



**FELLOWSHIP**  
**CHRISTIAN SCHOOL**  
COLOSSIANS 1: 9-12

Entering  
**AP Statistics**

---

**Summer Math Packet**

# AP Statistics

## Confidence Notebook

The “Confidence Notebook” is a set of notes and examples of the major topics in AP Statistics. The “Confidence” will help you to review the major concepts in each unit as well as be a summary of topics for the final exam and the AP test. The notebook will also be an invaluable aid when you go to college. This project is for *you* so if cartoons, silly phrases etc. help you to remember the material, then use them but it must be hand-written! Some of these pages will take some time to make so don’t procrastinate!

### Directions:

- Include a table of contents.
  - Page number must correspond to those on each unit’s calendar.
  - Page number is to be written in the top right corner of each page.
  - The table contents must be updated each unit.
- Each topic must be on a separate piece of paper.
  - Write only on one side of the paper.
  - Everything must be handwritten.
  - You may use *at most* two pages for each topic.
    - If page 5 needs two pages, number the pages “5a” and “5b”.
- Each topic should include definitions/rules/theorems and must include example(s).
- Each page/topic should be “poster-worthy”.
  - You can highlight key phrases or use different fonts but you must include color on each page.
  - You will be graded on thoroughness, neatness, accuracy and organization.
- Pages will be stored in a 1.5 to 2-inch binder
  - Dividers must be used to separate units.
- Unit Tests and quizzes should be kept in a separate section of the notebook in the back.
- Notebooks will be turned in at the end of each unit for a grade.

Students,

This packet is to be completed by the first day of school and will be used as a study guide for the first assessment in the course. Please show all steps when working through the packet.

It is a mistake to do this packet at the beginning of the summer. We want these techniques to be relatively fresh in your mind in the fall. If you work a couple of problems a day, the whole packet will be completed in no time.

As math department, we hope you take this seriously, as we sincerely wish for you to be successful throughout this next year. Your preparation over the summer will be rewarded in unexpected ways during the year.

Here are some helpful websites to use, if needed:

- <http://www.danshuster.com/apstat/APnotes-chap01.pdf> will be helpful for some definitions in the packet; make sure for those not listed that you use statistical definitions of the words
- [www.khanacademy.org](http://www.khanacademy.org)
- [www.patrickjmt.com](http://www.patrickjmt.com)
- [www.youtube.com](http://www.youtube.com) to find specific math related topics with accompanying videos

Mrs. Wludyga will send an e-mail to your fcsweb account on July 11 stating directions for joining AP Classroom, a College Board website for resources. You will also be given directions on how to watch a few short videos and answer a few multiple-choice questions through AP Classroom. This must also be complete by the first day of school.

Sincerely,

Fellowship Math Department

# AP Statistics

## Summer Packet 2021

**For each section, define the terms and then use them to answer the questions.**

## Section 1: Basic Statistical Terms

Population:

Parameter:

Sample:

Statistic:

EXAMPLE:

100,000 randomly selected US adults were asked whether they drink at least 48 oz of water each day and only 45% said yes. Identify the population and sample.

**SOLUTION:**

Population: all US adults

Sample: 100,000 randomly selected US adults

**Multiple Choice:** Choose the one option that best completes the statement or answers the question.

- 1) A \_\_\_\_\_ is the complete collection of all measurements or data collected, whereas, 1) \_\_\_\_\_  
a \_\_\_\_\_ is a subcollection of members selected from the complete collection.
- a) Sample; population                      b) Population; parameter  
c) Population; sample                     d) Sample; census
- 2) A journal publication mails a questionnaire to every college student asking about the 2) \_\_\_\_\_  
quality of its publication. The total number of college students represents what?
- a) The population                          b) The sample

- 3) A private college always mails out a survey three months before enrollment to ask if students if they are going to re-enroll the following year. On average, only 8% of the students responded. Of the 8% who do respond, an average of 85% say that they will re-enroll. This 8% who respond to the survey are known as what? 3) \_\_\_\_\_
- a) The population b) The sample
- 4) In a poll of 20,000 randomly selected high school students, 88% answered “yes” when asked, “Do you have Wi-Fi at home?” Identify the sample and population. 4) \_\_\_\_\_
- a) Sample: 88% who answered yes  
Population: all high school students b) Sample: 20,000 selected high school students  
Population: all high school students
- c) Sample: 20,000 selected high school students d) Sample: all high school students  
Population: 20,000 selected high school students
- 5) An IT security worker wants to test the resolution of some new cameras that the department just received. They received 20 boxes containing 6 cameras each. The worker does not have the time to test every camera in each box. The worker will choose one box at random and test all 6 cameras within that box. What is the population? 5) \_\_\_\_\_
- a) 120 cameras b) The 6 cameras in the box chosen
- c) The one box that was chosen d) The 20 boxes
- 6) Spell-checkers on desktop apps don’t always catch misspellings or say that a proper name is misspelled when in fact it isn’t. John can proofread extremely quickly and is a competent editor. A magazine publisher hires him to check the spelling of every word in the latest proof of their publication. Regarding John’s assignment, what is the population? 6) \_\_\_\_\_
- a) Finding misspellings in the latest proof b) The total number of misspellings that Jackie finds in the proof
- c) Every word in the proof d) The latest proof of history book
- 7) Determine whether the following is a statistic or a parameter:  
A company sampled 30 other companies and found their rate of employees who enrolled in a 401(k) was 47%. 7) \_\_\_\_\_
- a) Parameter b) Statistic
- 8) A counselor questions 250 men to determine their age when they first marry. The mean marrying age of the 250 men would be a \_\_\_\_\_. 8) \_\_\_\_\_
- a) Parameter b) Statistic
- c) Population d) Sample

9) The median age of all US First Ladies when their husbands took office would be a 9) \_\_\_\_\_  
\_\_\_\_\_.

- a) Parameter
- c) Population

- b) Statistic
- d) Sample

**Short Answer:** Complete the following question. Write your answer in complete sentences.

10) Medical researchers are interested in knowing the mean systolic and mean diastolic blood pressures for all US men aged 50 to 60. They sample 3,000 men and measure their blood pressure. They then calculate the mean and standard deviation of both measurements. Do the means and standard deviations represent parameters or statistics? Why?

## **Section 2: Variables and Individuals**

Individuals:

Variable:

Categorical Variables:

Quantitative Variables:

Discrete Variables:

Continuous Variables:

**EXAMPLE:**

The following is a small section of a data set describing education in the US.

State	Region	Population (1000s)	SAT Verbal	SAT Math	% taking	% No HS
CA	PAC	35,894	499	519	54	18.9
CO	MTN	4,601	551	553	27	11.3
CT	NE	3,504	512	514	84	12.5

Using the distribution, identify the individuals and variables. Determine if each variable is categorical or quantitative.

**SOLUTION:**

Individuals → states

Variables → Region (C), Population (Q), SAT Verbal (Q), SAT Math (Q), % taking (Q), % No HS (Q)

**EXAMPLE:**

Determine if each of the following would be a discrete variable or continuous variable

- a) Weight of a firefighter
- b) Flip a coin 20 times and count the number of heads

**SOLUTION:**

- a) Continuous since a firefighter's weight could take on any value between 0 and infinity
- b) Discrete since the number of heads will be an integer value

**Multiple Choice:** Choose the one option that best completes the statement or answers the question.

- 11) The US Census collects data about individuals and households. Which variable is categorical? 11) \_\_\_\_\_
- a) Annual electricity cost
  - b) Type of residence
  - c) Family size
  - d) Hours worked per week
- 12) Which type of data values are quantitative and the number of values is finite or countable? 12) \_\_\_\_\_
- a) Continuous
  - b) Categorical
  - c) Interval
  - d) Discrete
- 13) Determine whether the given value is from a discrete or continuous data set: The time it takes a calculator to compute 13) \_\_\_\_\_
- a) Continuous
  - b) Discrete

- 15) Determine whether the given value is from a discrete or continuous data set:  
Speed of cars passing through a busy intersection on a weekday
- a) Continuous                      b) Discrete

Rank	Last week's rank	Movie title	Studio	Box office sales (in millions of \$)
1	N/A	Pirate Adventure	Movie Giant	35.2
2	2	Secret Agent Files	GMG	19.5
3	1	Epic Super Hero Team	22 <sup>nd</sup> Century	14.3
4	5	Reptile Ride	Movie Giant	10.1
5	4	Must Love Cats	Dreamboat	9.9

Identify the individuals. Then, identify the variables and state whether they are categorical or quantitative. For each quantitative variable, determine whether it is discrete or continuous.



### Section 3: Distributions

For the first four terms, define and draw a rough sketch.

Symmetric:

Uniform:

Right Skewed:

Left Skewed:

Define the following:

Mean:

Median:

Standard deviation:

Interquartile Range:

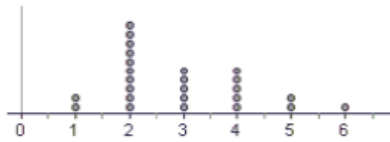
5 number summary:

Range:

**Multiple Choice:** Choose the one option that best completes the statement or answers the question.

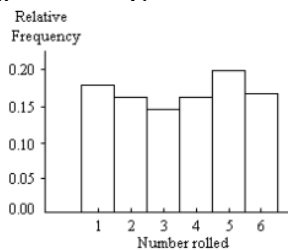
- 17) The distribution below is the number of people in a household reported by 25 people in a census.

18) \_\_\_\_\_



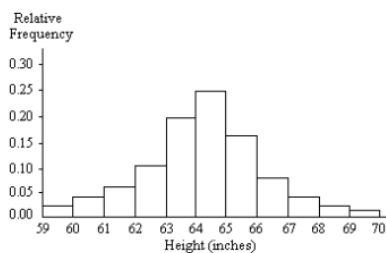
The best description for the shape of this distribution is

- a) Approximately symmetric  
b) Skewed left  
c) Skewed right  
d) Roughly Uniform
- 18) A die was rolled 200 times, and the distribution shows the relative frequency (probability) that was obtained for rolling each digit. 19) \_\_\_\_\_



The best description for the shape of this distribution is

- a) Approximately symmetric  
b) Skewed left  
c) Skewed right  
d) Roughly Uniform
- 19) A relative frequency histogram for the heights of a sample of adult women is shown below. 20) \_\_\_\_\_



The best description for the shape of this distribution is

- a) Approximately symmetric  
b) Skewed left  
c) Skewed right  
d) Roughly Uniform

20) Find the mean for the given data.

21)\_\_\_\_\_

13, 15, 11, 13, 10

- a) 11
- c) 12.4

- b) 15.5
- d) 13

21) Find the median for the given data.

22)\_\_\_\_\_

3, 7, 18, 21, 30, 30, 49

- a) 25.5
- c) 21

- b) 18
- d) 30

22) Find the range for the given data.

23)\_\_\_\_\_

27, 37, 16, 43, 58

- a) 58
- c) 42

- b) 10
- d) 16

23) Find the 5-number summary for the given data.

24)\_\_\_\_\_

27, 37, 16, 43, 58

- a) 16, 26.5, 37, 37, 58
- c) 16, 21, 37, 21, 58

- b) 16, 27, 37, 43, 58
- d) 11, 27, 37, 43, 21