Research is More than Googling:

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A-Z

Educational Research Basics by Del Siegle

Search Educational

Home | Types of Research | Ethics and Informed Consent | Measurement Scales | Single Subject Research | Qualitative Research | Historical Research | Correlations | Experimental / Group Comparisons | t Tests | Normal Distribution | Sampling | Variables | Instrument Reliability & Validity | ANOVA, Regression, and Chi-Square | Standard Error

Honors students demonstrating different sampling techniques with M and Ms

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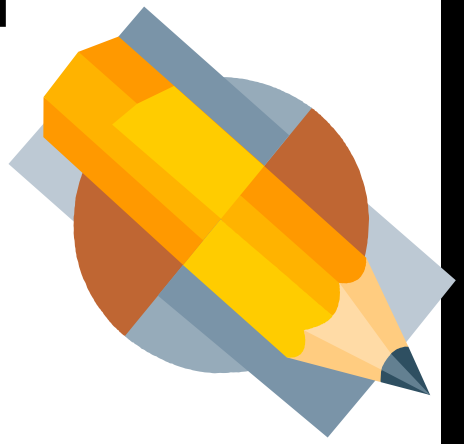
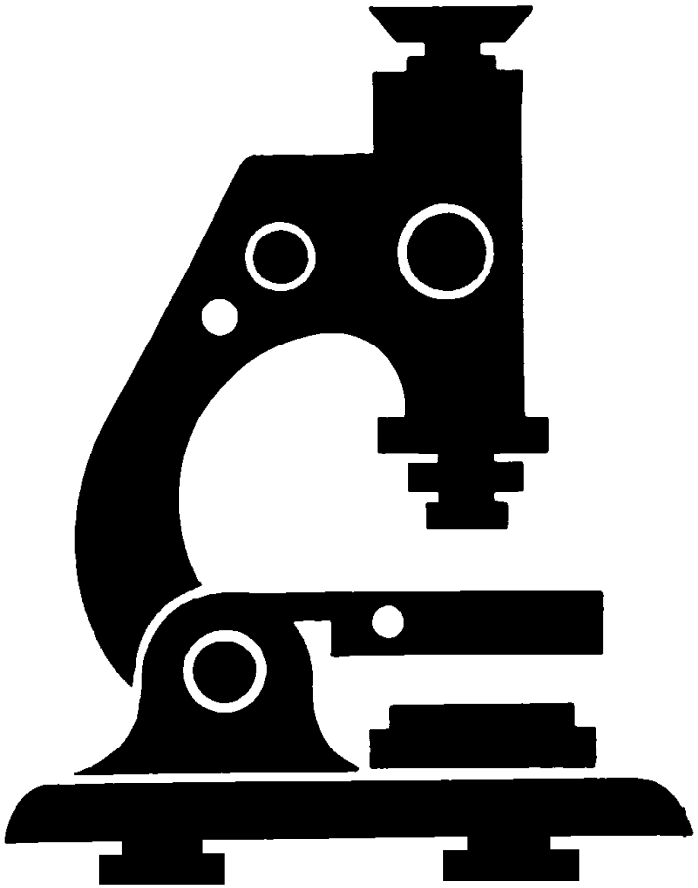
OUTLINE

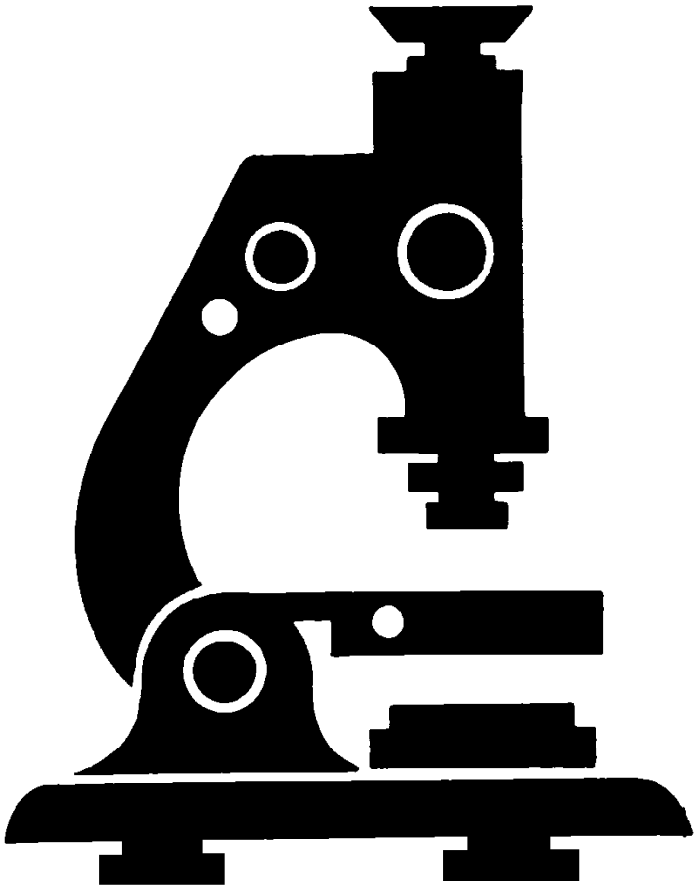
* What is research and why is it important
* SEM (Schoolwide Enrichment Model)
* Correlational Research
  - *Scattergram*
  - *r = .85*
* Descriptive Research
  - *Qualitative vs. Quantitative*
  - *Chi-Square*
* Historical Research
* Experimental Research
  - *Random Assignment*
  - *Control & Treatment*
  - *t test (p < .05)*
  - *Formations of Groups*
* Management of Projects



The Research Process Presents an Open-Ended, Inquiry-Based Approach to Learning

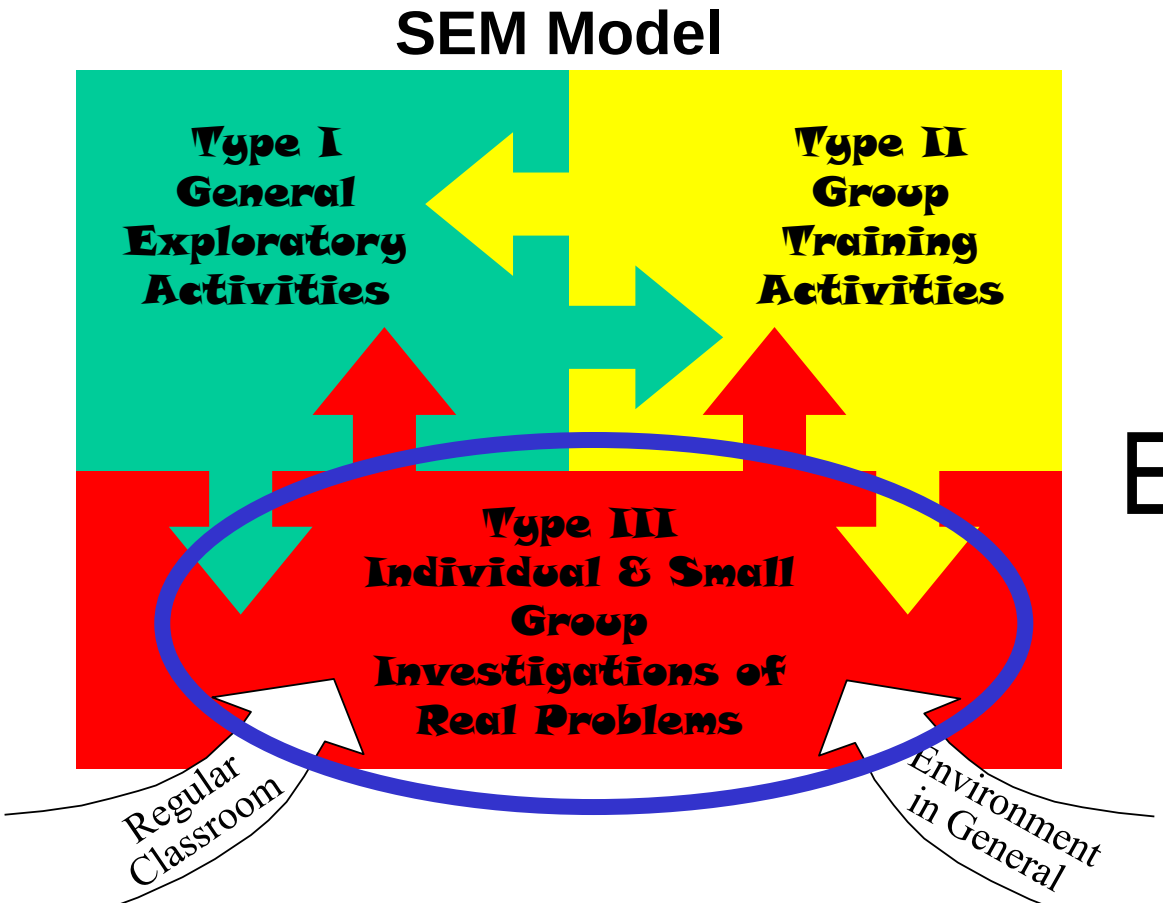


Characteristics of True Research



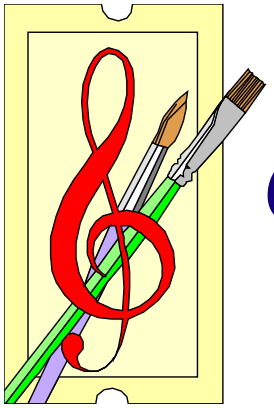
- Investigates a problem that does not have a predetermined conclusion
- Tests a hypothesis
- Gathers, records and interprets raw data
- Presents conclusion(s) to an appropriate audience

Starko, 1986



Type III Enrichment

Investigative activities and artistic productions in which the learner assumes the role of a first-hand inquirer and a practicing professional.



Type III's

Changing the student from a lesson learner to a first-hand inquirer

- **The student has an internal commitment in addition to a cognitive or scholarly interest**
- **There is no agreed upon, correct solution**
- **The student wants to bring about some form of change in actions, attitudes, or beliefs with a targeted audience**
- **Products are directed toward a real audience**

Technology use in the classroom has progressed through 3 distinct stages.

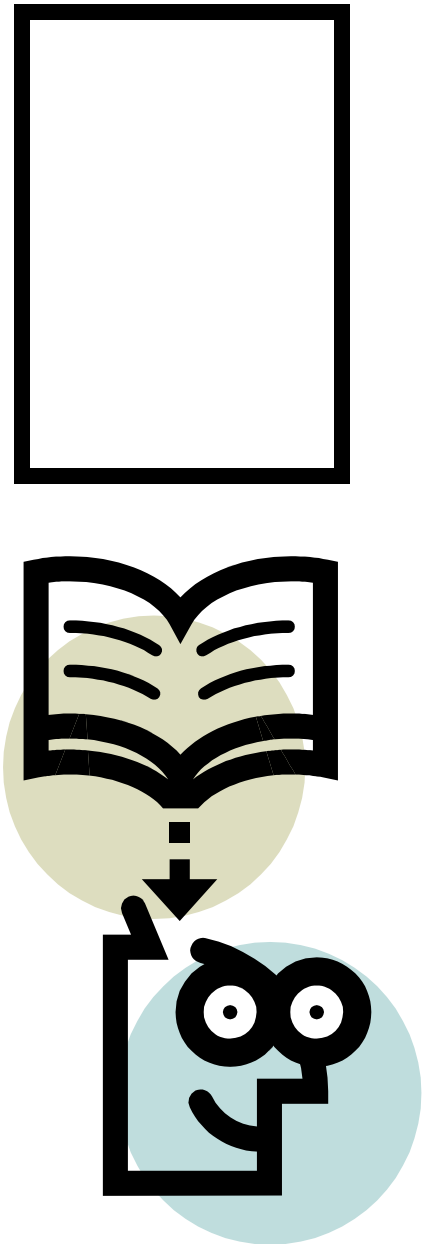
Automated Print

Automated Print **Production Tool**

Automated Print Production Tool

Data driven virtual learning

…our goal is to allow students to construct knowledge by providing them with opportunities to gather information, organize it in meaningful ways, and present it to others. In this way, the student is actively engaged in a life-long learning process.



“Tomorrow’s illiterate will not be the man [or woman] who can’t read; he [or she] will be the man [or woman] who has not learned how to learn”

Herbert Gerjuoy as reported by Alvin Toffler (1970, p. 414).

Identify Problems

2

Discover Trends and Patterns

Critically Evaluate
Research Findings

Case for Developing Research Skills….

1. **Increases Motivation**
2. **Develops Skills of Autonomy**
3. **Develops Critical and Creative Thinking Skills**
4. **Develops Expertise**
5. **Produces New Knowledge**

Brown & Seymore, 2015

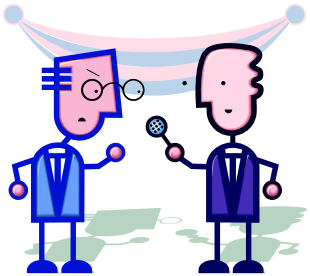
Types of Research Methodologies

Causal-Comparative

Correlational

Experimental

Historical



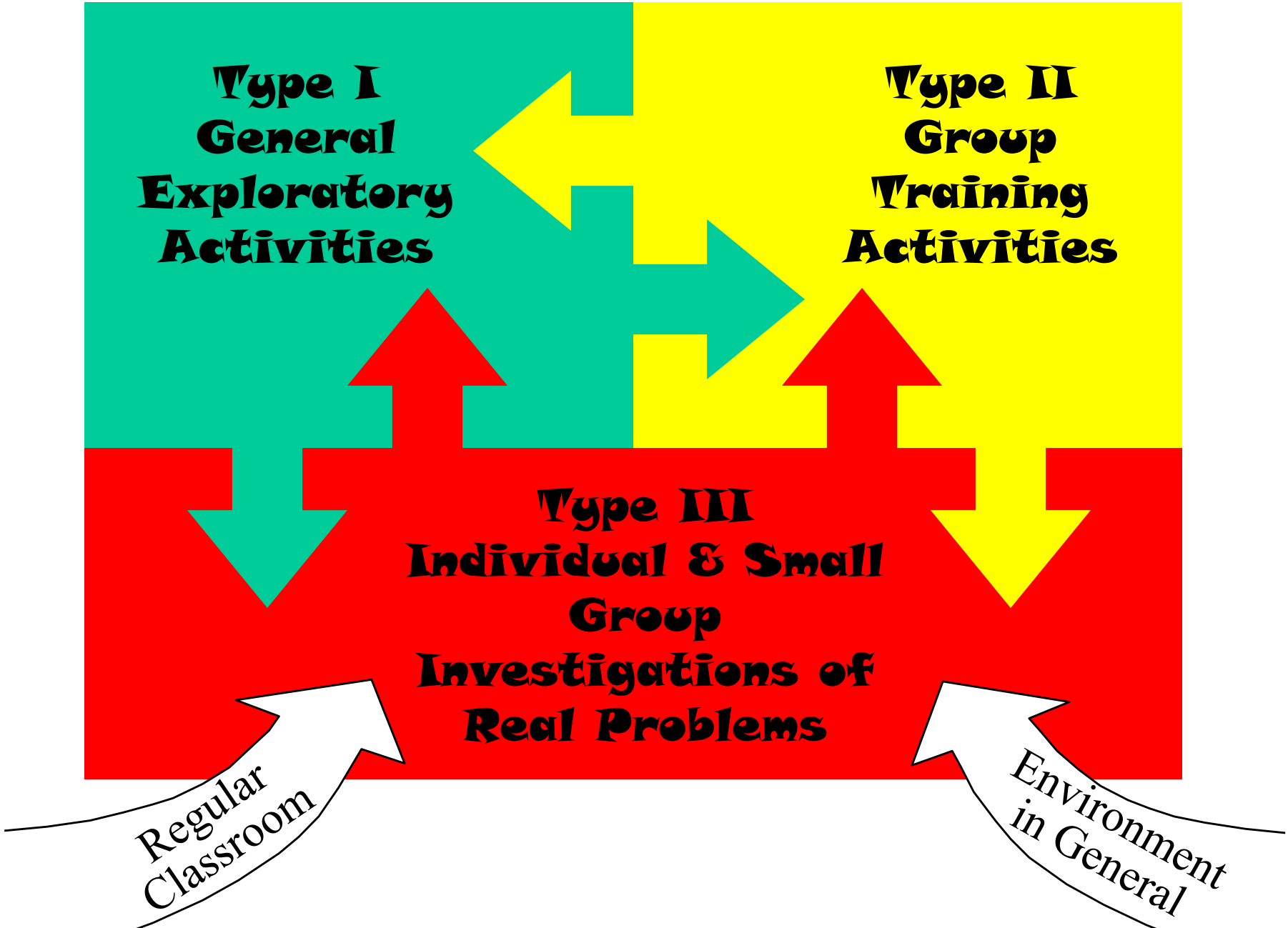
Survey*

Action Research

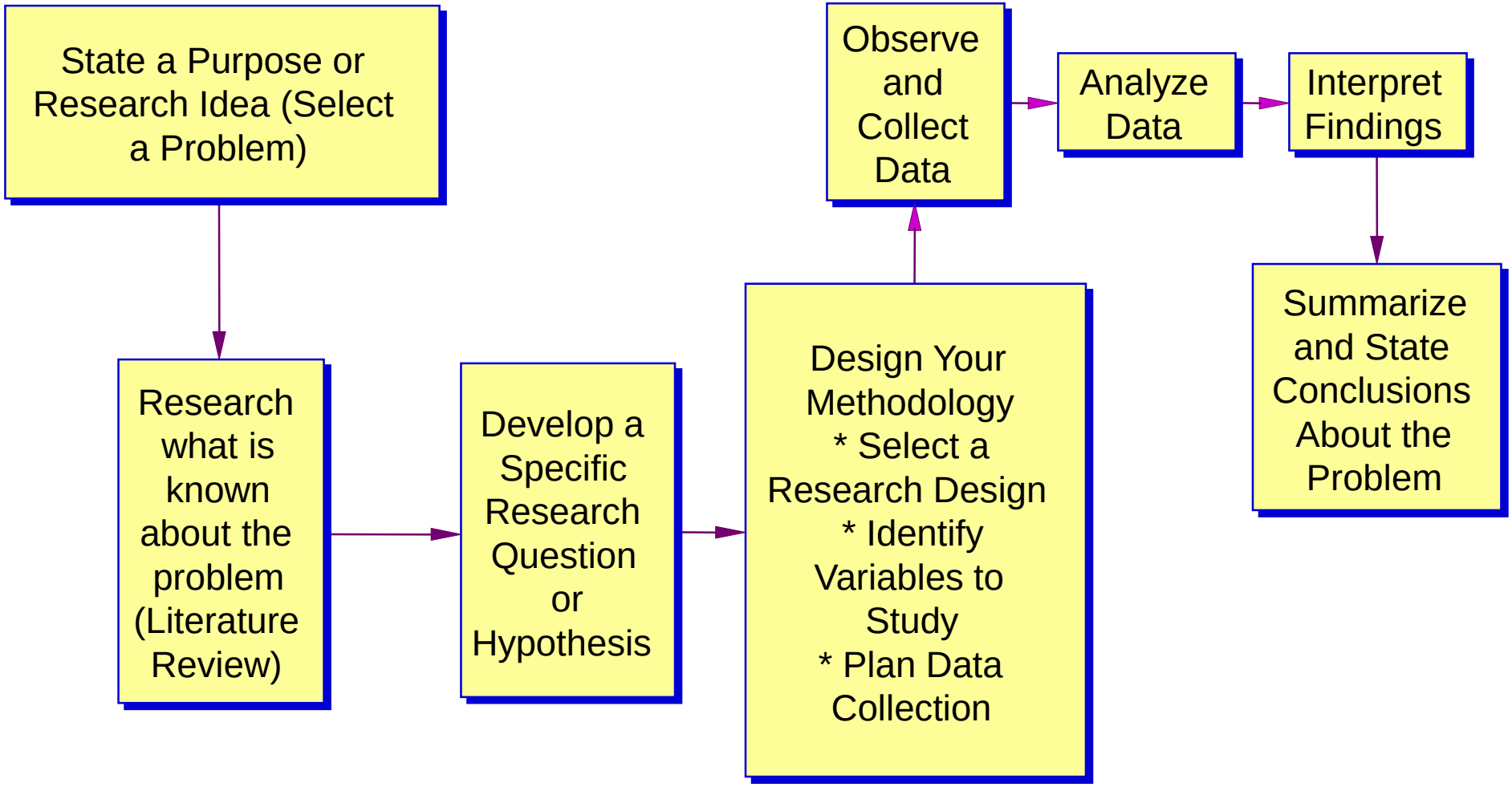
Ethnographic*

*Descriptive

SEM Model


Type I
General
Exploratory
Activities
Type II
Group
Training
Activities
Type III
Individual & Small
Group
Investigations of
Real Problems
Regular
Classroom
Environment
in General

The Research Process



Correlational RESEARCH

What relationship exists?

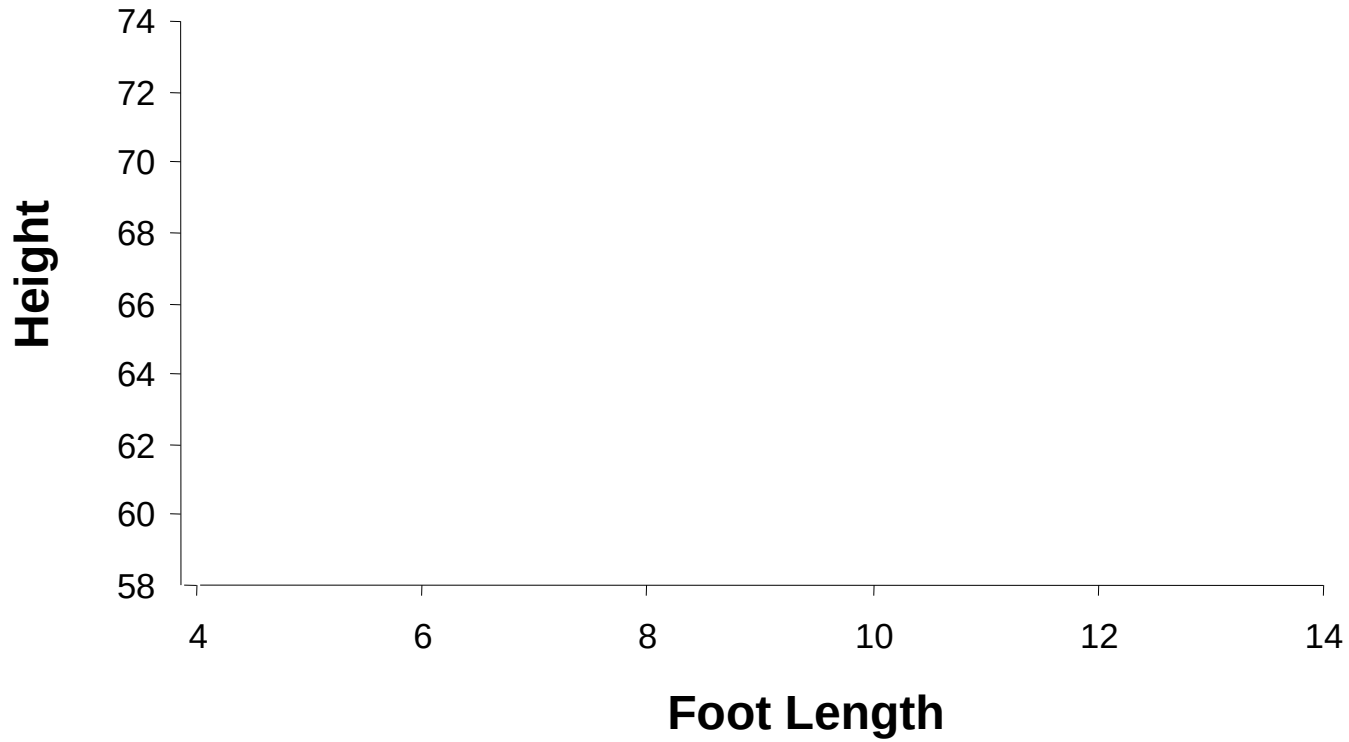
* Correlation can be either **positive** or **negative**
* Correlation can differ in the degree or strength of relationship

CORRELATION ONLY DESCRIBES THE RELATIONSHIP, IT DOES NOT PROVE CAUSE AND EFFECT

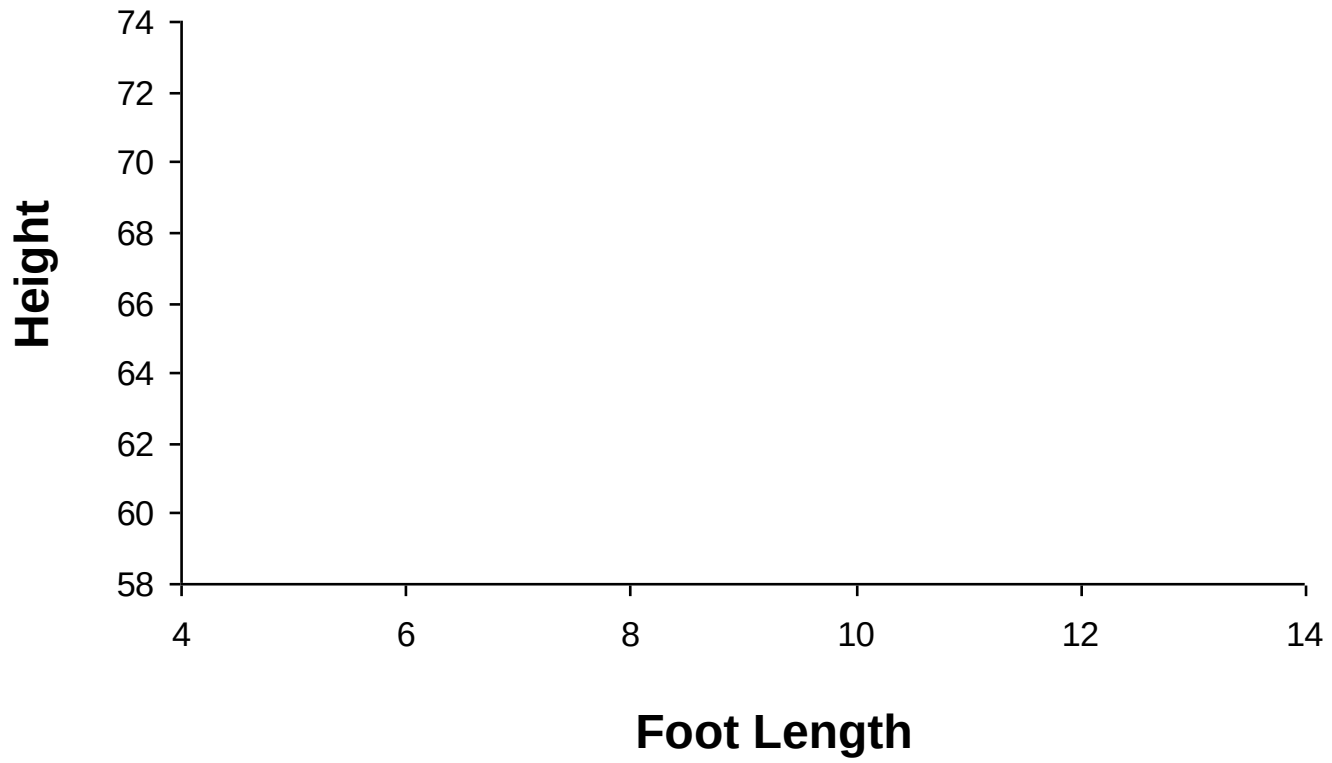
What is the relationship between...
...the oxygen level in water and the number of bacteria in the water?
...average age of Congress and the number of bills passed?
...number of words in a sentence and the readability level of the sentence?
...hours spent each week doing homework and school grades?
...number of children in a family and the number of bedrooms in the home?
...length of arm span and height?

Suppose we wished to graph the relationship between foot length and height of 20 subjects.

In order to create the graph, which is called a scatterplot or scattergram, we need the foot length and height for each of our subjects.

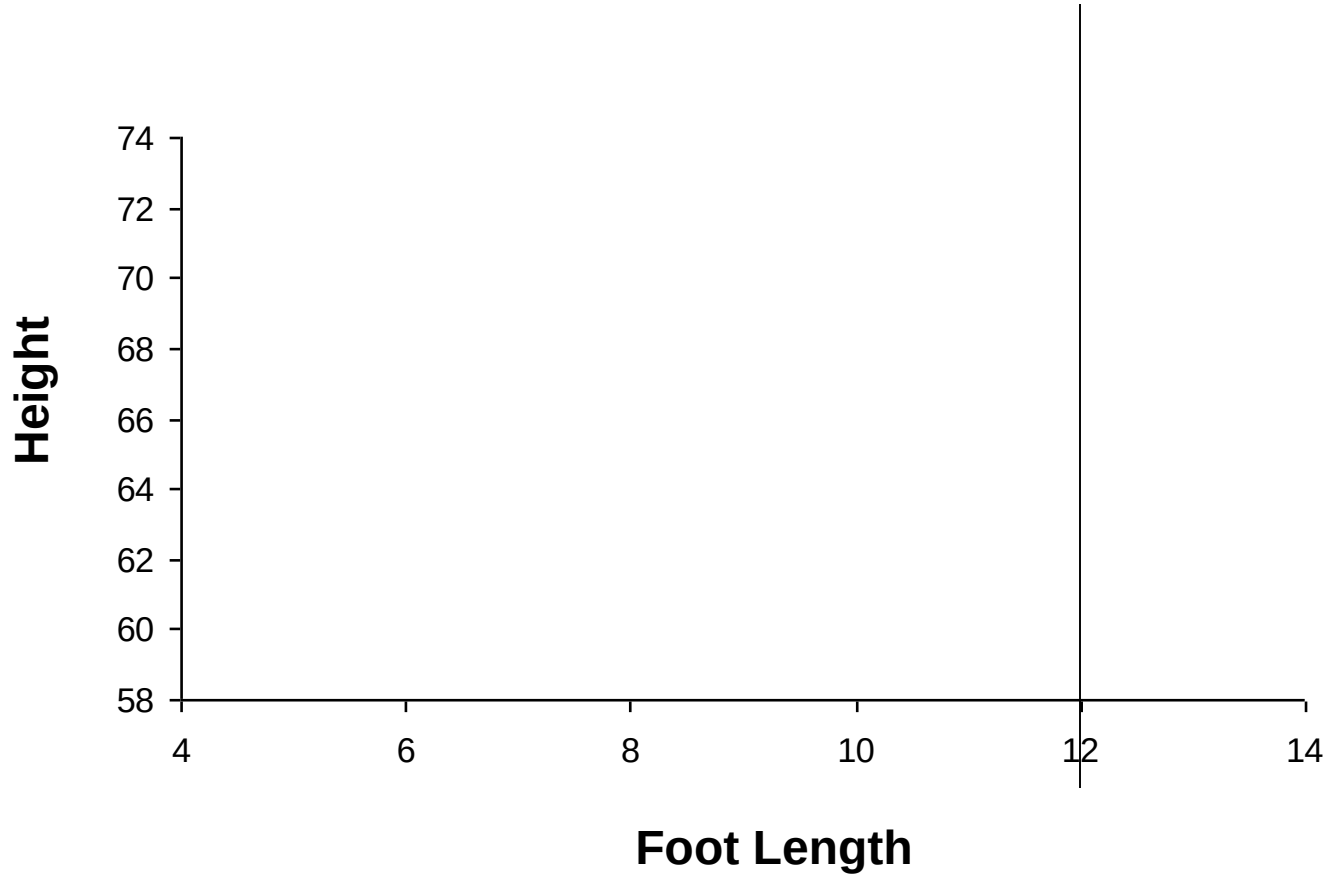


Assume our first subject had a 12 inch foot and was 70 inches tall.



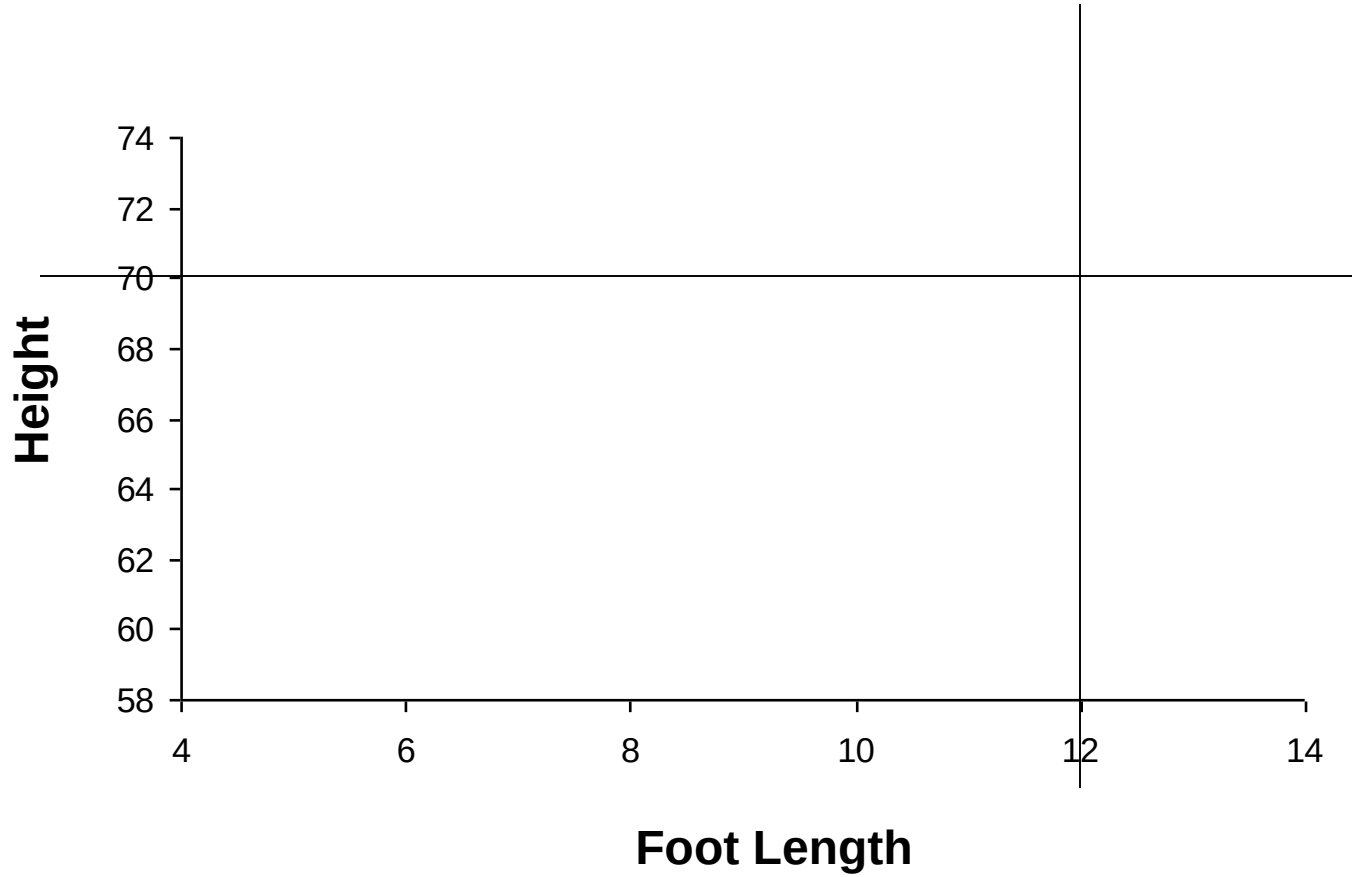
Assume our first subject had a 12 inch foot and was 70 inches tall.

1. Find 12 inches on the x-axis.



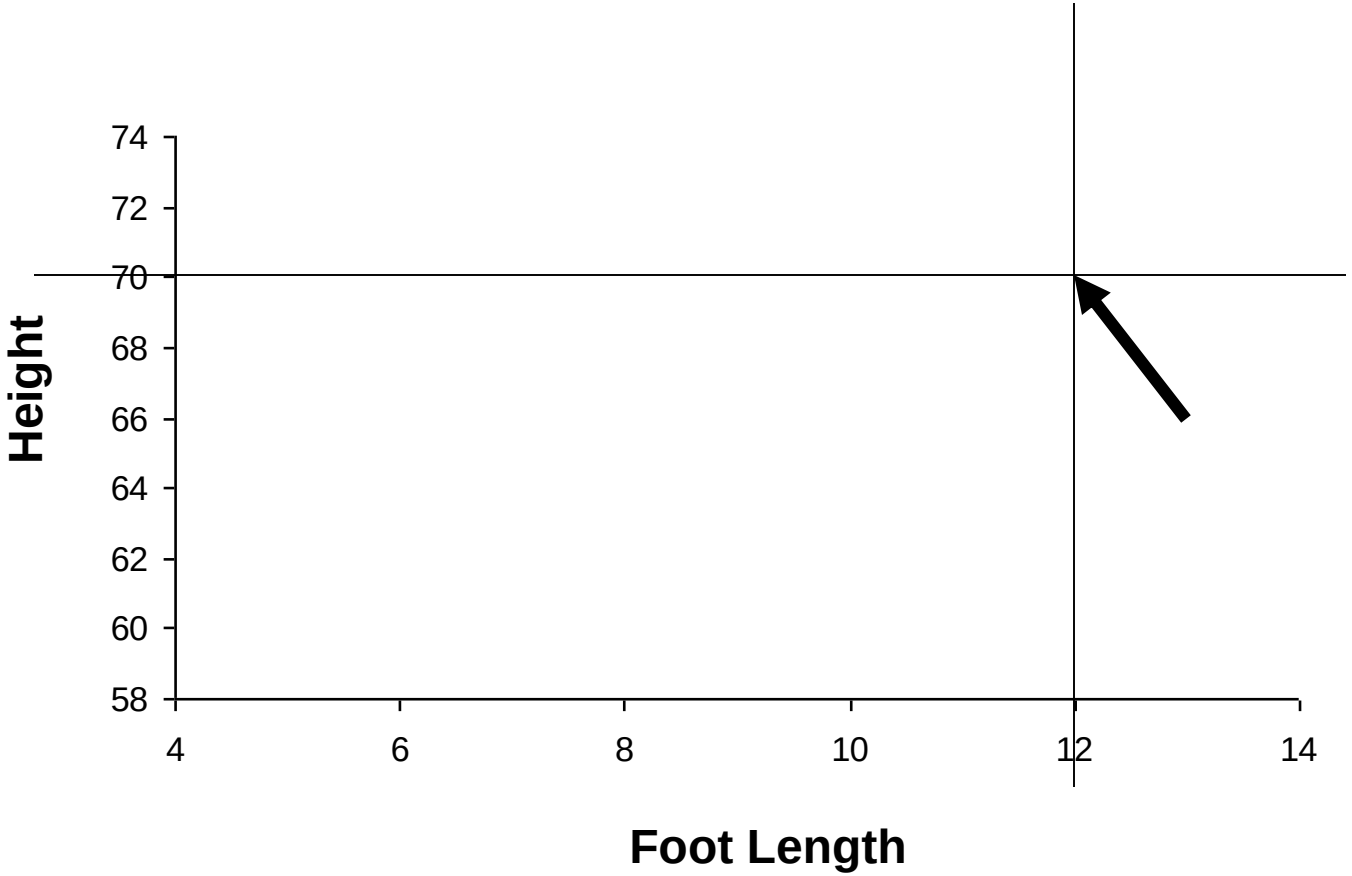
Assume our first subject had a 12 inch foot and was 70 inches tall.

1. Find 12 inches on the x-axis.
2. Find 70 inches on the y-axis.



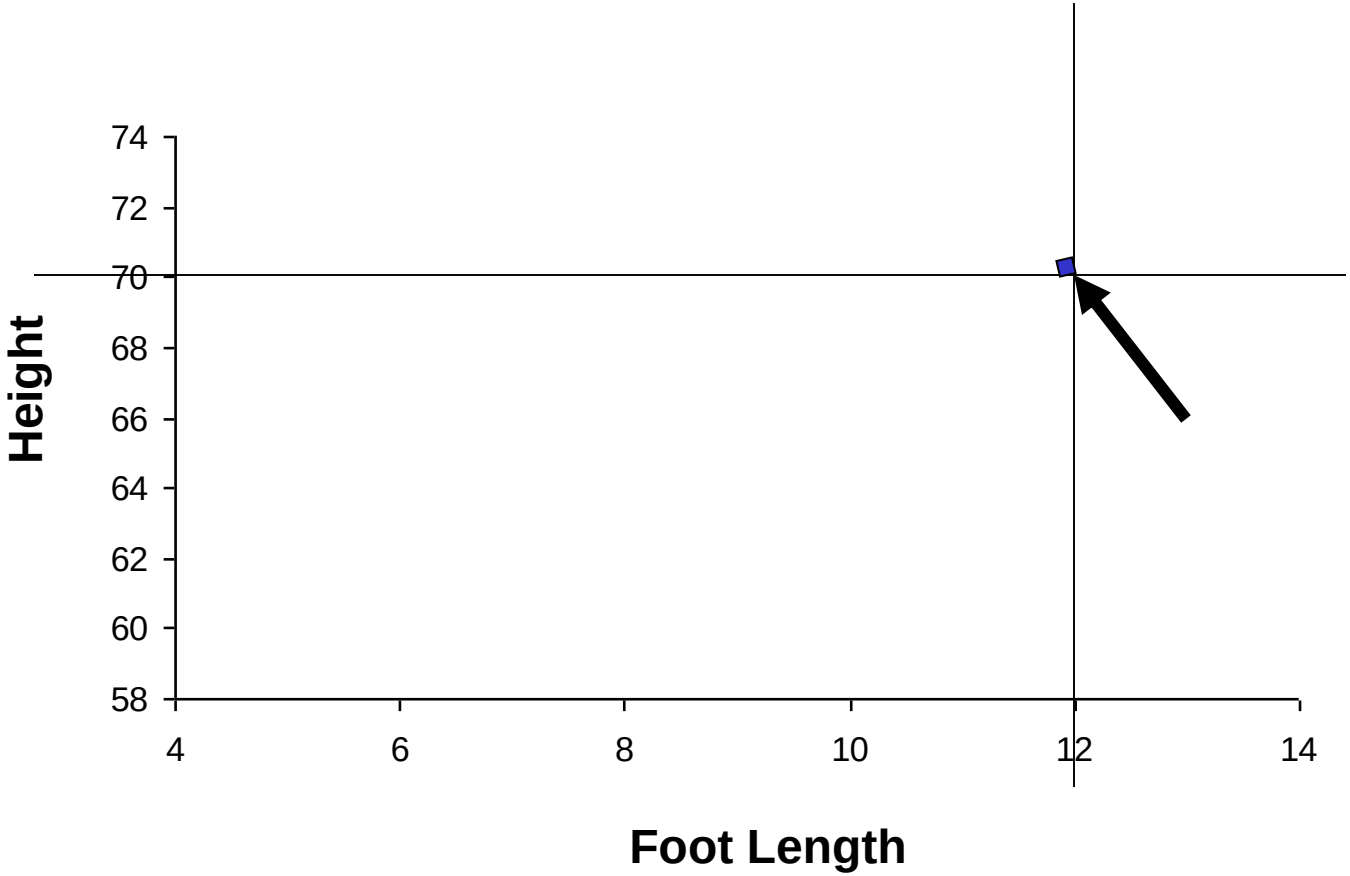
Assume our first subject had a 12 inch foot and was 70 inches tall.

1. Find 12 inches on the x-axis.
2. Find 70 inches on the y-axis.
3. Locate the intersection of 12 and 70.



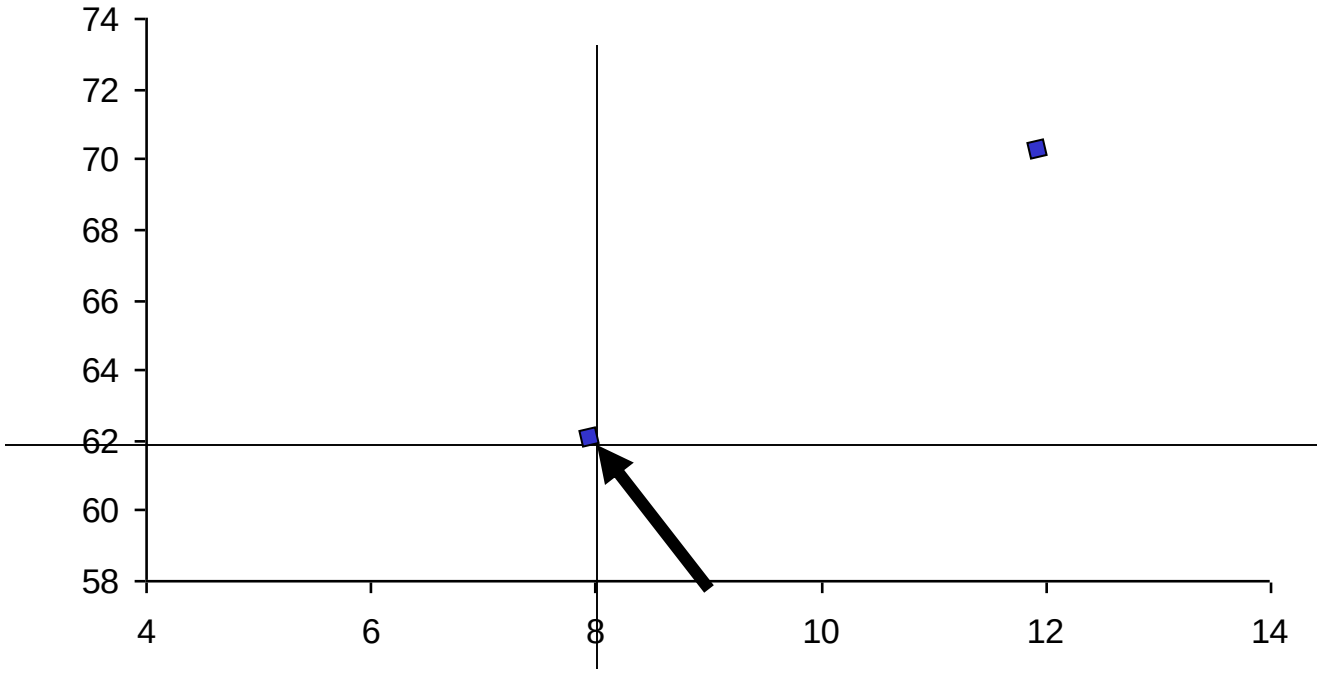
Assume our first subject had a 12 inch foot and was 70 inches tall.

1. Find 12 inches on the x-axis.
2. Find 70 inches on the y-axis.
3. Locate the intersection of 12 and 70.
4. Place a dot at the intersection of 12 and 70.



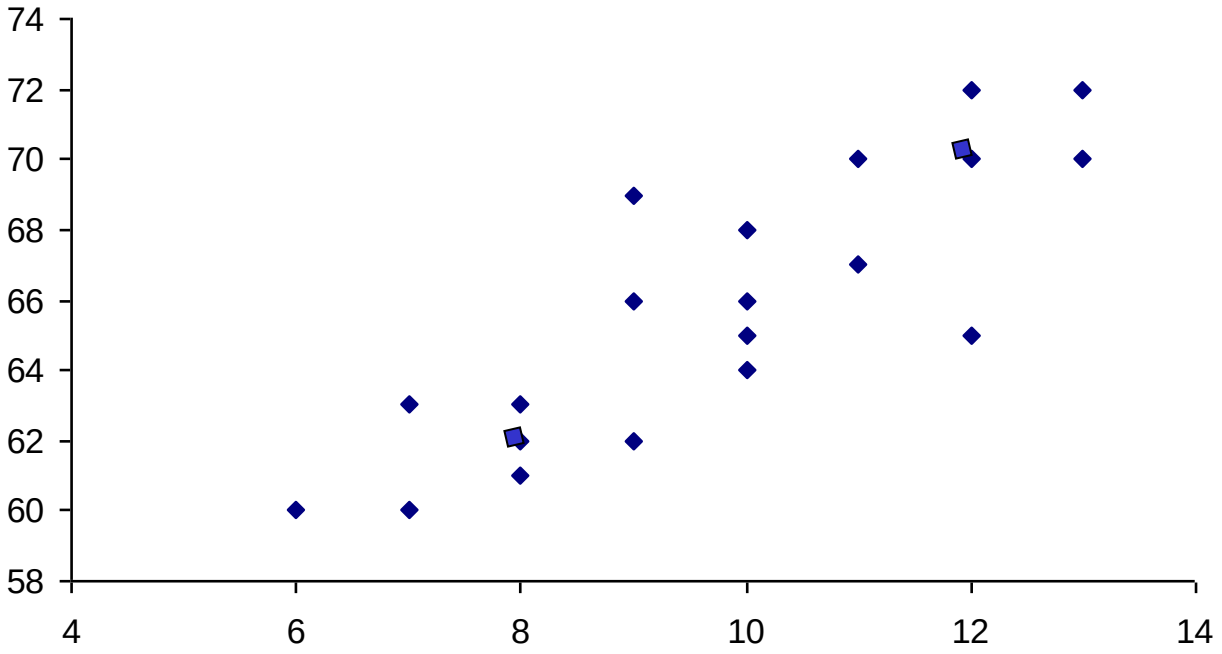
Assume that our second subject had an 8 inch foot and was 62 inches tall.

5. Find 8 inches on the x-axis.
6. Find 62 inches on the y-axis.
7. Locate the intersection of 8 and 62.
8. Place a dot at the intersection of 8 and 62.

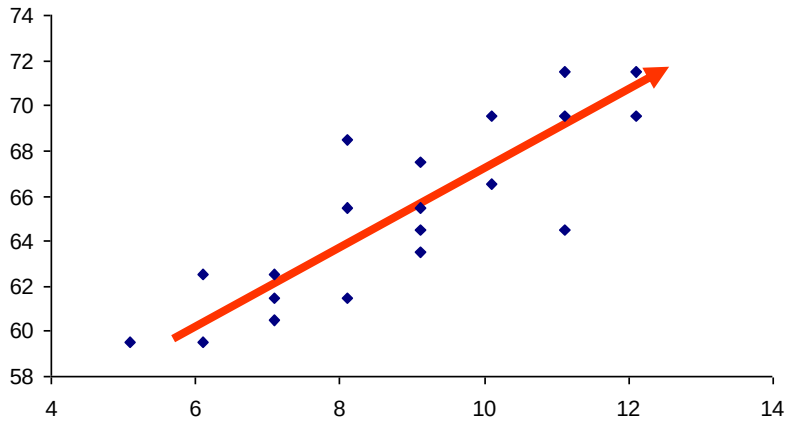


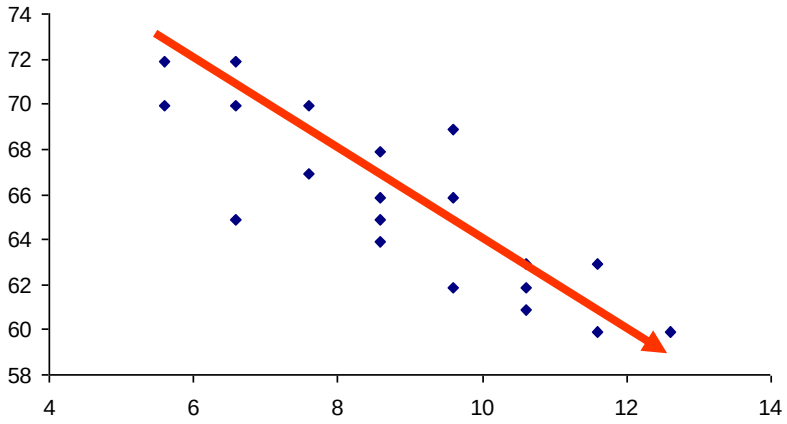
Assume that our second subject had an 8 inch foot and was 62 inches tall.

5. Find 8 inches on the x-axis.
6. Find 62 inches on the y-axis.
7. Locate the intersection of 8 and 62.
8. Place a dot at the intersection of 8 and 62.
9. Continue to plot points for each pair of scores.



If the points on the scatterplot have an upward movement from left to right, we say the relationship between the variables is positive.





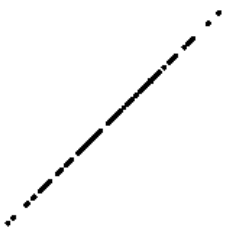
If the points on the scatterplot have a downward movement from left to right, we say the relationship between the variables is negative.

Not only do relationships have direction (positive and negative), they also have strength (from 0.00 to 1.00 and from 0.00 to –1.00).

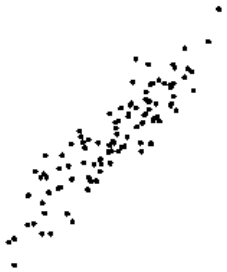
The more closely the points cluster toward a straight line, the stronger the relationship is.

***r* = 0.00**

***r* = 1.00**



r = 1.00



r = 0.90

r = 0.80

r = 0.70

r = 0.60

r = 0.50

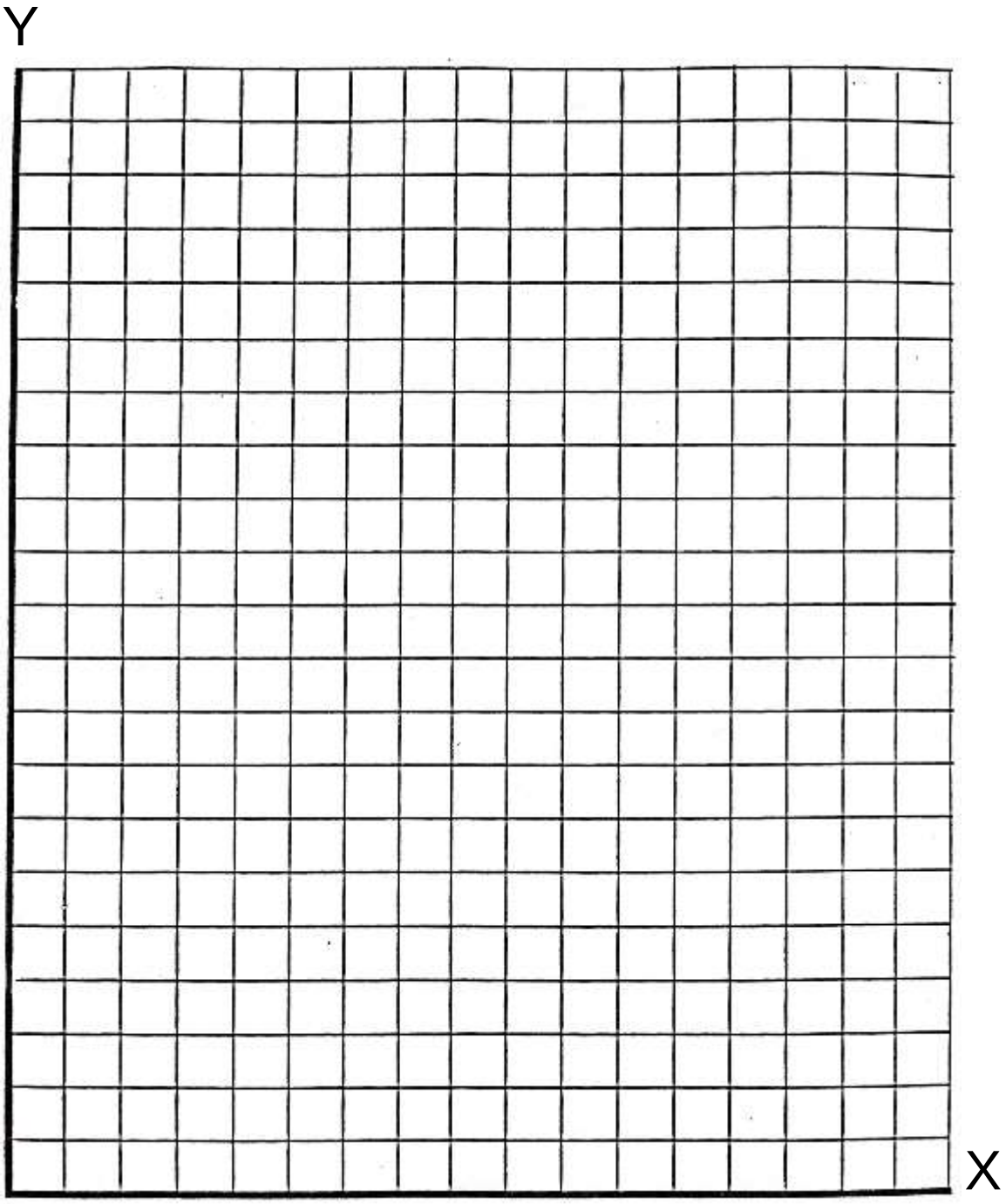
r = 0.40

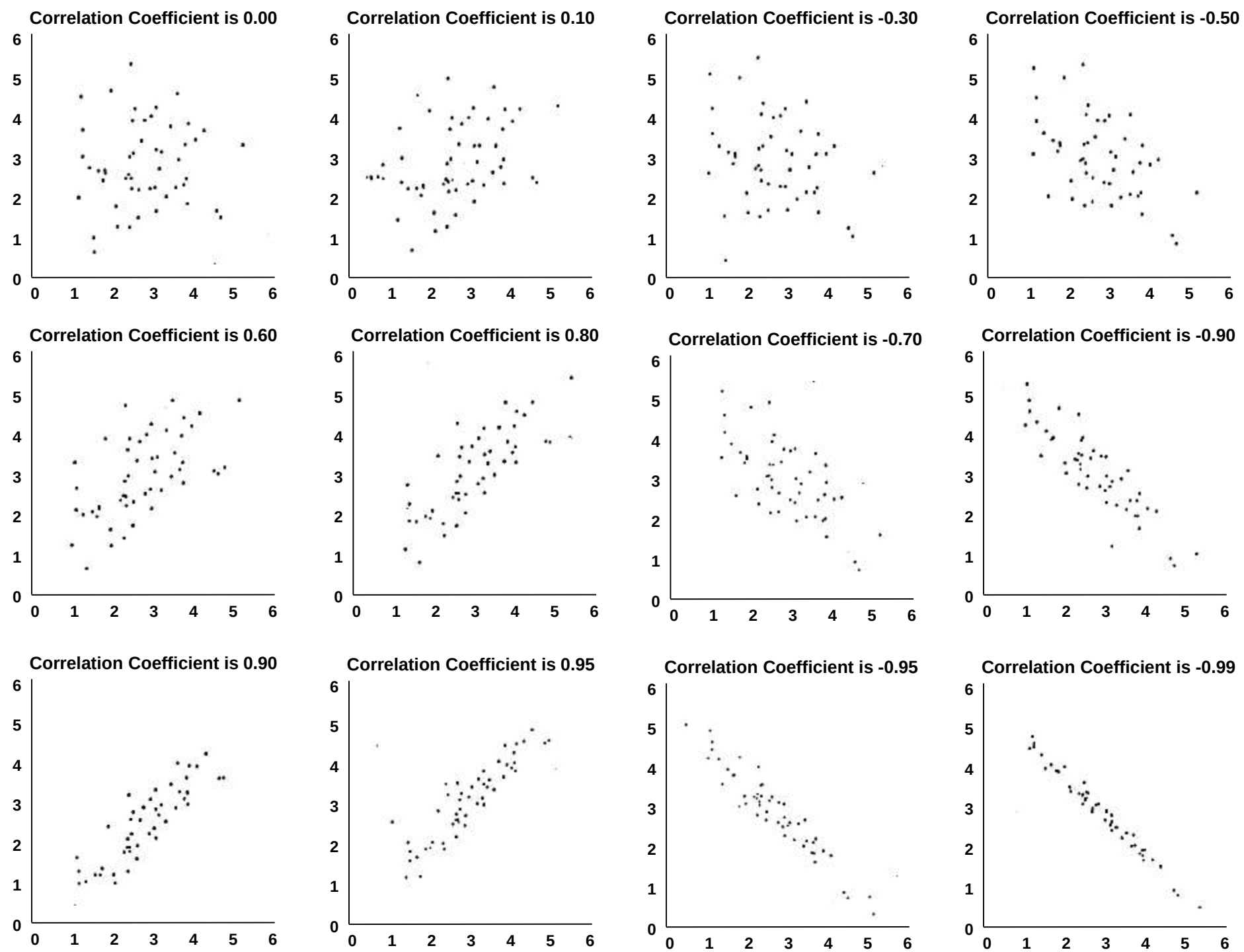
r = 0.30

r = 0.20

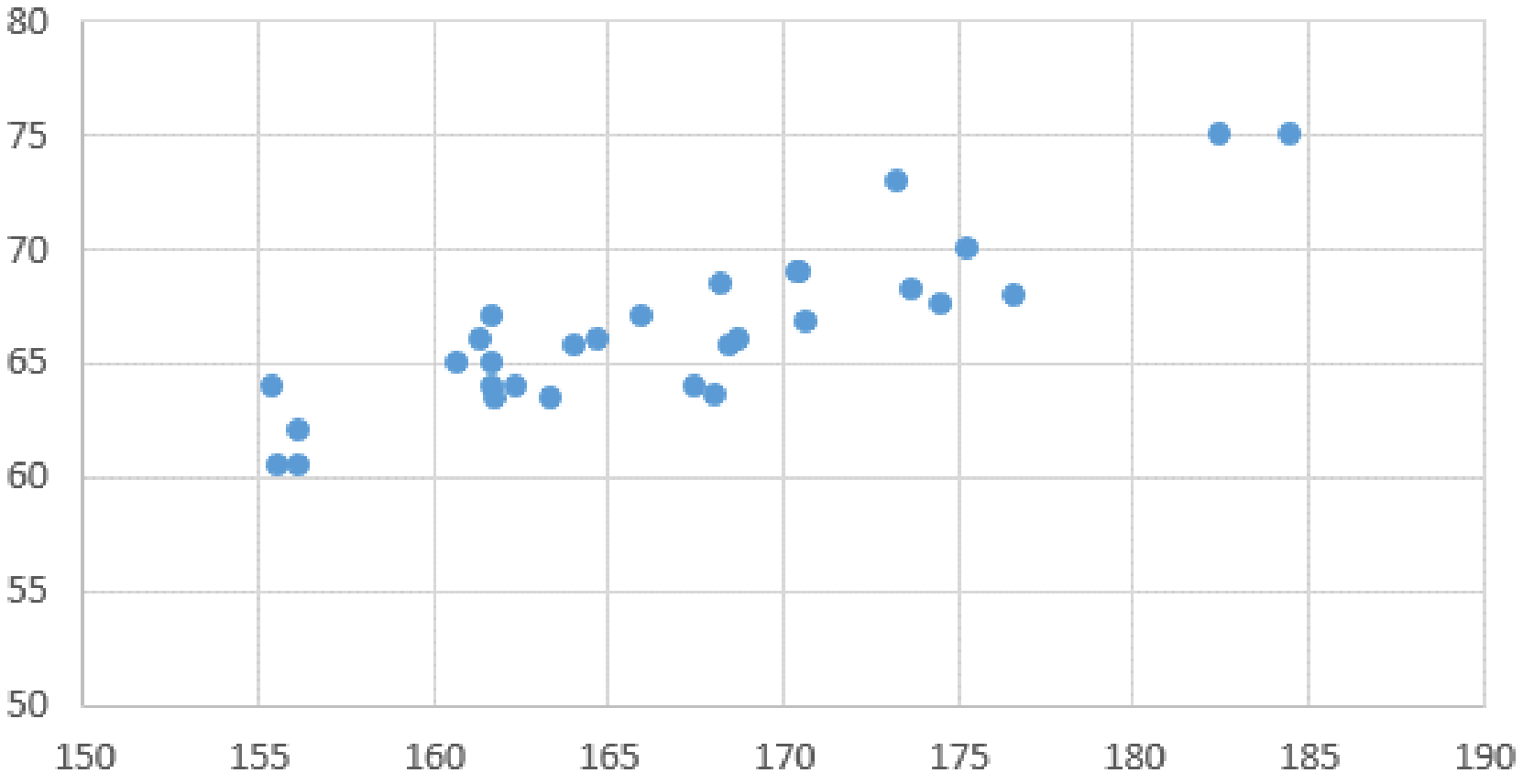
r = 0.10

SCATTER PLOT

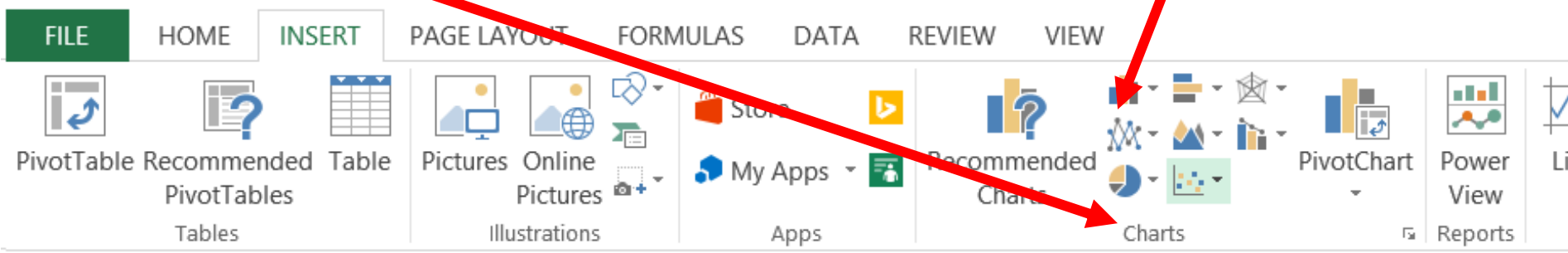



Correlation Coefficient is 0.00
Correlation Coefficient is 0.10
Correlation Coefficient is -0.30
Correlation Coefficient is -0.50
Correlation Coefficient is 0.60
Correlation Coefficient is 0.80
Correlation Coefficient is -0.70
Correlation Coefficient is -0.90
Correlation Coefficient is 0.90
Correlation Coefficient is 0.95
Correlation Coefficient is -0.95
Correlation Coefficient is -0.99

Directions for Making a Scatterplot with Excel



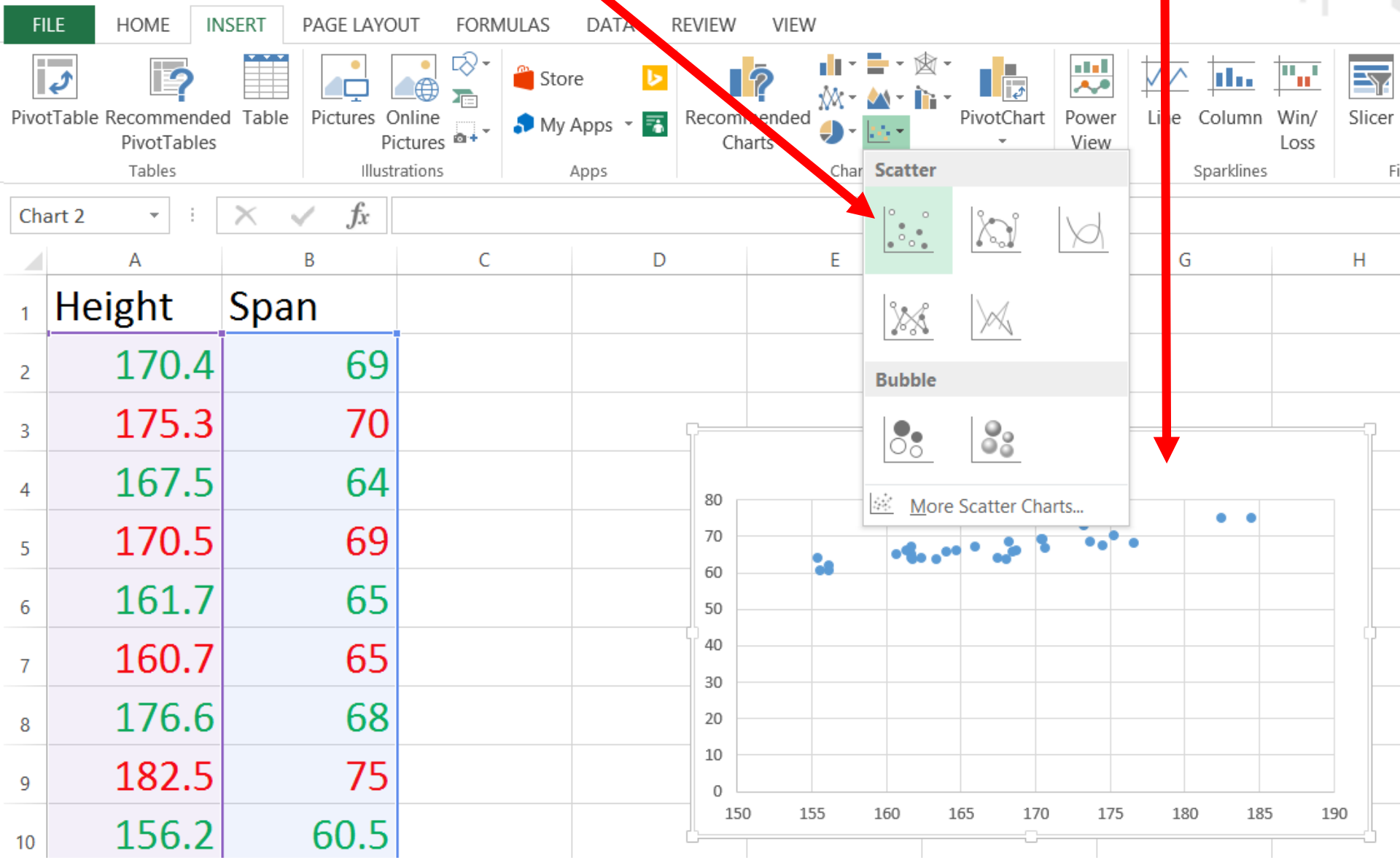
After the pairs of scores have been entered on the spreadsheet, highlight the data and select the **scatterplot icon** from the **Chart** menu.



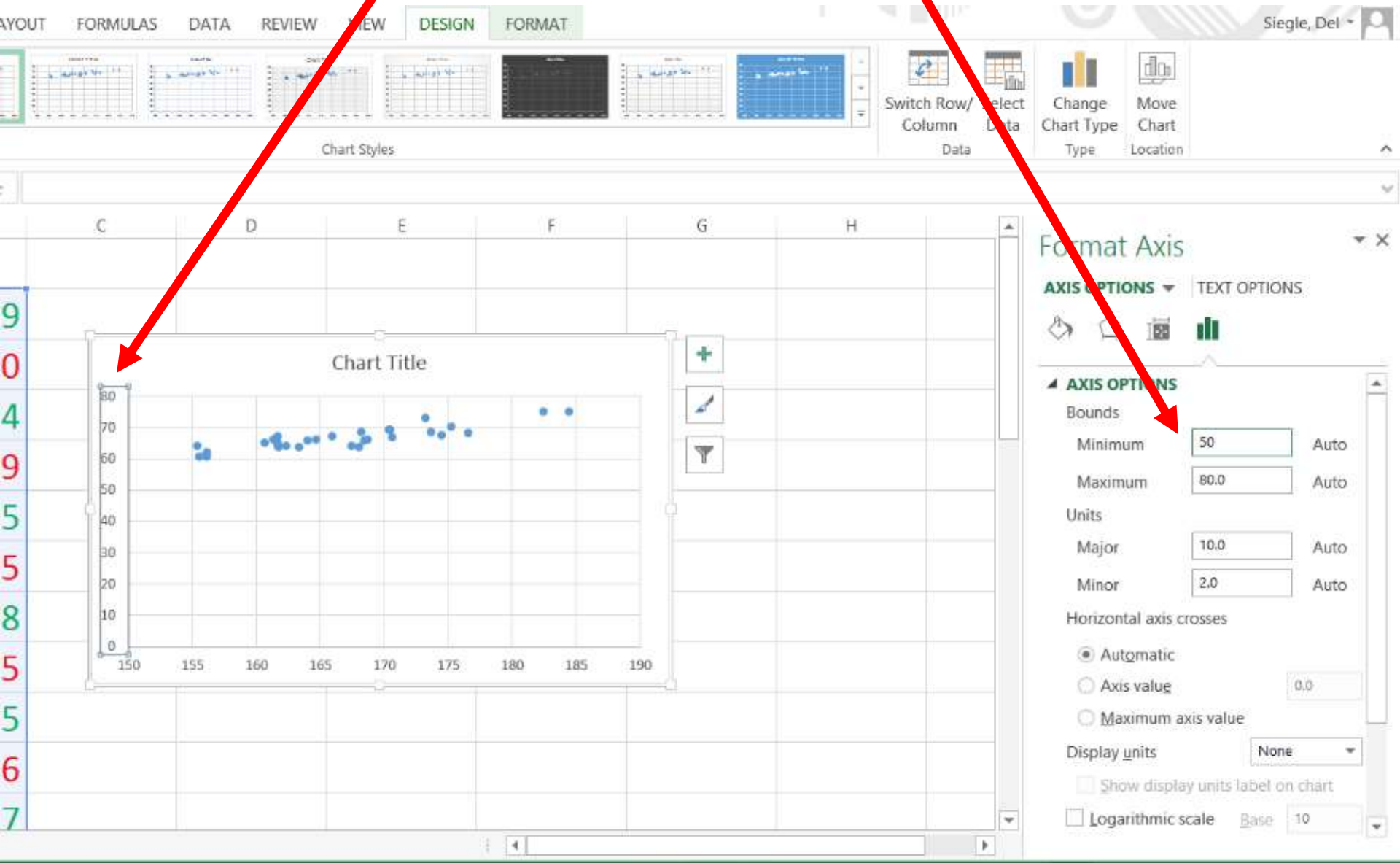
B31 | 75

	A	B	C	D	E	F
1	Height	Span				
2	170.4	69				
3	175.3	70				
4	167.5	64				
5	170.5	69				
6	161.7	65				
7	160.7	65				

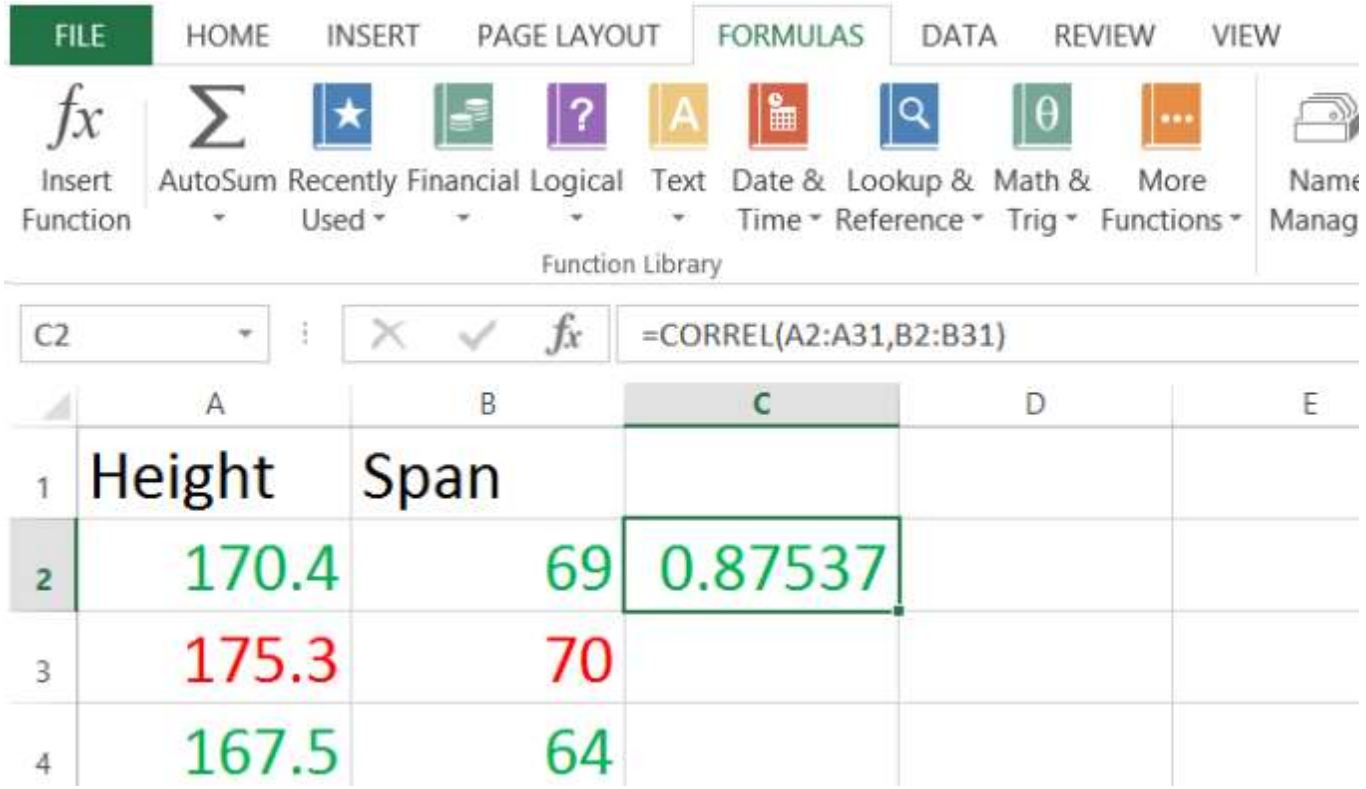
Select the **scatterplot icon** without the lines. The **scatterplot** will appear on the spreadsheet sheet.



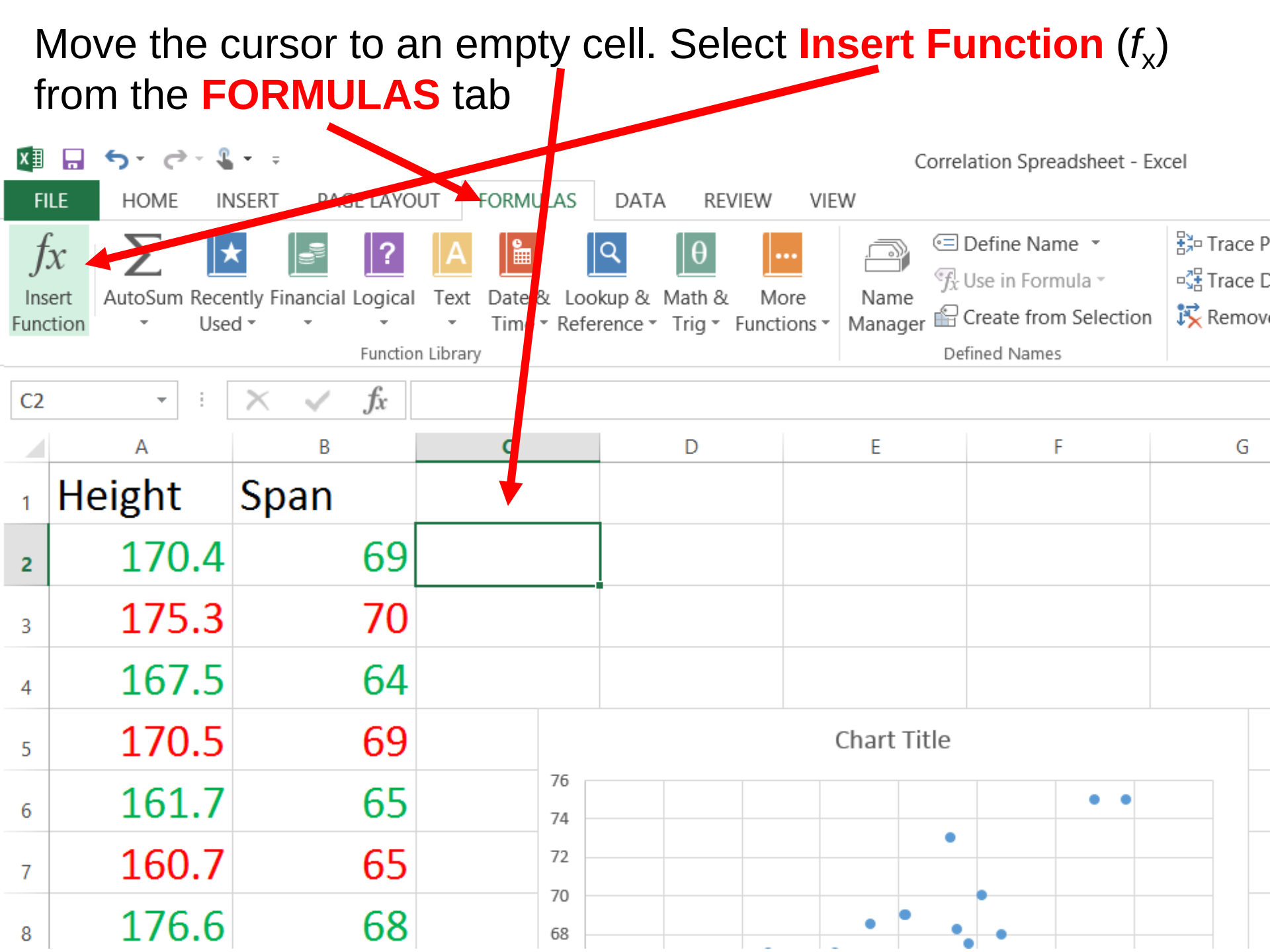
Right click on an **axis** to format the **minimum** and maximum values.



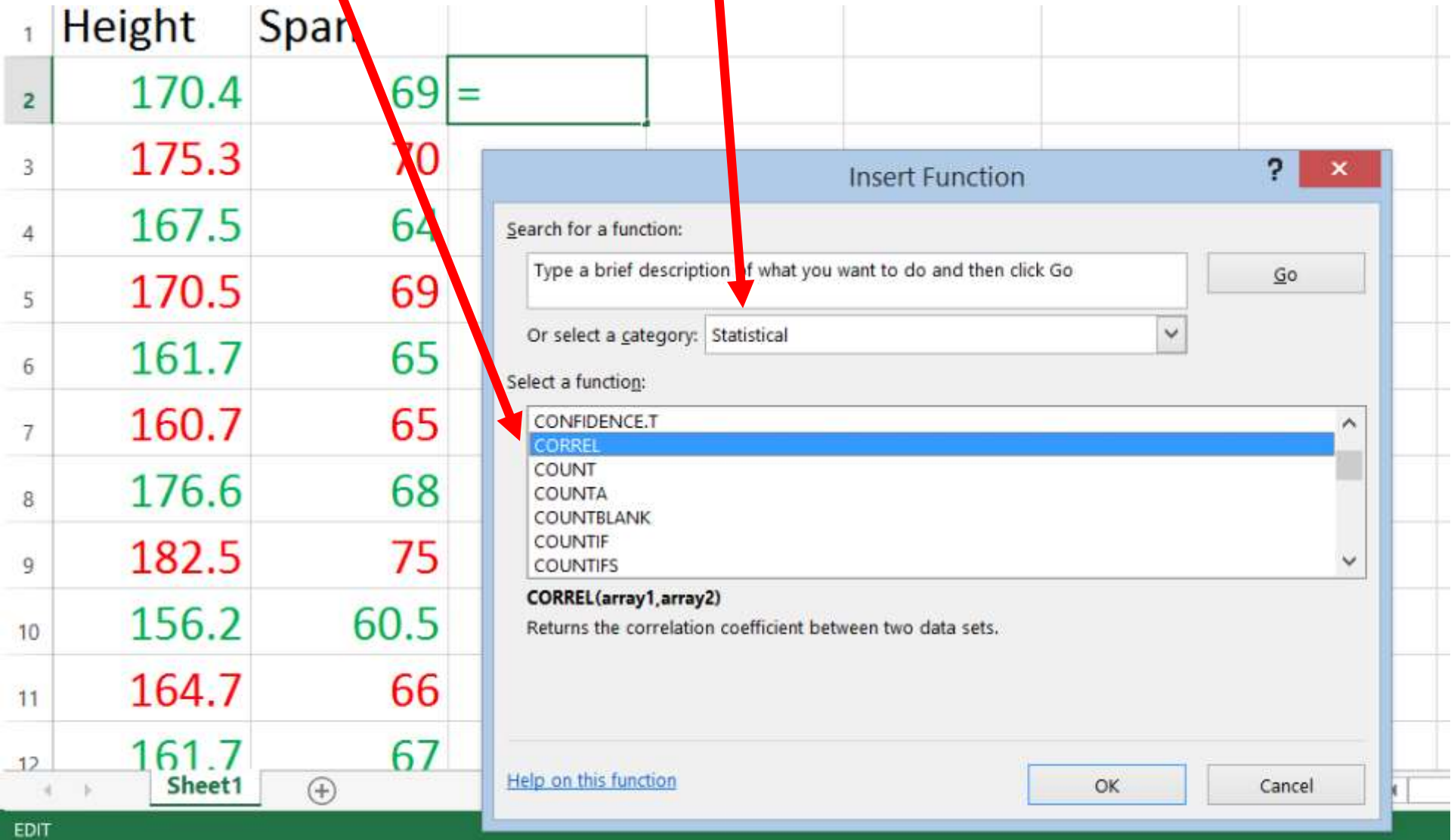
Directions for Calculating the Correlation Coefficient with Excel



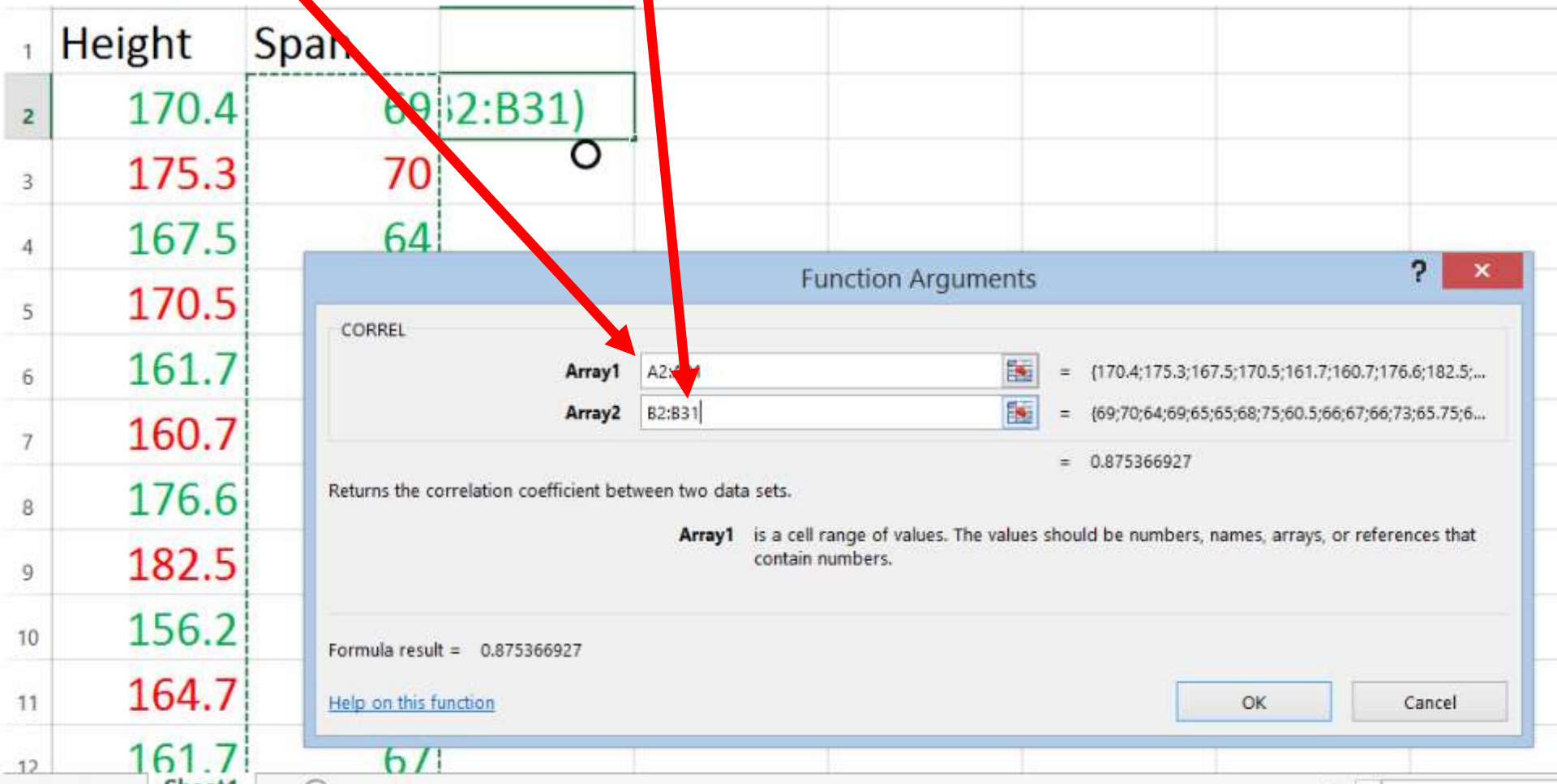
Move the cursor to an empty cell. Select **Insert Function** (f_x) from the **FORMULAS** tab



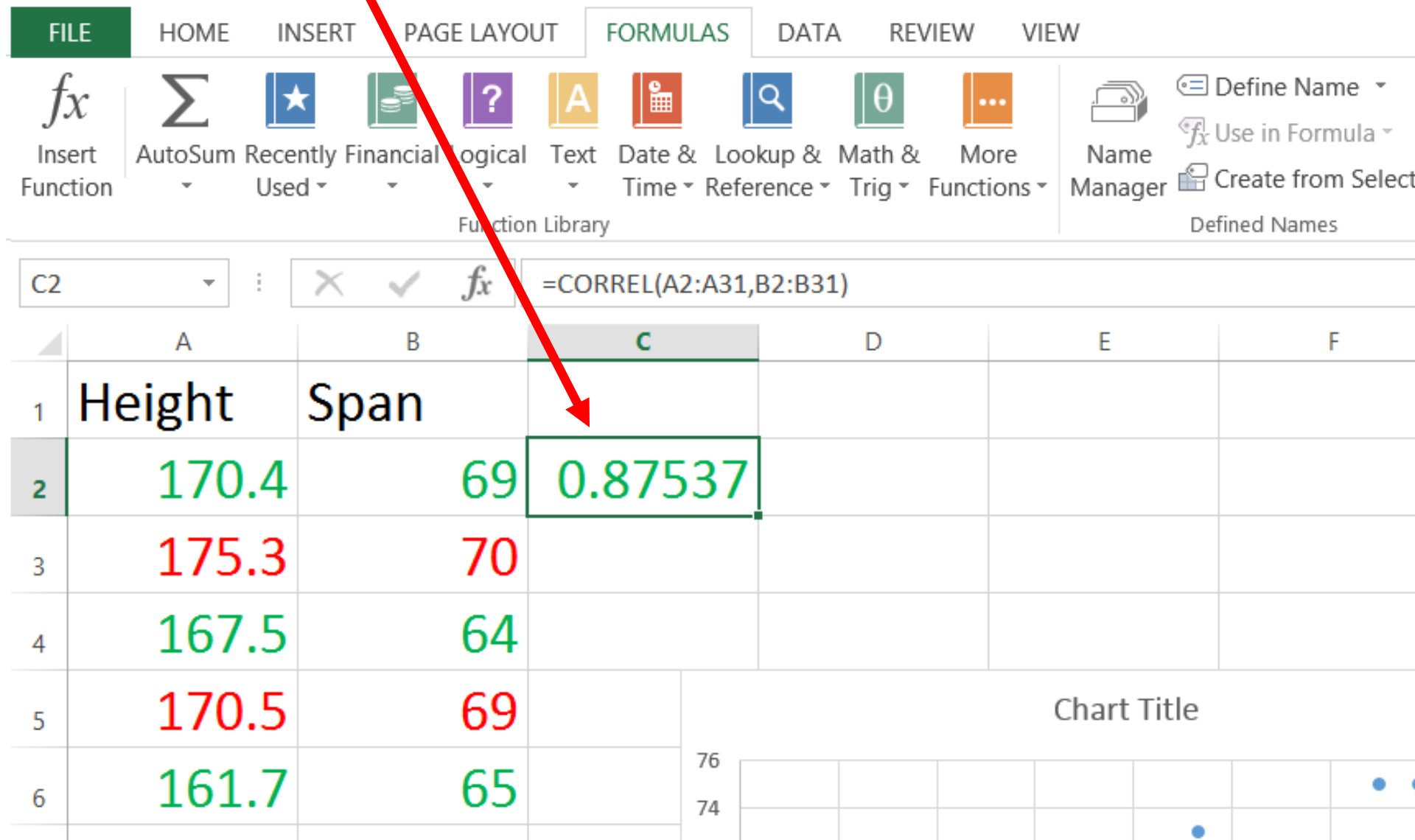
Select **CORREL** from the **Statistical** category. By default, Excel shows the Recently Used category. If you have not used CORREL, you will need to need to change the category to Statistical



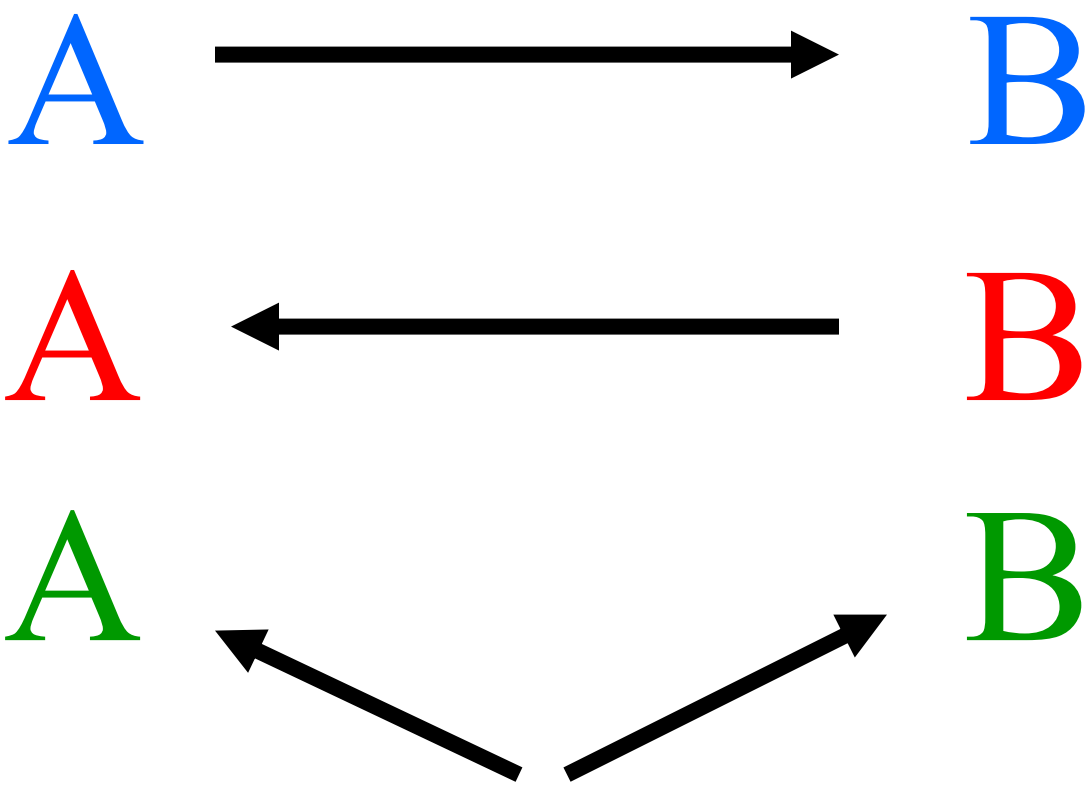
Enter the location for the scores for the first variable in the **Array1 box** and location for the scores for the second variable in the **Array2 box**.



The **correlation coefficient (Pearson's *r*)** will appear in the cell.



Correlation is a necessary, but not sufficient, condition for determining causality.



The following table is adapted from Doll and shows per-capita consumption of cigarettes in various countries in 1930, and the death rates from lung cancer for men in 1950.

Country	Cigarette Consumption	Death per million
Australia	**480**	**180**
Canada	**500**	**150**
Denmark	**380**	**170**
Finland	**1100**	**350**
Great Britain	**1100**	**460**
Holland	**490**	**240**
Iceland	**230**	**60**
Norway	**250**	**90**
Sweden	**300**	**110**
Switzerland	**510**	**250**
USA	**1300**	**200**

Gapminder World Guide

www.gapminder.org/world

(updated March, 2010)

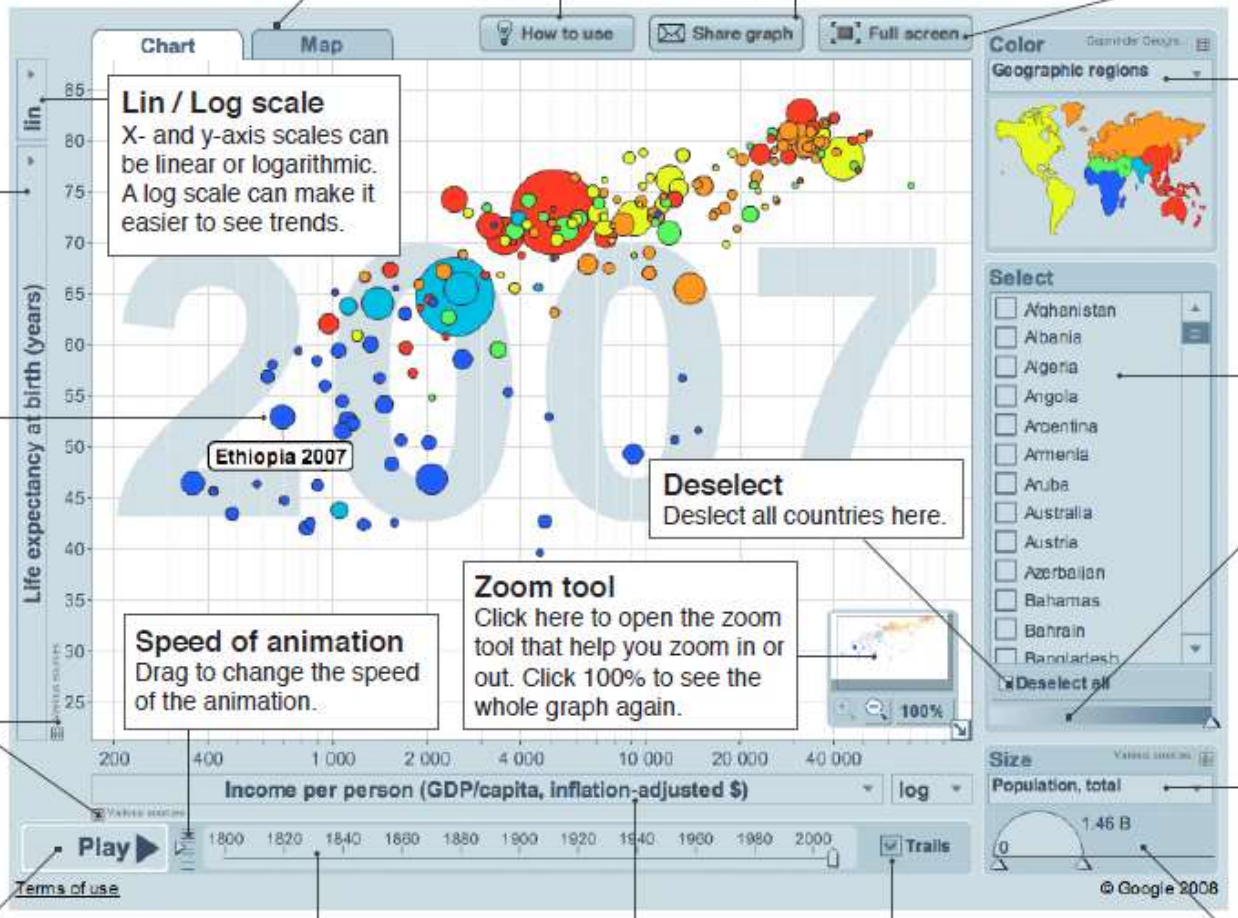


Chart / Map
Select between Chart view and Map view.

How to use
Click to open video tutorial about the interactive functions.

Share graph
Creates a short URL to the graph you've created. Share it with friends.

Full screen
Click to toggle full-screen. Graph will cover the whole screen. ("Lecture mode")

Color
The countries on the graph are color-coded by continent. Click to choose another indicator for color.

Y-axis
Click here to select indicators for the y-axis.

Lin / Log scale
X- and y-axis scales can be linear or logarithmic. A log scale can make it easier to see trends.

Select countries
Click boxes to select specific countries. (You can also click the bubbles.)

Name of country
Hover mouse pointer over bubble to reveal the name.

Deselect
Deslect all countries here.

Opacity
Drag to adjust visibility of non-selected countries.

Zoom tool
Click here to open the zoom tool that help you zoom in or out. Click 100% to see the whole graph again.

Sources
For information about the sources, click the small text next to the axis.

Speed of animation
Drag to change the speed of the animation.

Size indicator
The size of the bubble normally represents the population of the country. Click here to make the size show another indicator.

Play / Stop
Click Play/Stop to control the animation. (How the graph changes over time.)

Time
Click and drag to change year.

X-axis
Click here to select indicators for the x-axis. You can also choose to display **time** on this axis.

Trails
Click Trails to follow a selected country while the animation plays.

Bubble size
Change the size of the bubbles here.

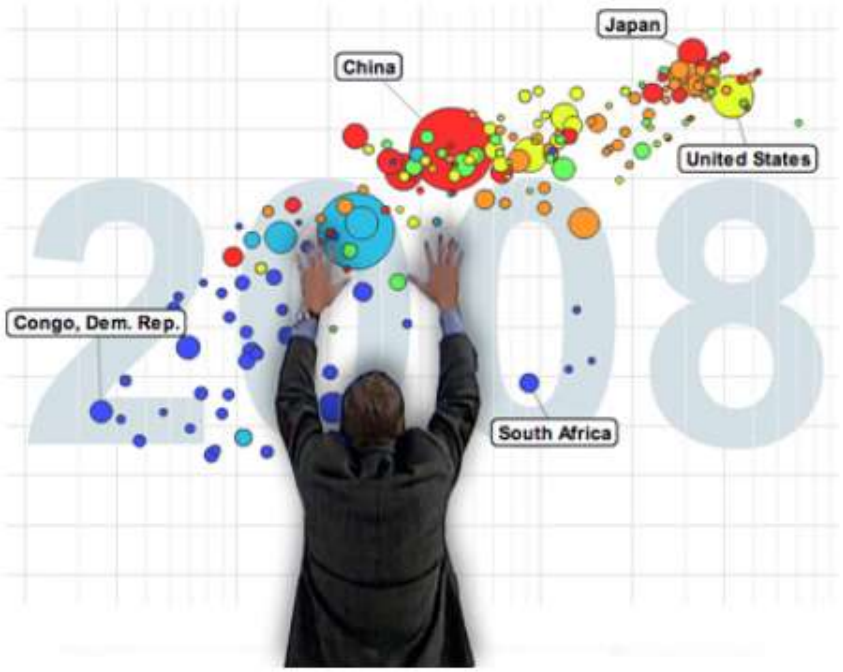
Adapted from an original idea by wwww.juicygeography.co.uk

http://www.gapminder.org

GAPMINDER

a fact-based worldview

GAPMINDER WORLD | VIDEOS | DOWNLOADS | TEACH | IGNORANCE | DATA



Refresh your world

Pour the sparkling fresh numbers into your eyes and upgrade your worldview.

EXAMPLES:

- Wealth & Health of Nations
- CO_2 emissions since 1820
- Africa is not a country!
- Is child mortality falling?
- Where is HIV decreasing?

BUBBLE CHART

http://www.cetla.howard.edu/teaching_resources/data.html

CETLA | Center for Excellen... | Mozilla Firefox Start Page

www.cetla.howard.edu/teaching_resources/data.html

al data files to teach stude

Center for Excellence in Teaching, Learning, and Assessment

HU HOME | CETLA HOME | SITE MAP

Teaching Resources

- Blackboard Resource Center
- Software Resource Center
- Multimedia Resources
- Copyright
- Scholarship of T& L
- Distance Learning
- Teaching Evaluation
- Entrepreneurship
- Curriculum Design
- Teaching with Digital Data
- Accessibility

TEACHING WITH DIGITAL DATA AND ARCHIVES

UNDER CONSTRUCTION

Advances in information technology have opened up new opportunities for students to use data and archives to answer real-world questions in their disciplines. On-line databases and web-based tools now allow undergraduates and even younger students to access and manipulate authentic data and artifacts without having to master sophisticated or time-consuming methods of data collection,

Firefox automatically sends some data to Mozilla so that we can improve your experience. Choose What I Share

How Research-Friendly Is Your Classroom?

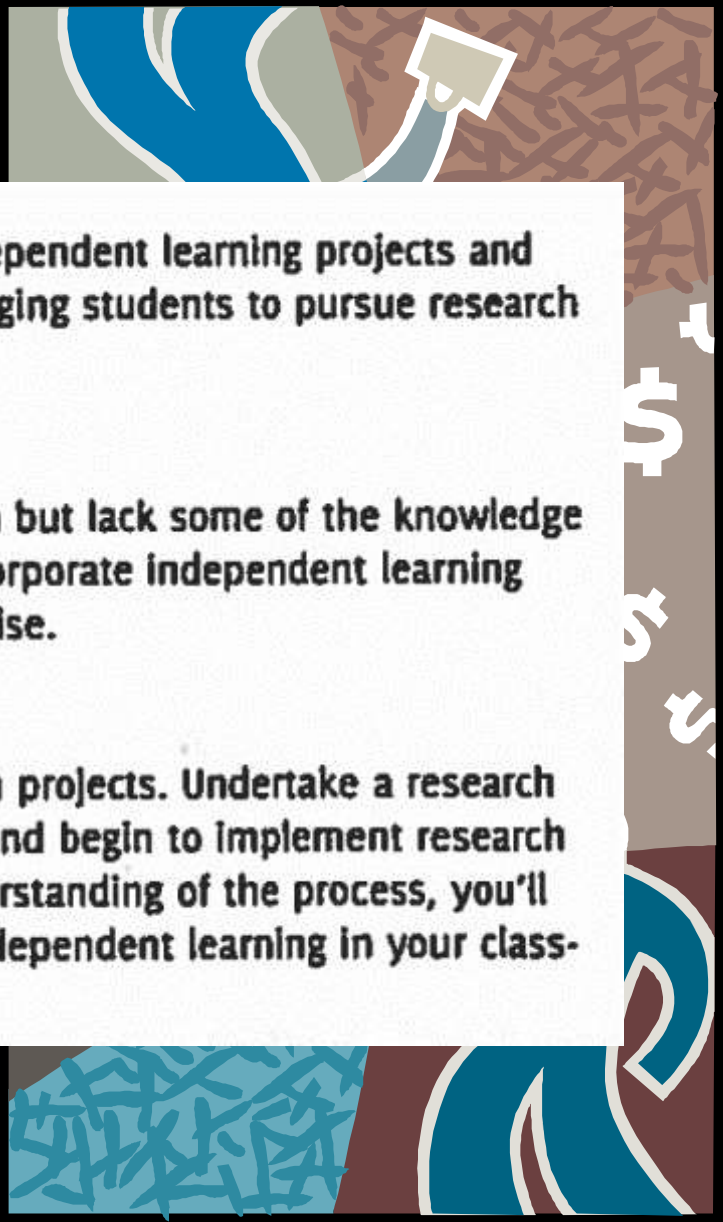
Read each of the following statements and consider how often it is true in your classroom (*usually*—5, *sometimes*—3, or *rarely*—1). Circle the appropriate number for each question.

I recognize emerging potential in my students.	5	3	1
I facilitate opportunities for independent work.	5	3	1
I encourage students to pursue areas of interest.	5	3	1
I encourage students to achieve significant goals.	5	3	1
I withhold judgment, allowing students to solve problems.	5	3	1
I permit students to work ahead of the group.	5	3	1
Within a unit, my students pursue topics of interest in depth.	5	3	1
I work directly with students planning independent learning.	5	3	1
I accept and promote the need for self-directed learning.	5	3	1
I facilitate the development of responsibility and autonomy.	5	3	1
I expect my students to contribute new knowledge.	5	3	1
I generate rich questions that encourage critical thinking.	5	3	1

46–60: Highly Research-Friendly
You're already encouraging students to undertake independent learning projects and have the skills to facilitate such projects. Keep challenging students to pursue research projects.

27–45: Somewhat Research-Friendly
You may recognize the importance of student research but lack some of the knowledge and skills for facilitating the process. Intentionally incorporate independent learning projects for your students—with practice comes expertise.

12–26: Not Consistently Research-Friendly
You are not comfortable facilitating individual research projects. Undertake a research project of your own to learn more about the process and begin to implement research skill development activities. As you deepen your understanding of the process, you'll develop the skills necessary to effectively facilitate independent learning in your classroom.



Descriptive
RESEARCH

How are things now?

* Describes situations or events
* Does not seek or explain relationships, make predictions, or get at meanings or implications

PROBABLY IS THE EASIEST TYPE OF RESEARCH

What are the genetic frequencies of different eye colors?
How are females portrayed in books on the New York Times Bestseller's List?
Did the impeachment vote follow along political lines?
In which grade do the largest number of students buy lunch?
Which grade throws away the most trash in our school?
Do freshmen and seniors like the same TV shows? music? movies?
Do meal worms prefer light or dark places?

Observation

"look like a scientist looks"

*** Attend to * Record * Analyze**

Events to be studied are ***currently occurring*** *and* ***accessible***

* Quantitative

Frequency Observations

Easiest and most appropriate for young children

USUALLY INVOLVES TALLIES AND MEASUREMENTS

* Qualitative

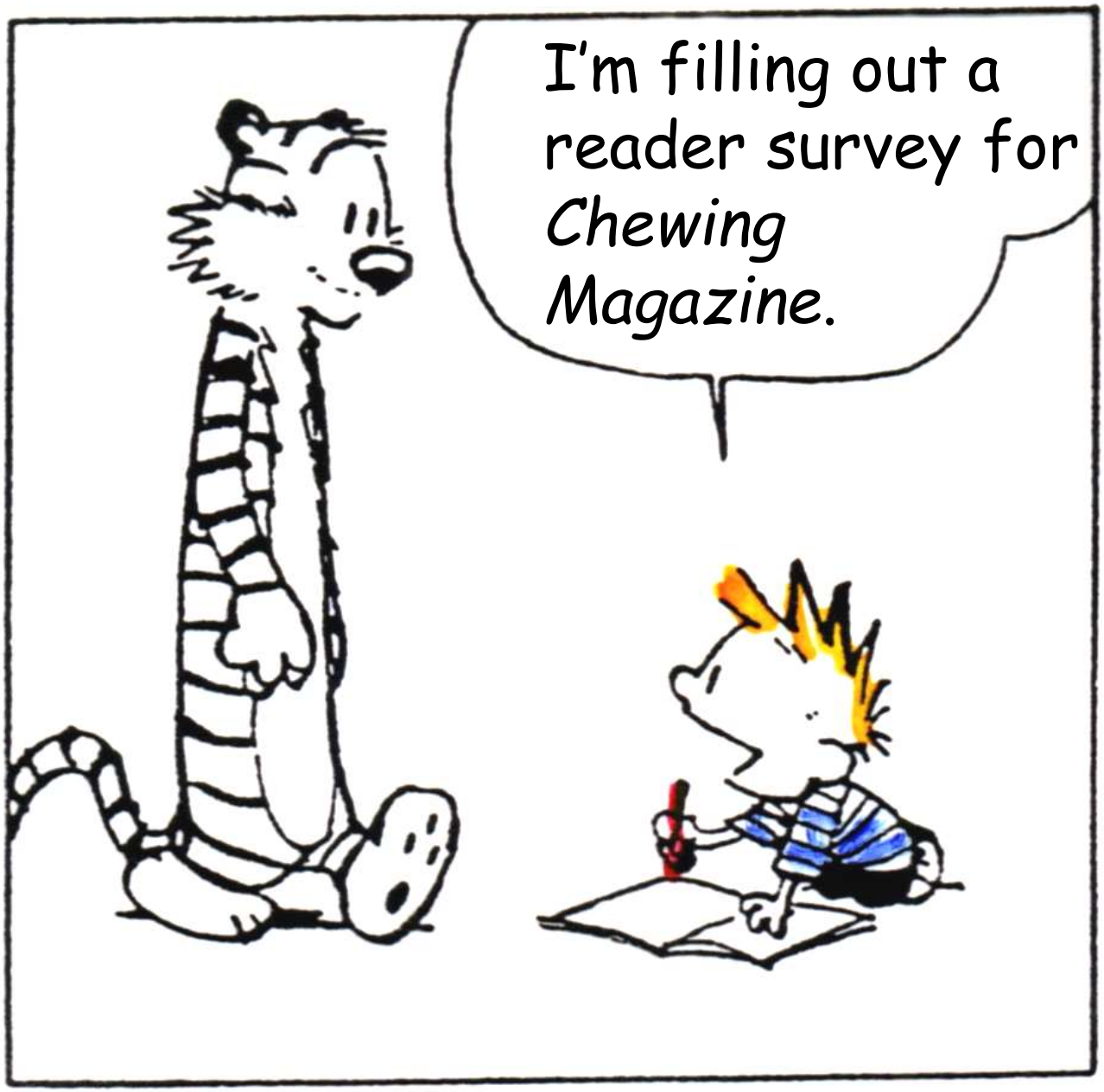
Descriptive Observations

Often used in situations in which the variables or questions are less clear

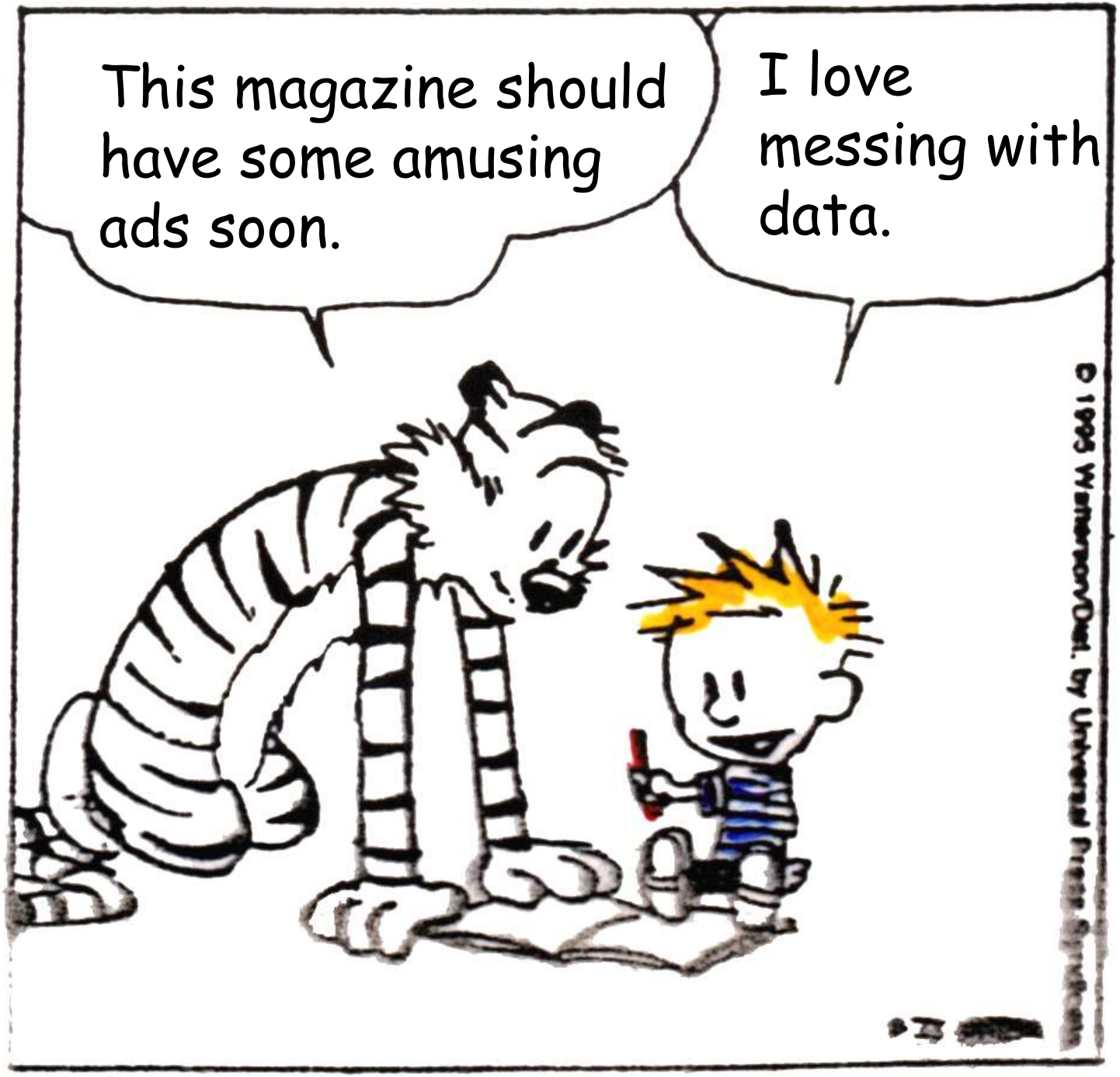
INVOLVES NEAT, ACCURATE, UNBIASED NOTES with TRIANGULATION

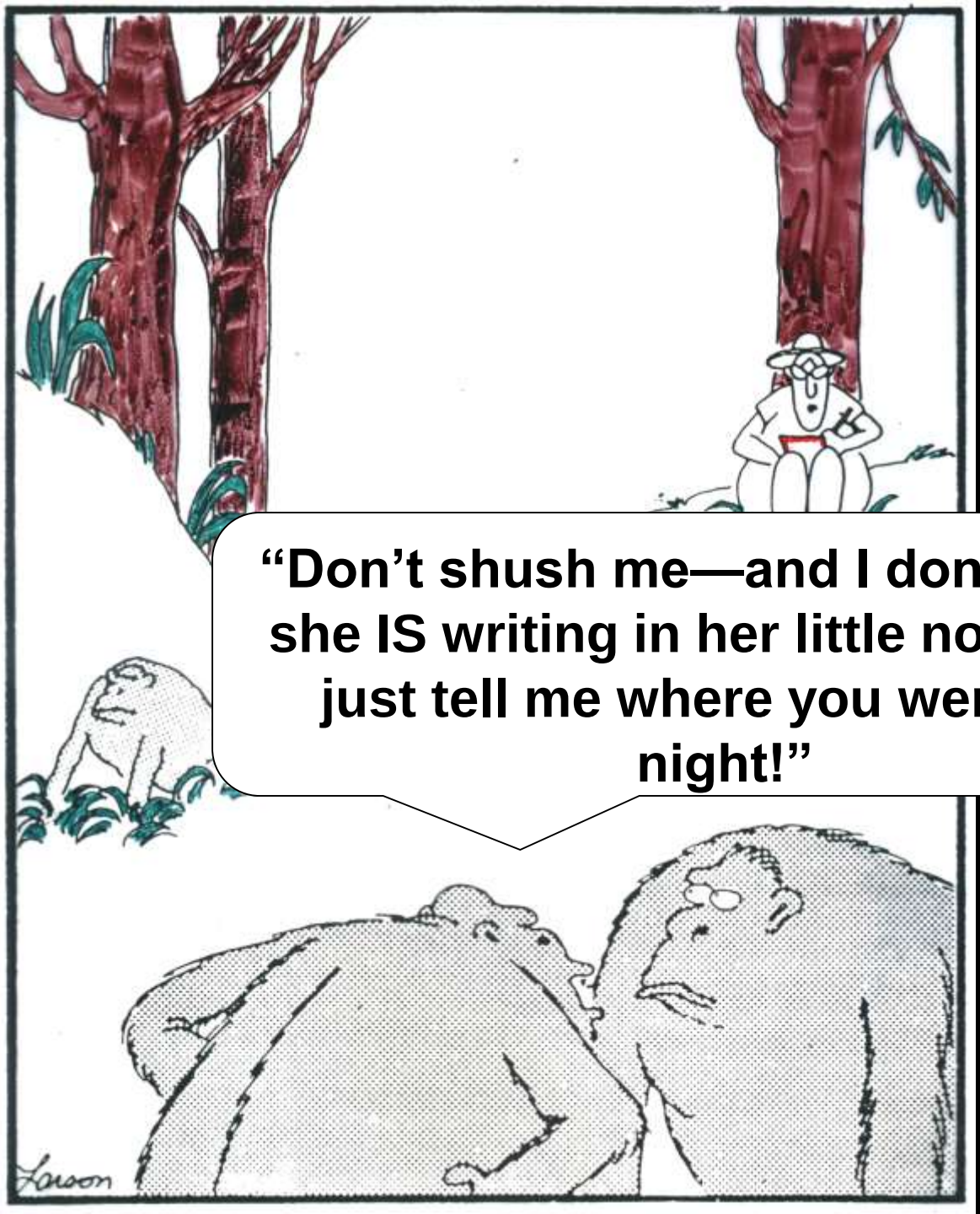
Starko, A. J., & Schack, G. D. (1992). *Looking for data in all the right places* . Mansfield Center, CT: Creative Learning Press.

CALVIN AND HOBBES/ Bill Watterson



See, they asked how much money I spend on gum each week, so I wrote, "$500." For my age, I put "43," and when they asked what my favorite flavor is, I wrote "Garlic/Curry."


This magazine should have some amusing ads soon.
I love messing with data.
© 1995 Watterson/Dist. by Universal Press Syndicate


“Don’t shush me—and I don’t care if she IS writing in her little notebook; just tell me where you were last night!”
Larson

1. E O T
2. T O E
3. E T O
4. O T E
5. T E O
6. O E T

Plickers

Cards Help SIGN IN SIGN UP

https://www.plickers.com

Plickers is a powerfully simple tool that lets teachers collect real-time formative assessment data without the need for student devices

Download on the App Store

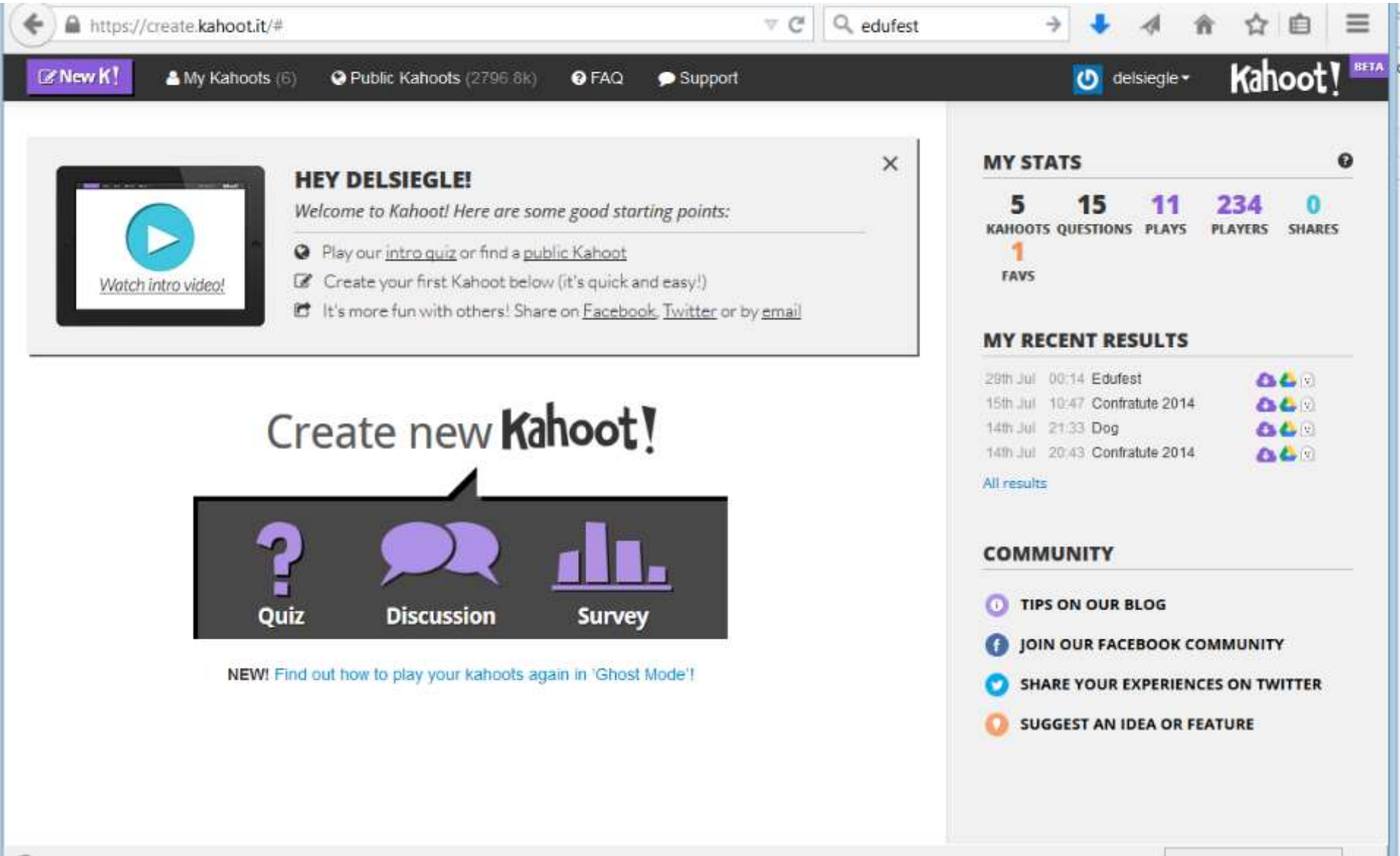
ANDROID APP ON Google play

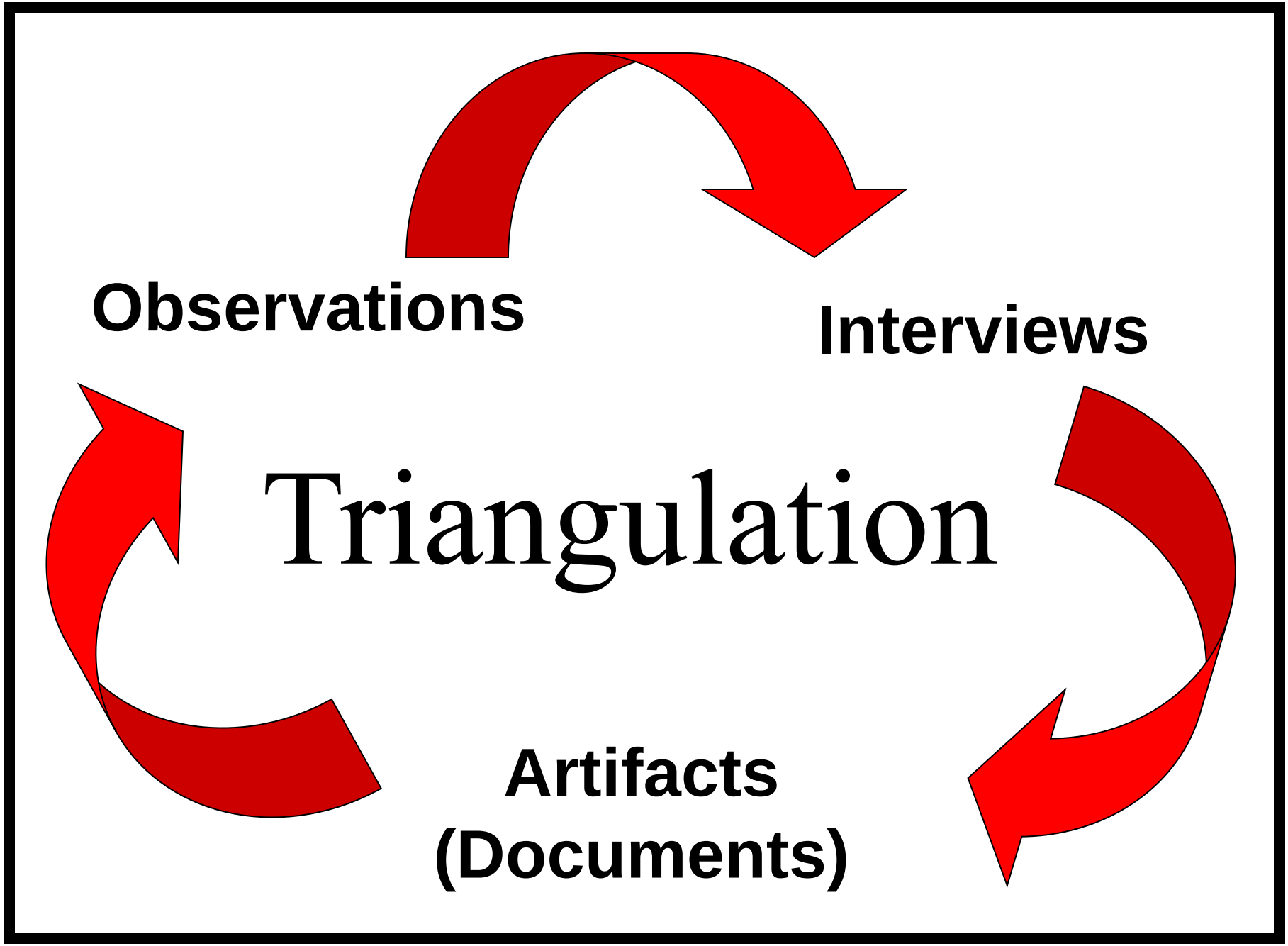
Tailor instruction with instant feedback

Use Plickers for quick checks for understanding to know whether your students are understanding big concepts and mastering key skills.

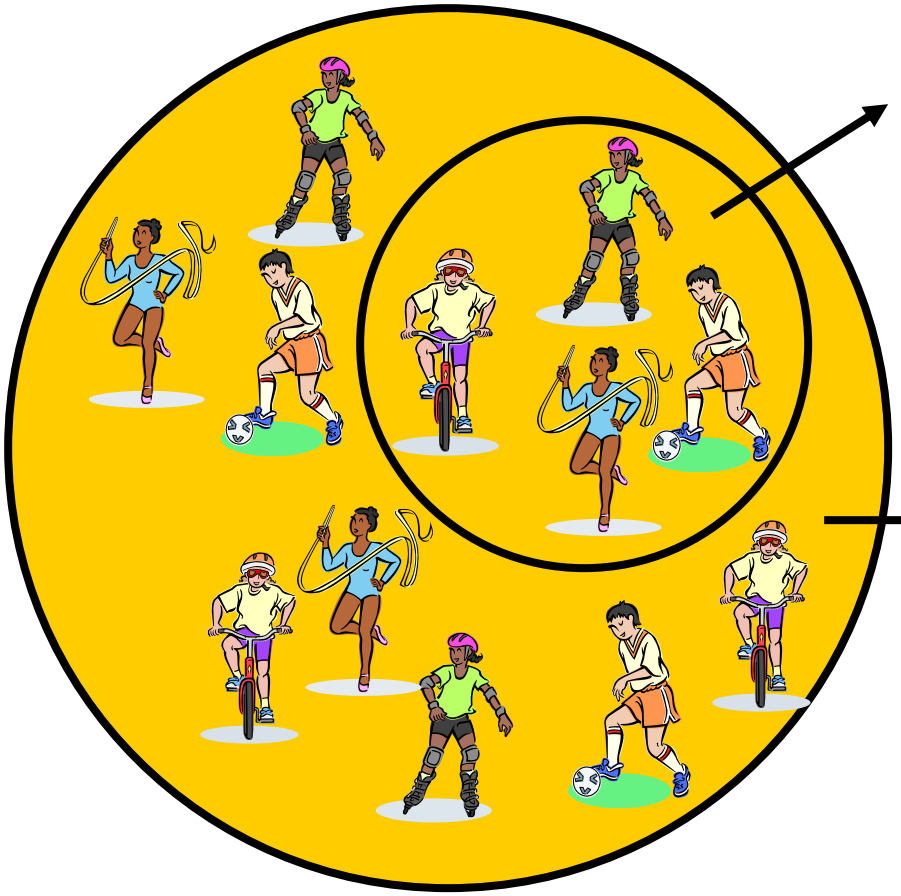
"Seeing responses like these on @plickers quizzes let[s] me know I can

https://create.kahoot.it




Observations
Interviews
Triangulation
Artifacts
(Documents)

Samples and Populations



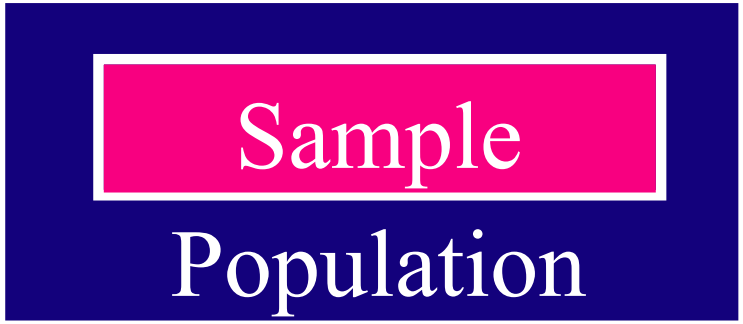
Sample

Subset of people used to conduct studies who represent the population

Population

Groups consisting of all people to whom researchers wish to apply their findings

CHOOSING A SAMPLE



RANDOM SAMPLE

Each subject in the population has an equal chance of being selected

STRATIFIED SAMPLE

A representative number of subjects from various subgroups

SYSTEMATIC SELECTION

Selection of every nth subject in the population

TWO-STAGE CLUSTER SAMPLING

Samples chosen from pre-existing groups

Types of Survey Questions

- **Open-ended**

  What is your favorite color?

- **Closed or Fixed Response**

  Yes/No or True/False Questions

  Do you like the color yellow? Yes No

  Multiple Choice Questions

  My favorite color is

  a. red
  b. blue
  c. yellow

  Rating Scales

  Rate the following colors from 1 to 5

Yellow	1	2	3	4	5
	Dislike a lot		Do not care		Like a lot

  Ranking Questions

  Rank in order your preference for each color, with 1 being your favorite.

  _____ a. red
  _____ b. blue
  _____ c. yellow

survey

Pitfalls to **AVOID**

1. Beware of **jargon**
2. Watch out for **"fuzzy" words**
3. Do not ask more than **one question** at a time
4. Avoid loaded or **leading questions**
5. Make sure that fixed-response questions have a place for **every possible answer**
6. Use filter questions to **guide subjects** if all questions may not be answered
7. **Minimize** the amount of **writing** the respondents have to do
8. Put questions in a **logical order**
9. Begin with **clear directions**
10. **Field test** the survey

Slavin, A. J., & Schaub, G. D. (1992) *Looking for data in all the right places* . Mansfield Center, CT: Creative Learning Press.

Content Analysis

R E S E A R C H

INDIRECT STUDY OF HUMAN BEHAVIOR THROUGH THEIR COMMUNICATIONS

How frequently are “dogs” and “trucks” mentioned in top country songs?
How are females portrayed in children’s books?
What are popular weekend adolescent activities based on Facebook posts?

STEPS

1. Develop a research question
2. Create a sampling plan
3. Briefly review material in sample
4. Set unit of analysis and define terms
5. Code the content
6. Summarize findings

Historical
RESEARCH
How did things used to be?

INVOLVES RECONSTRUCTING THE PAST BY COLLECTING, EVALUATING, VERIFYING, AND SYNTHESIZING EVIDENCE

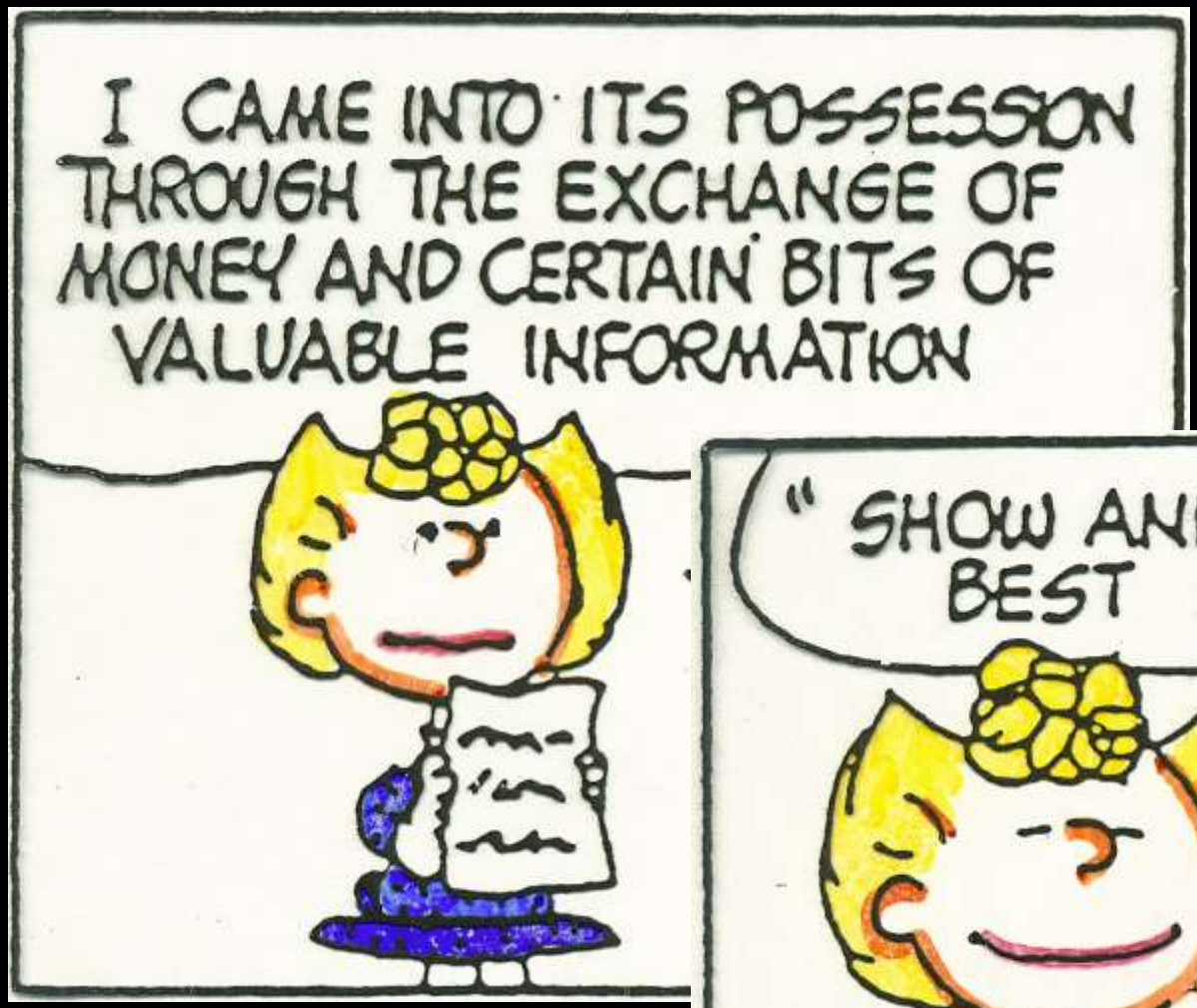
What was Brookside School like 50 years ago?
What stores were on Main Street 25 years ago?
How is second grade today different than second grade when our parents were in school?

Historical
R E S E A R C H

* Primary sources are those in which the author was a direct observer of the recorded event
* Secondary sources are those in which the author is reporting observations of others

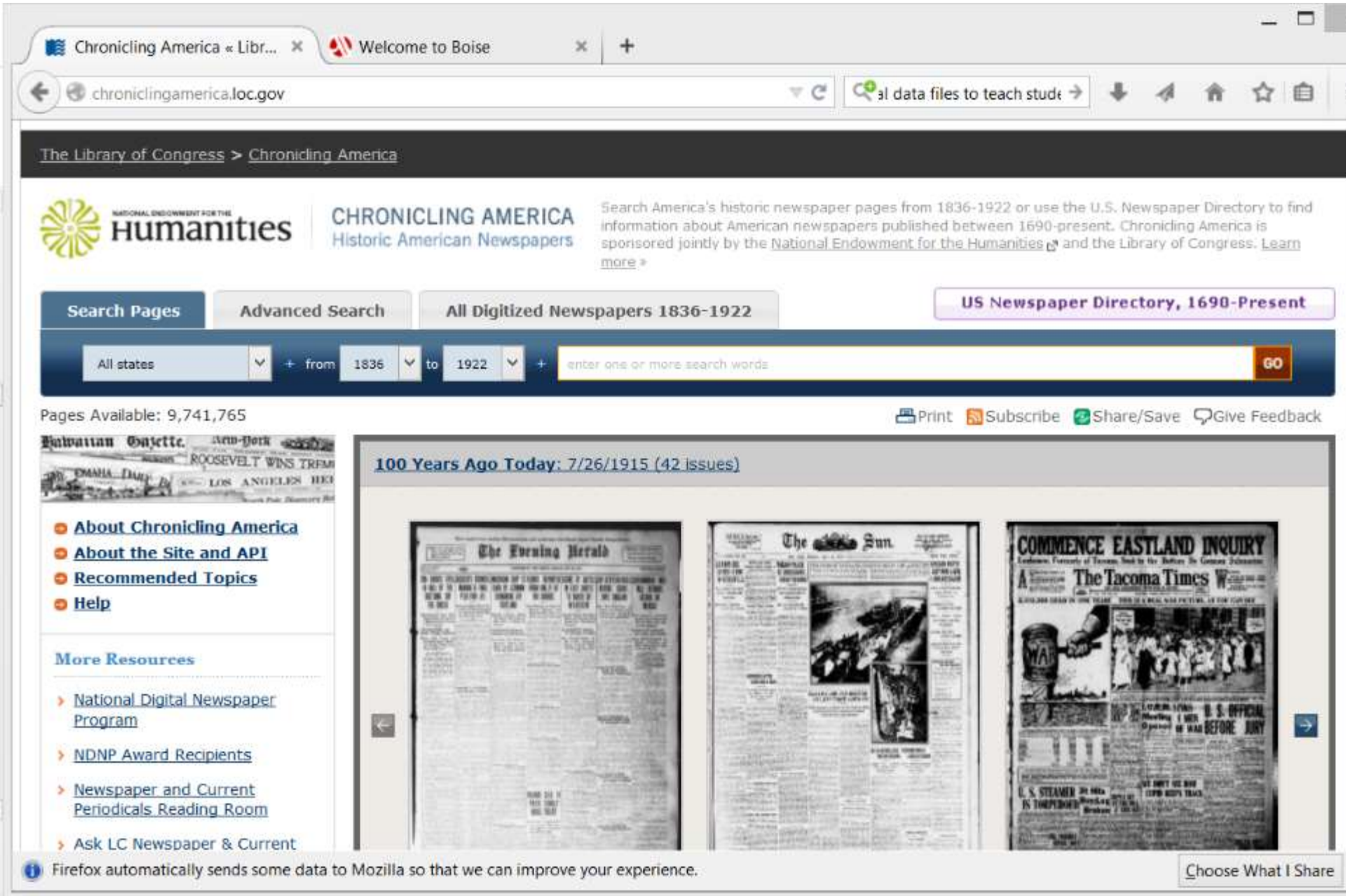
* External criticism refers to the genuineness of the document
* Internal criticism refers to whether the content of the document is accurate

I HAVE HERE IN MY HANDS AN ORIGINAL DOCUMENT
THIS WAS WRITTEN BY AN ACTUAL CAVE MAN, AND WAS DISCOVERED ONLY RECENTLY BY A FARMER IN IOWA..


I CAME INTO ITS POSSESSION THROUGH THE EXCHANGE OF MONEY AND CERTAIN BITS OF VALUABLE INFORMATION

" SHOW AND LIE " IS MY BEST SUBJECT
SCHULZ

http://chroniclingamerica.loc.gov



Experimental

RESEARCH

What would happen if...?

Random Assignment of Subjects to Treatment (Experimental) and Control Groups

CONSISTS OF A TREATMENT WHICH INVOLVES THE MANIPULATION OF VARIABLES

What are the effects of cleaning products on different types of bacteria?

Does the order of names on a ballot influence the selection of candidates in an election?

Is reading comprehension influenced by listening to different types of music?

Do beans grow better in a hot, medium, or cold place?

Do students work more accurately in a quiet or a noisy room?

What liquid is most effective in "watering" plants?

Group Comparisons

True Experiment

RANDOM ASSIGNMENT OF INDIVIDUALS

Quasi-Experiment

ASSIGNMENT OF GROUPS

Causal-Comparison (Ex Post Facto)

GROUPS ARE ALREADY FORMED

Two Common Experimental Designs

Posttest Only Control Design

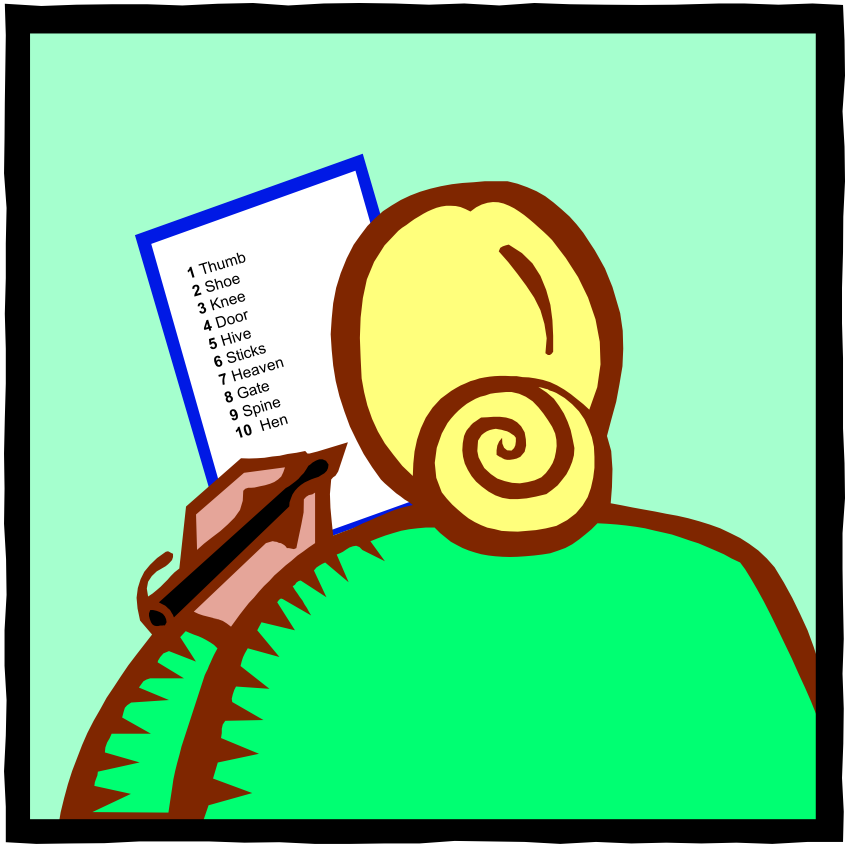
Experimental Group Treatment ----> Posttest
Control Group Posttest

Pretest – Posttest Control Design

Experimental Group Pretest ----> Treatment ----> Posttest
Control Group Pretest----------> Posttest

"This Old Man"

1	Thumb
2	Shoe
3	Knee
4	Door
5	Hive
6	Sticks
7	Heaven
8	Gate
9	Spine
10	Hen



Key Words to Unlock Research Skills

* Hypothesis
* Samples and Populations
* Random Assignment
* Control and Treatment Groups
* Independent, Dependent, and Confounding Variables

Hypothesis

…a prediction of the study's outcomes

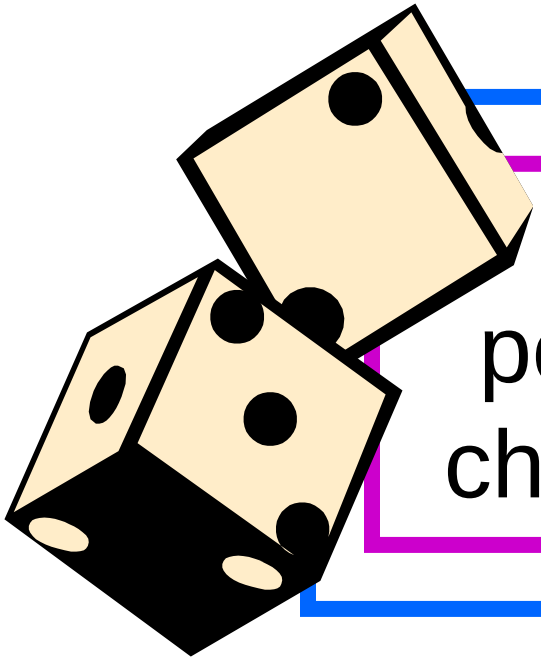
Control Group

Group in a research study that is treated “as usual.”

Treatment (Experimental) Group

The group in a research study that receives the treatment (or method) of special interest in the study.

Random Assignment



Each subject in the population has an equal chance of being selected.

Independent Variables

…a variable that affects the outcome of a study

Dependent Variables

…the variable measured at the end of the study to see if the groups have significantly different values.

Confounding Variables

…a variable other than those the researcher is investigating that could account for the outcome of a study.

Measures *of* Central Tendency

There are lots of ways to be average.

Mean

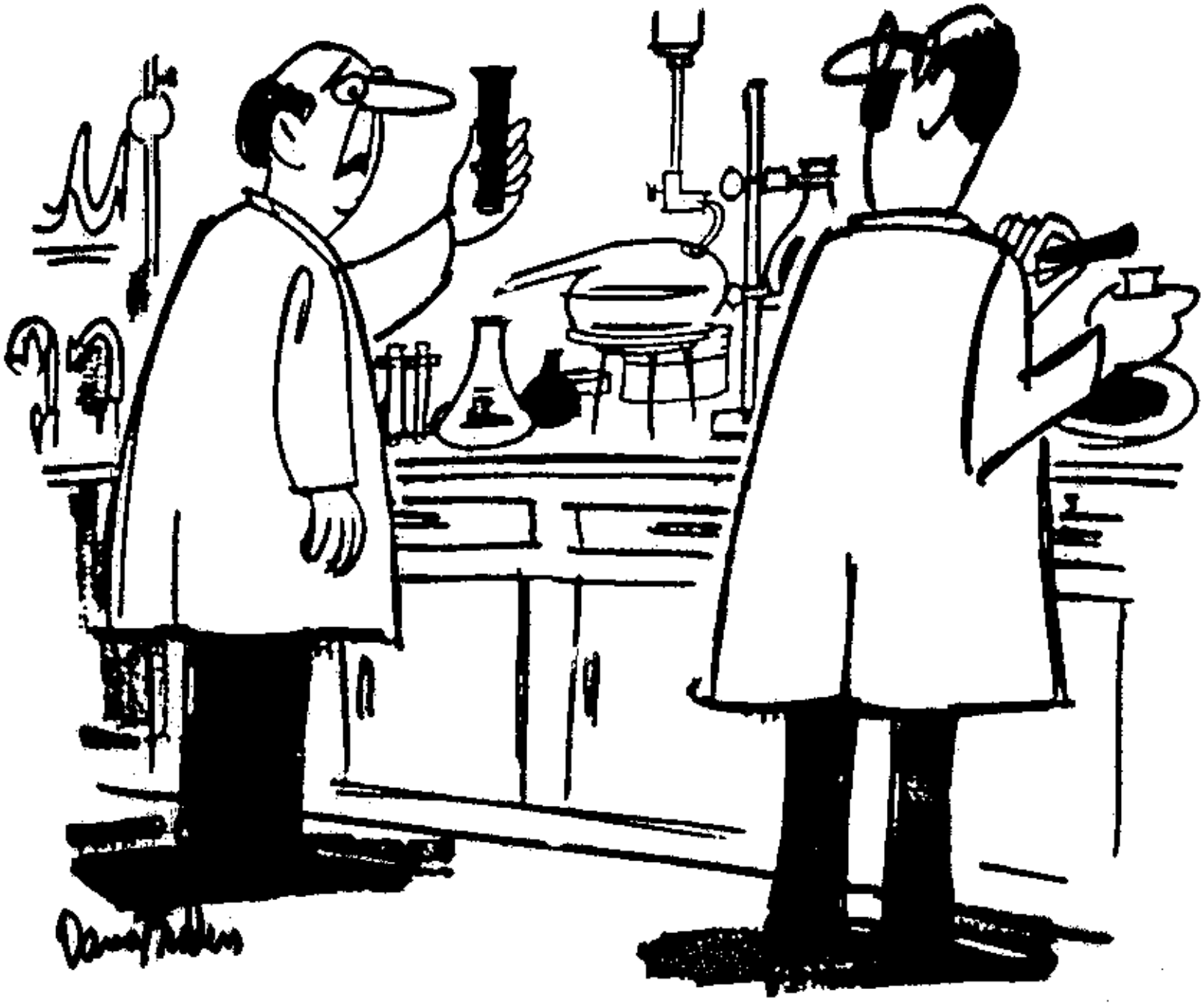
Add all the scores and divide by the number of scores

Mode

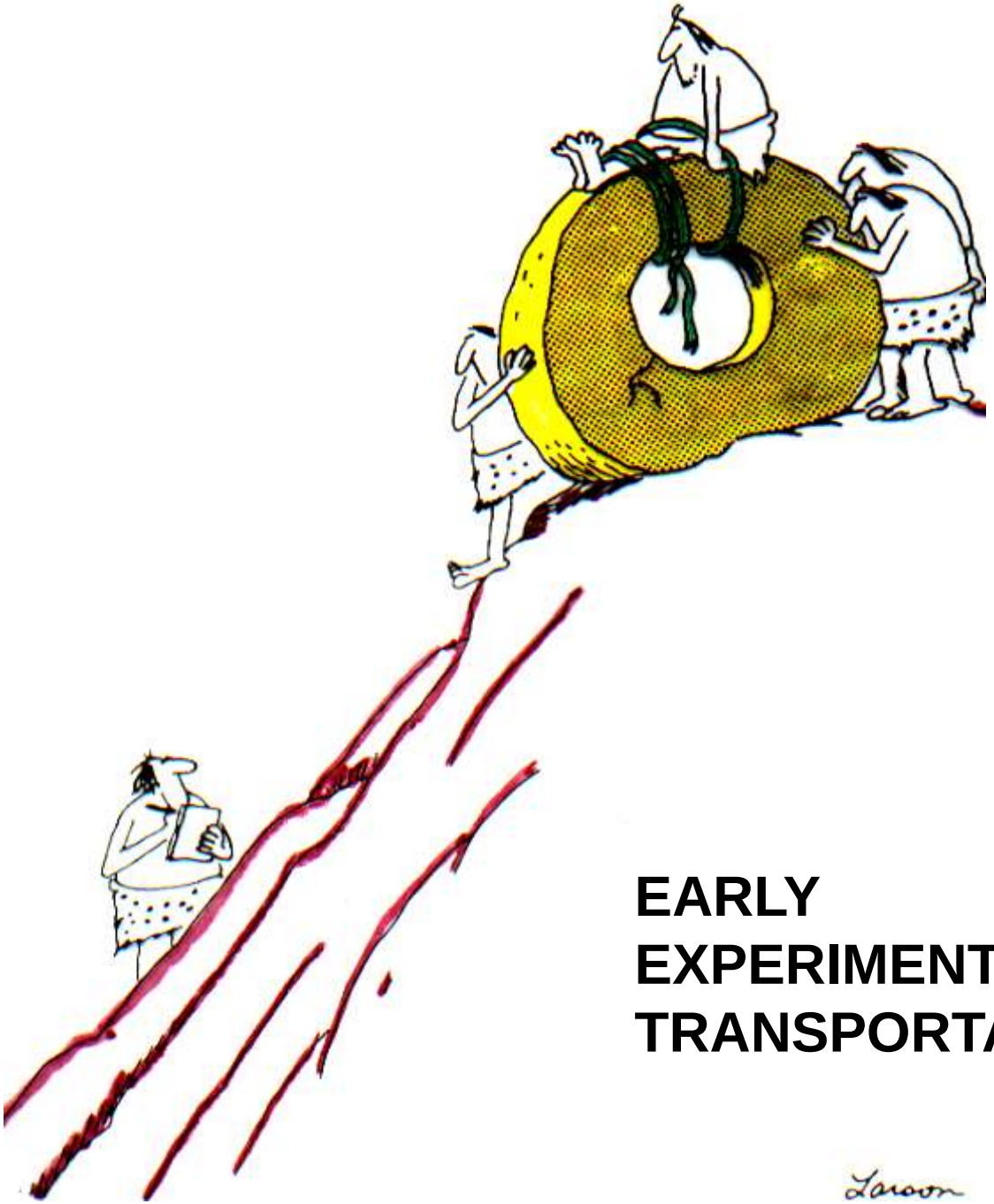
The most frequently occurring score

Median

The middle score



“What’s the opposite of “Eureka!’?”



EARLY EXPERIMENTS IN TRANSPORTATION

Inferential Statistics

- **Chi-Square**

  …enables us to determine if differences between what results we may expect in a survey vary significantly from those we actually obtain

- ***t* test**

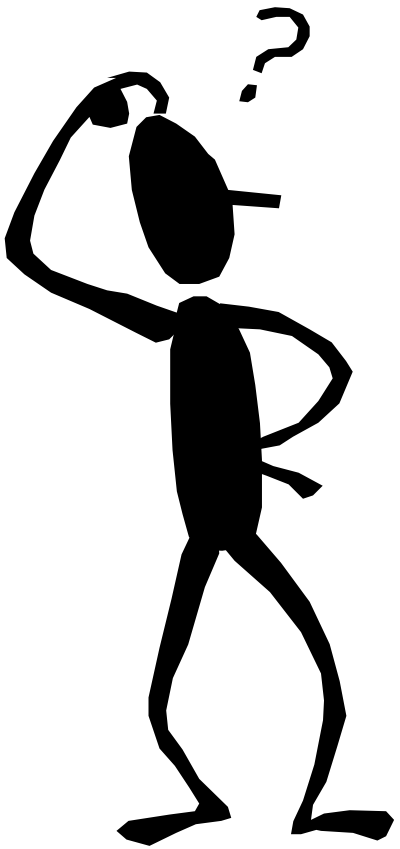
  …enables us to decide if the difference between the average scores of two groups is significant

- **Correlation**

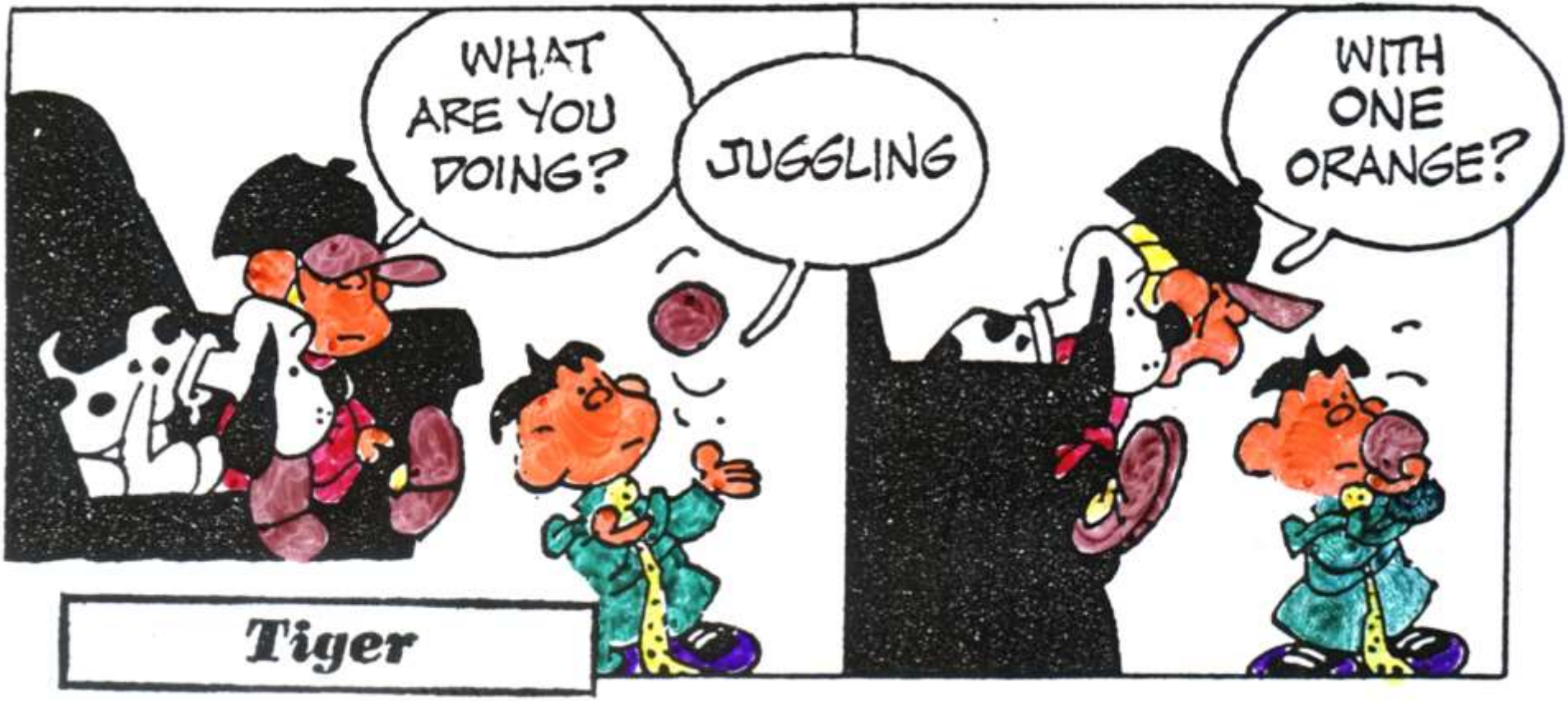
  …enables us to see if and how much two variable are related

What defines an

authentic problem ?



- **Does not have a predetermined answer**
- **Is personally relevant to the investigator**
- **Can be explored through the methodologies of one or more disciplines**


WHAT ARE YOU DOING?
JUGGLING
WITH ONE ORANGE?
Tiger

YOU GOTTA START SOMEPLACE
4-19
BUD BLAKE
© King Features Syndicate, Inc., 1973. World rights reserved.

Verifying the Accuracy of Information

Name: _____ Date: _____
Research Topic: _____ Source: _____
Key Information: _____

Evaluating the Source:

1. Who sponsors, promotes, publishes, or provides this information?

   _____

2. What indications are there that this is a reputable source?

   _____

3. What is the professional affiliation or reputation of this source?

   _____

4. What qualifications and requirements had to be met for this resource to provide this information?

   _____

Evaluating Information Accuracy:

1. What possible conflicts of interest or a potential for bias exist?

   _____

2. Is the information current? ____ Yes ____ No

3. Does the information align with what I already know to be true about this topic? ____ Yes ____ Somewhat ____ No

4. Is this a reputable source? ____ Yes ____ No

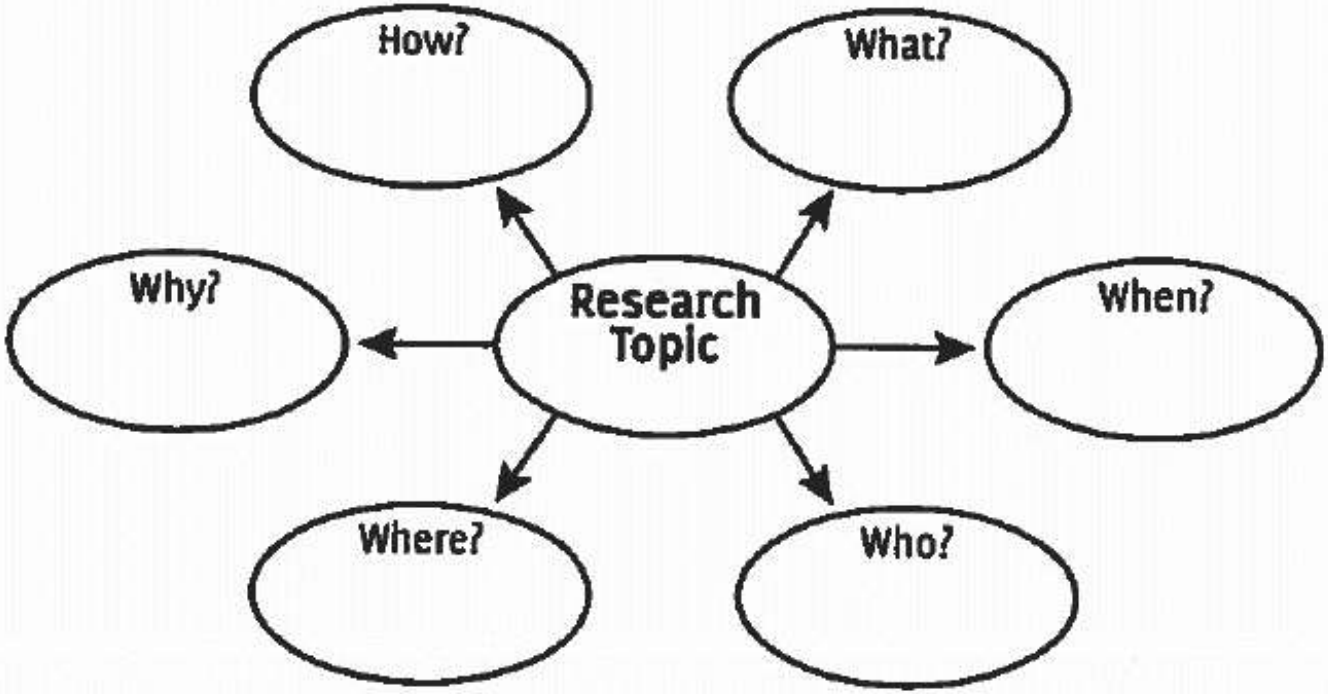
5. Does the information contain errors? ____ Yes ____ No

6. Can I find the same information in at least three places?
   Verification 1: _____
   Verification 2: _____
   Verification 3: _____

Problem Generator Web

Use the problem generator to web possible questions about your research topic. Consider how questions that examine ways to improve the topic and cause/effect relationships; what questions that help us understand more about the topic; why questions that seek to explain origins, reasons, and theories; when questions that attempt to chronologically order key events to better understand a topic; where questions that identify locations, origins, and sources and can help you identify possible resources for your project; and who questions that identify key figures in your area of study and may guide you to people in your community who can assist you.

Once you have questions in each area, you're ready to begin defining your research problem and/or research questions.



1. List Alternatives
2. Develop Criteria
3. Make a Decision by Comparing Criteria with Alternatives
4. Provide Reasons for the Decision

Decision MAKING GRID

Alternatives

Criteria

	1 pt	2 pts	3 pts	4 pts	5 pts	6 pts	Total

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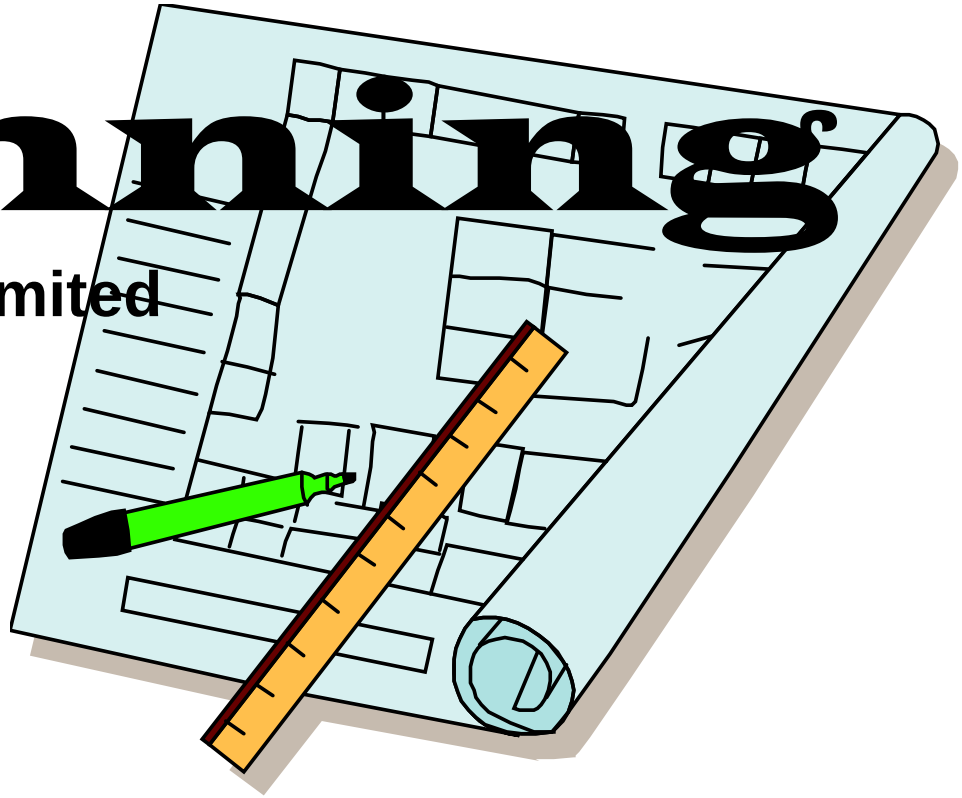
Planning

Based on Talents Unlimited



1. **What is the Project?**
2. **What Material and Equipment do I Need?**
3. **What are the Steps Involved?**
4. **What Problems Might I Encounter**

Management Plan

for Individual and Small Group Investigations

Designed by Del Siegle
Based on the Talents Unlimited Planning Talent

Estimated Beginning Date _____ Ending Date _____

Progress Reports with homeroom teacher
Due on the following dates 1. _____ 2. _____ 3. _____ 4. _____

Progress Reports with resource room teacher
due on the following dates 1. _____ 2. _____ 3. _____ 4. _____

1. My project is _____

2. These are the resources I will need: _____

3. These are the steps-in-order I will need to take to complete my project:

4. These are some problems I might encounter as I attempt my project:

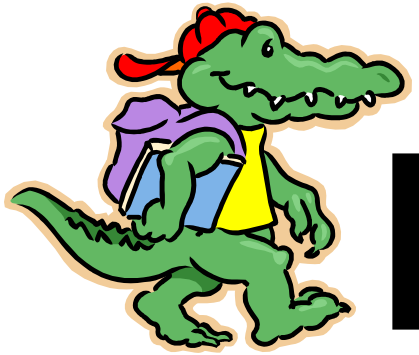
5. These are some possible solutions to those problems: _____

Intended Audiences: With whom will you share your product?

Intended Outcome: What will the final product/service be?

Compacting will occur in _____

Student's Signature	Parent's Signature	Homeroom Teacher	Resource Room Teacher



MY Plan

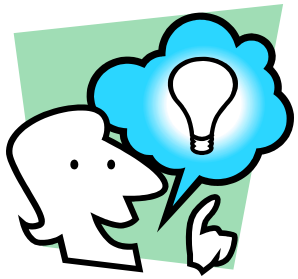
Starting Date: _____

Ending Date: _____

Student's Signature: _____

Parent's Signature: _____

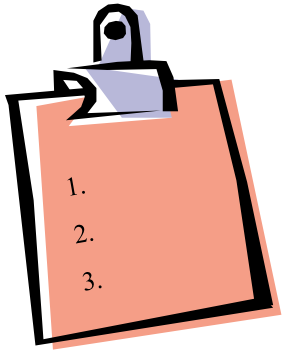
Teacher's Signature: _____



What I want to do…

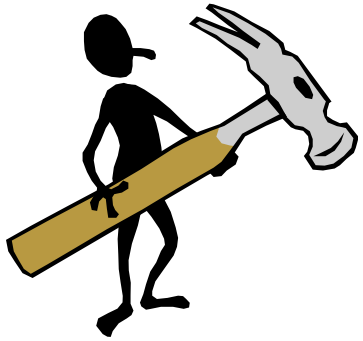
(Product or Service)

What I will need…



The steps I will take…

What might go wrong…



How I can fix these problems…

c. Del Siegle, 2001 – This form may be reproduced for classroom use.

Accomplishment PLAN

Name _____ Date _____

School _____ Homeroom _____

My Activities:

	Activity	Time Needed	Finished
1.			
2.			
3.			
4.			
5.			

Evaluation:

_____ I completed my goals.

_____ I used my planned time wisely.

_____ I did my best thinking.

• Something new I learned today was _____

_____

• I felt _____ when _____

Next time I plan to _____

_____

Next time I need the following materials: _____

_____

_____

Parent's Signature

_____

Here's what I THINK

A Project Self-Evaluation by: _____

Del Siegle, 1998
Adapted from the Student Product Self-Evaluation Form by Sally M. Reis

1. Describe your feelings about working on your project. Did you enjoy working on it?

2. What was the hardest part about working on your project?

3. List some of the things you learned while working on your project.

4. Were you satisfied with your final project?

5. What did you like best about your final project?

6. What did you like least about your final project?

7. If you were planning to do your project again, what would you do differently?

8. What was the most important thing that you learned from doing your project that will help you in the future?

9. List some ways that your teacher and others helped you on your project.

Parent's Point of View

Name of Person Completing this Form:

Student's Name:

1. Has your child discussed his/her project with you at home?

2. Have you noticed any changes in your child's interests or use of free time since he/she began working on his/her project?

3. Please comment below on your child's task commitment, involvement, and interest level while the independent study or group project was being developed.

4. Please assess the overall quality of your child's project.

5. Please add any other comments about the resource program that you would like to offer.

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REFLECTING
on the student's project

c. 1998 Del Siegle -- Modified from the Student Product Assessment Form by Sally M. Reis
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Name of Student:

Title of Project:

Date Started: ***Date Completed:***

	Factor	Rating
1.	Variety of Resources Used to Complete the Project	_____
2.	Level of Resources Used to Complete the Project	_____
3.	Level of Advanced Knowledge Gained While Completing the Project	_____
4.	Time and Effort Put Into Completing the Project	_____
5.	Authentic Methodology Used During the Project	_____
6.	Care and Attention to Detail in Completing the Project	_____
7.	Quality of Final Project in Comparison to Others His/Her Age	_____
8.	Task Commitment While Completing the Project	_____
9.	Independence While Completing the Project	_____
10.	Appropriateness of the Audience for the Project	_____
11.	Originality and Uniqueness of the Final Project	_____
12.	Comments:	

Rating Scale: 5=Outstanding; 4=Above Average; 3=Average; 2=Below Average; 1=Poor