Math 9

Name:

UNIT 7 LEARNING GUIDE – DATA ANALYSIS

INSTRUCTIONS:

Using a pencil, complete the following questions as you work through the related lessons. Show ALL of your work as is explained in the lessons. Do your best and always ask questions if there is anything that you don't understand.

7.1 DATA COLLECTION

1. Classify each statement as either qualitative or quantitative data.

	Qualitative Data	Quantitative Data
a. The measure of someone's heart rate.		
b. Regarding the *quality/qualities* of something.		
c. More often used by social scientists.		
d. The lifespan of a whale.		
e. Regarding the *quantity/quantities* of something.		
f. The description of someone's mood.		
g. Eye colour.		
h. More often used by chemists.		

2. Classify each statement as either discrete or continuous data.

	Discrete Data	Continuous Data
a. Speed of bird flight.		
b. Grains of rice per pound.		
c. Uses only certain numbers (typically whole numbers.)		
d. The age of a fish.		
e. The number of students in a class.		
f. The number of times a person brushes their teeth in a week.		
g. Can use all values within a certain range.		
h. The weight of a baby.		

3. Rewrite each question on the questionnaire so that it is unbiased and would be interpreted by everyone the same way.

   a. What kind of snack food, such as chips, have you purchased in the last week?

   b. How would you rate your interaction with the superb doctors at our hospital?

   c. Why do you think we should stop selling popcorn at school dances?

   d. Do you normally eat a lot for breakfast?

7.2 SAMPLES

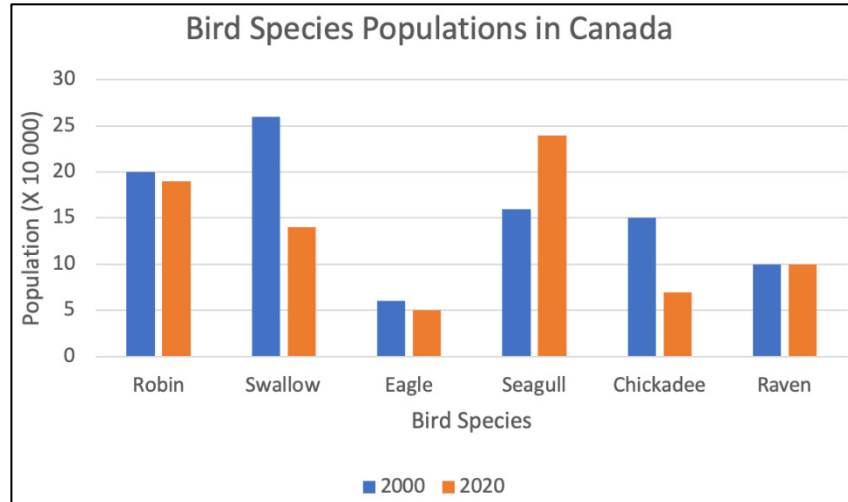1. Identify each statement as a *sample* or a *population.*

		Sample	Population
a.	Every 20th person that attends a hockey game.		
b.	Every student of the graduating class.		
c.	One third of the books signed out of the library.		
d.	A random selection of people that like cats.		
e.	Every dancer at ABC Dance Studio.		
f.	Some parents of the dancers at ABC Dance Studio.		
g.	All adults with driver's licenses.		
h.	Snowfall amounts for every day in 2019.		

2. The manager at a shirt manufacturing facility wants to check the quality of the shirts being produced. Below is a list of the various ways the manager might choose a sample for their study on shirt quality. Label each method as either **convenience, volunteer,** or **random.**

   a. The manager asks employees to bring him 5 shirts to be evaluated if they'd like to participate in the quality check.

   b. The manager goes to three employees who work near his office to check all of the shirts they have produced.

   c. The manager takes every hundredth shirt off of the production line to inspect it.

7.3 GRAPHING DATA

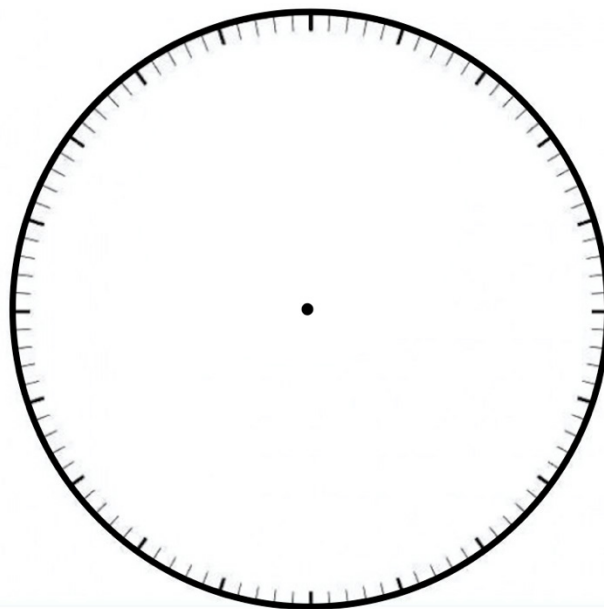1. Use the graph below to answer the following questions.

Bird Species Populations in Canada

a. What is the title of the graph?

b. What is the title of the *x*-axis?

c. What is the title of the *y*-axis?

d. What is the range of the scale? *Hint: Read the y-axis title carefully.*

e. List 3 of the data labels.

2. Use the graph from Question 1 to answer the following questions.

a. Which bird species had the biggest decrease in its population from 2000 to 2020?

b. How many species saw in increase in their population from 2000 to 2020?

c. What was the population of eagles in 2000? In 2020?

d. What was the increase of the seagull population between 2000 and 2020?

e. Which bird species saw a drop of more than 50 000 from 2000 to 2020?

f. What was the overall trend in bird populations from 2000 to 2020?

3. For an entire year, Janelle recorded the main activity that she did each day. Use her data in the table below to answer the following questions.

Janelle's Main Activity for Each Day of the Year		
Activity	Days Per Year	Percentage of the Year
School	179	
Work	80	
Time at Home	55	
Staying with Relatives	21	
Vacation Away from Home	15	
Swim Meets	15	
TOTAL	**365**	

a. Calculate the percentage of the year that Janelle did each activity and record it in the table. Round to the nearest unit. _Hint: For each activity, divide the number of days for the activity by the number of days in the year, then multiply by 100._

b. Does the sum of the percentages equal 100%? _Hint: If not, recalculate._

c. Create a pie graph to display the information in the table. The graph must include: a **title**, a **legend**, and **data labels** showing the percentage in each sector.
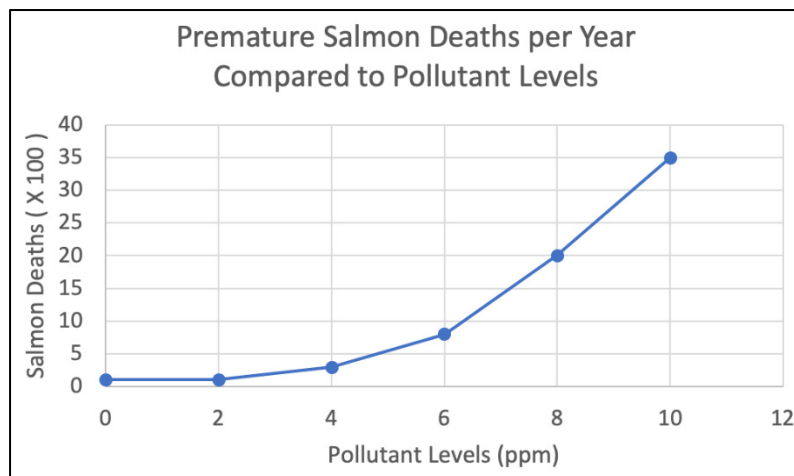
WCLN.ca

7.4 DRAWING LINE GRAPHS

1. For each pair, identify the dependent and the independent variable.

   a. Number of minutes talking on long-distance calls.
      Cell phone bill amount.

   b. Score on math test.
      Time spent studying.

   c. Arrival time at school.
      Time departed from home.

   d. Distance travelled by car.
      Amount of gas used.

   e. Day of the week.
      Number of pizzas sold.

   f. Fish deaths per month.
      Amount of pollutants in the water.

2. Use the graph below to answer the following questions.

   a. Is the data in the graph discrete or continuous? How do you know?

   b. How many premature salmon deaths are there when the water pollution levels are at 8 ppm (parts per million)?

   c. How many premature salmon deaths would be expected in a year if the pollutant levels were at 1 ppm? 7 ppm?

   d. If 500 salmon died prematurely one year, what would you expect were the pollutant levels that year?

   e. What can you deduce (figure out) from this graph regarding the effects of pollutants on the life span of salmon?

3. Create a line graph for each table of data below. Include: a graph title, axis labels, a proper scale. _Reminder: 1) Determine whether the data is discrete or continuous to decide whether the data points will be joined by a line or not. 2) Place the independent variable on the x-axis._

   a. The table below shows the average number of people that go swimming at Pristine Lake each day compared to the temperature of the water.

Water Temperature (°C)	# of Swimmers
14	1
16	10
18	25
20	100
22	130
24	150

   b. The table below shows the number of students in attendance at Brock Secondary School for each day of the first week of school.

Day of the Week	# of Students in Attendance
Mon.	832
Tues.	850
Wed.	871
Thurs.	848
Fri.	840

UNIT 7 – ANSWER KEY

SECTION 7.1

1.

2.

	Qualitative Data	Quantitative Data
a.		X
b.	X	
c.	X	
d.		X
e.		X
f.	X	
g.	X	
h.		X

	Discrete Data	Continuous Data
a.		X
b.	X	
c.	X	
d.		X
e.	X	
f.	X	
g.		X
h.		X

3.   Answers may vary somewhat.   a. What kind of snack food have you purchased in the last

week.   b. How would you rate your interaction with the doctors at our hospital.   c. Do you think that we should stop selling popcorn at the school dances?   d. How much do you eat for breakfast?/What quantities of food do you have for breakfast?

SECTION 7.2

1.

	Sample	Population
a.	X	
b.		X
c.	X	
d.	X	
e.		X
f.	X	
g.		X
h.		X

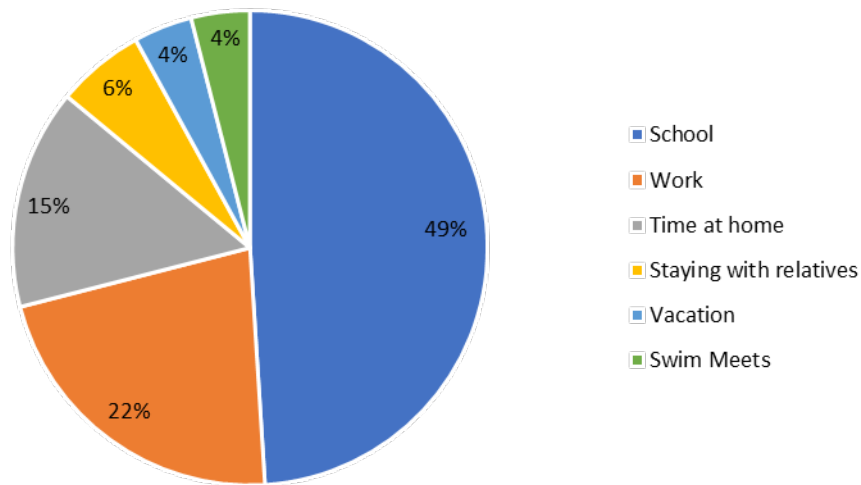2. a. Volunteer   b. Convenience   c. Random

SECTION 7.3

1.   a. Bird Species Populations in Canada   b. Bird Species   c. Population (x 10 000)

d. 0 to 300 000   e. Any 3 of: Robin, Swallow, Eagle, Seagull, Chickadee, Raven

2. a. Swallow   b. 1 (seagull)   c. Year 2000: 60 000, Year 2020: 50 000   d. 80 000

    e. Swallow & Chickadee   f. The population of birds declined.

3. a. 49%, 22%, 15%, 6%, 4%, 4%, 100%   b. Sum of percentages should add up to 100%

    c.

Main Activity for Each Day of the Year

Section 7.4

1. a. Ind, Dep   b. Dep, Ind   c. Dep, Ind   d. Ind, Dep   e. Ind, Dep   f. Dep, Ind

2. . a. The data is continuous. You can tell because there is a line joining the plotted points.

    b. 2000   c. At 1ppm: ~100, At 7 ppm: ~ 1400   d. ~4.8 ppm   e. Several possible

    answers. Ex. The amount of pollutants in the water has a direct effect on the number of

    salmon deaths.

3. a.

    b.