If his record continues, how many wins and losses will he have at the end of 28 games?

Media Statistics & Probability Practice Answers

1. a) cereal: $\frac{2}{25}$; fruit: $\frac{7}{25}$; chips: $\frac{21}{100}$; cookies: $\frac{17}{100}$; ice cream: $\frac{13}{50}$
 b) cereal: 96; fruit: 336; chips: 252; cookies: 204; ice cream: 312
2. a) 18
 b) 1440
 c) Assume his foul shot record in 4 games will continue.
3. a) 31 students
 b) The results of the study were expressed as a fraction and reduced to lowest terms.
4. a) 75
 b) 150
 c) Assume the team has the same record they did in the first half of the season.
5. a) $\frac{7}{10}$ b) 23.4% c) 15 students
6. a) 9 games won, 3 games lost
 b) 21 games won, 7 games lost