

MBF 3CI 3.3 Warm-up

Date: _____

Warm-up: Bias

You have learned about all different types of bias:

1. Sampling bias
2. Non-response bias
3. Response bias
4. Measurement bias

Given the following situations,

- a) Classify the bias or biases present
- b) Suggest how it can be avoided

A. A survey asked students at a HHSS football game whether a fund for extra-curricular activities should be used to buy equipment for the football team and/or instruments for the school band

B. A poll by an online newspaper includes the question: "Do you plan to support the current government at the next federal election in order to continue to implement their excellent and amazing policies?"

C. A science class asks every fifth student entering the cafeteria to answer a survey on environmental issues. Less than half agree to complete the questionnaire.



Sampling Bias

Non-response Bias
Measurement Bias

Non-response Bias



Before we begin, are there any questions from last day's work?

Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) Understand the difference between discrete data and continuous data
- b) Understand the difference between a bar graph and a histogram.
- c) Understand different ways to express an interval.

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3.3: Display DataDate: Oct. 12/16

One web site you need to check out ⇒ <http://www.worldometers.info>

Data can be divided into two major categories: discrete and continuous.

Discrete data can take on only a countable number of values.

Continuous data has an infinite number of values.

Examples of discrete data



students with blue eyes

students wearing black



Examples of continuous data



mass of a textbook

heights of students



Discrete data can be either numerical or categorical.
Categorical data are named types instead of numbers.



Examples of categorical data

types of chocolate bars

types of stores- shoes
 clothing

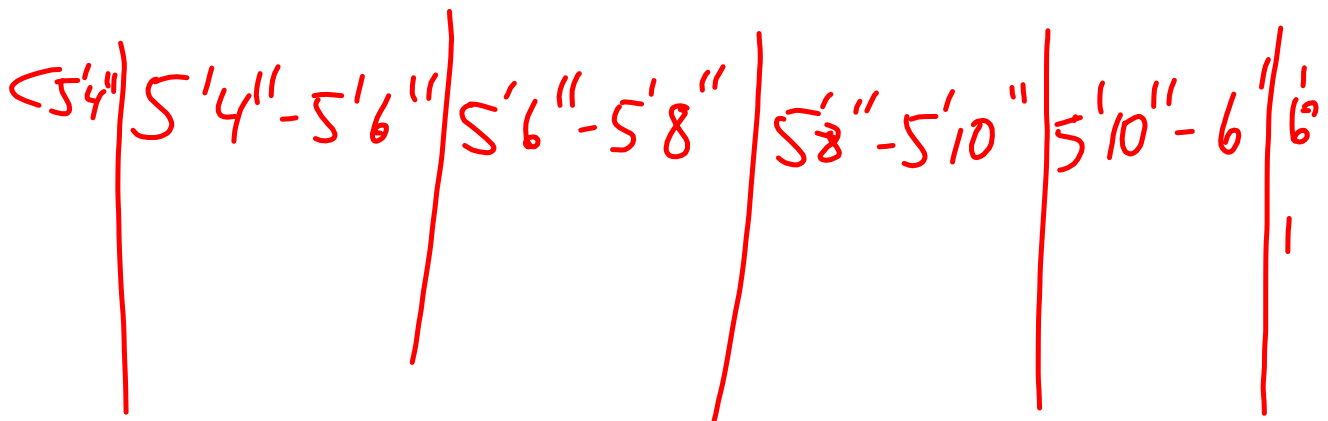


Continuous data can *never* be categorical – it must be numerical.

On your own, do pp.125-126 #1 and 4.
 (The final answers are in the back of the text on p.555)

The number of observed data in a given interval or a category is known as the **frequency**.

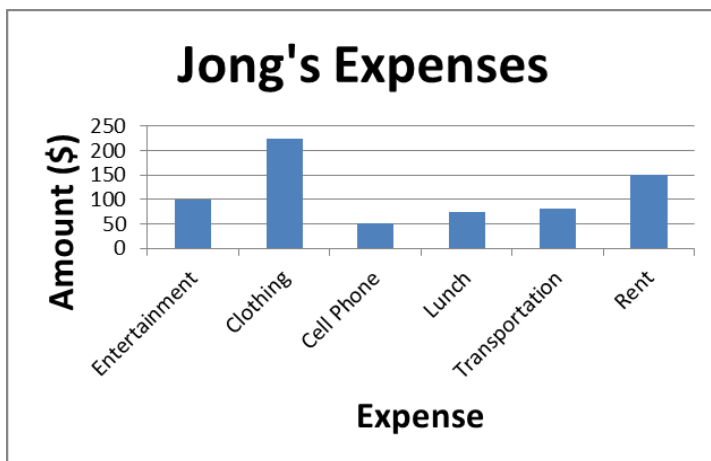
For example: Using height



A **frequency bar graph** is a diagram that represents quantities with horizontal or vertical bars, whose lengths correspond to the frequency of the particular category.

Bar graphs display discrete data only!

So, there is always a gap between each bar.



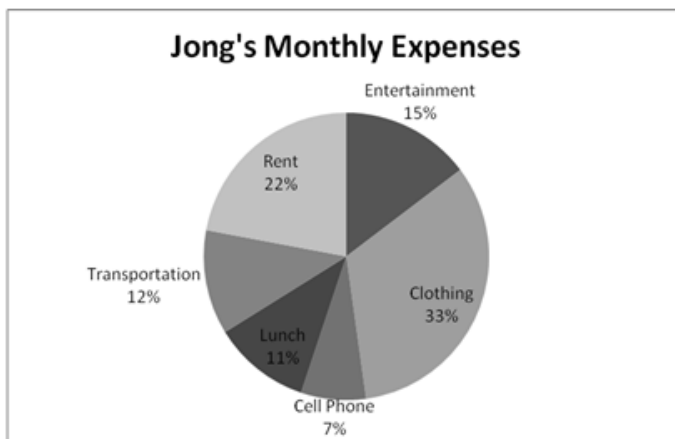
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$$\text{Rent Percentage of Expenses} = \frac{150}{675}$$

$$= 22\%$$

A **pie (circle) graph** is a diagram where the circle represents the whole and each sector of the circle proportionately (%) represents a part of the whole. Pie (circle) graphs are for discrete data only!

You may use a circle graph or bar graph any time you want to illustrate comparisons, as long as the data is discrete.



Each "slice" is called a **sector**.

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An **interval** is all of the numbers between two given numbers.

Examples of an interval

$0-10, 10-20, 20-30$

$5'6''-5'8'', 5'8''-5'10'', 5'10''-6'0''$

$(0, 10)$,
not including

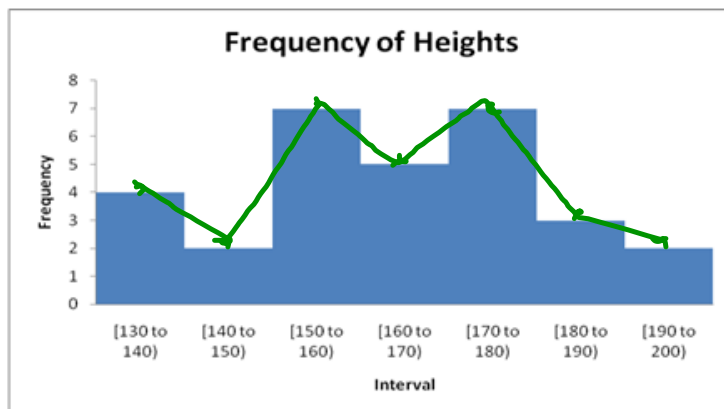
$[0, 10]$

including 10

$[0, 10), [10, 20), [20, 30), [30, 40]$


$0 \leq x < 10, 10 \leq x < 20$

A **histogram** displays quantities with vertical bars whose lengths correspond to the frequency of a particular interval. It is different from a bar graph in the sense that the intervals contain only continuous data! As a result, there is **never a gap** between the vertical bars.



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Since there are no gaps from one interval to the next, it makes sense that a **line graph** can also be displayed for continuous data too!

(Let's superimpose this on the graph above)  tap the graph

On your own, do pp.125-126 #2 and 3.

(The final answers are in the back of the text on p.555).

Note: in #2, some of the answers in the back say "circle graph" is the best choice.

Any time the data is discrete and you want to illustrate comparisons, a bar graph OR circle graph is okay!

Are you done #1 and 4 yet too?