Alternative Method of Instruction
Middle School – 8th Grade
Day 2

Name: _____

Name: _____

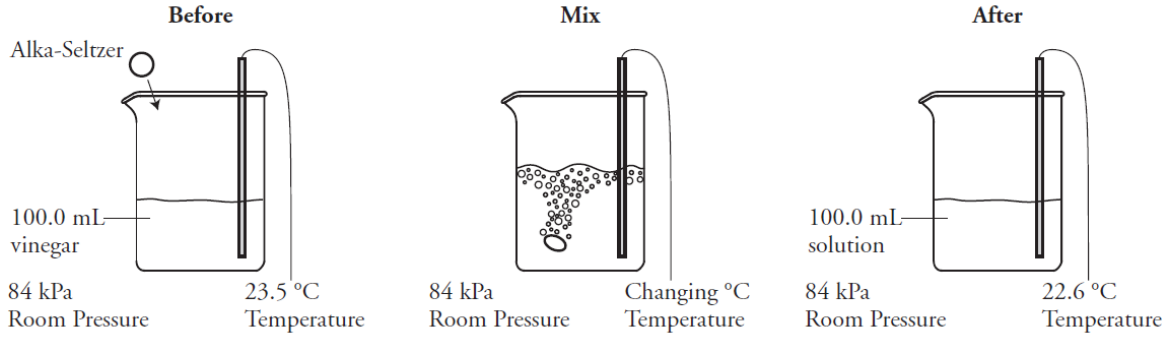
Fundamentals of Experimental Design

What is measured during a controlled experiment?

Why?

Working in the science lab can be a lot of fun. Mixing random chemicals and burning stuff just to see what happens can be entertaining (and possibly dangerous), but it doesn't lead to anything helpful to the scientific community. In order to be helpful to the community, a researcher's work in the lab must be systematic. A researcher usually asks a question and then designs an experiment to investigate that question. In this activity you will identify different types of variables that will help you design controlled experiments.

Model 1 – Alka-Seltzer® and Vinegar



1. Briefly describe the reaction illustrated in Model 1 in one or more complete sentences.

2. Did the room pressure change as the reaction occurred? If yes, was there an increase or decrease?

3. What two pieces of evidence observed during the "mix" phase of the reaction suggest that a chemical change is taking place?

4. Did the solution temperature increase or decrease during the reaction?

Model 2 – Results of Alka-Seltzer® Experiment

	Number of Alka-Seltzer Tablets	Volume of Vinegar (mL)	Room Pressure (kPa)	Initial Temp (°C) (Vinegar Solution)	Final Temp. (°C) (Final Mixture)
Trial 1	1	100.0	84	23.5	22.6
Trial 2	2	100.0	84	23.5	21.5
Trial 3	3	100.0	84	23.5	20.4
Trial 4	4	100.0	84	23.5	19.2
Trial 5	5	100.0	84	23.5	18.1

5. Which trial in the Model 2 data table corresponds to the reaction illustrated in Model 1?

6. Consider the five trials that produced the data in Model 2.
   a. What variable was purposefully changed in the experiment?

   b. What variable changed as a result of changing the variable listed in part *a*?

7. What variable(s) shown in the Model 2 data table remained constant among all the trials?

Model 3 – Boiling Points of Alcohols

Alcohol Name	Formula	Number of Carbons	Volume of Alcohol (mL)	Boiling Point (°C)	Room Pressure (kPa)
Methanol	CH_3OH	1	75	64.7	101
Ethanol	CH_3CH_2OH	2	75	78.4	101
Propanol	$CH_3CH_2CH_2OH$	3	75	97.1	101
Butanol	$CH_3CH_2CH_2CH_2OH$	4	75	117.7	101
Pentanol	$CH_3CH_2CH_2CH_2CH_2OH$	5	75	137.9	101

8. Describe the similarities and differences in the five alcohols used in the Model 3 experiment.

9. Consider the experiment that produced the data in Model 3.
   a. What variable was purposefully changed in the experiment?

   b. What variable changed as a result of changing the variable listed in part *a*?

10. What variable(s) in the Model 3 data table remained constant among all the trials?

Read This!

When designing an experiment, you need to consider three types of variables. The **independent variable** is changed by the experimenter by design. This variable is sometimes called the "manipulated variable." The **dependent variable** is what changes as a result of the change in the independent variable. This variable is sometimes called the "responding variable." In some cases more than one dependent variable is considered. The third category involves **controlled variables**. These are variables that you think might change the outcome of the experiment, but since you are not studying them, you need to keep them constant in each trial.

11. Identify the independent, dependent, and controlled variables for the experiments that produced the data shown in Model 2 and Model 3.

Model Experiment	Variables		
	Independent	Dependent	Controlled
Alka-Seltzer® and Vinegar			
Boiling Points of Alcohols			

Read This!

A well-written research question states the independent and dependent variables for an experiment. For example, a student investigated the effect of the deicer, magnesium chloride, on vegetation on the sides of highways. Her research question was, "What is the effect of magnesium chloride solution concentration on the growth of rye grass?"

12. Write a research question, using the format suggested in the *Read This!* box, for the experiments in Models 2 and 3.

    Alka-Seltzer® and Vinegar —

    Boiling Points of Alcohols —

13. A student wonders, "Will changing the volume of alcohol in a boiling point experiment change the boiling point of the liquid?" Identify the variables that should be considered in this experiment.

    Independent **Dependent** **Controlled**

Extension Questions

14. Many experiments designed to investigate the reaction of Mentos® with Diet Coke® have been documented on YouTube. Design and write an experiment that uses the knowledge gained in this activity to investigate this reaction. Include a research question; the independent, dependent and controlled variables; and a simple procedure.

15. Scientists may design an experiment with a **control group**, which is a set of organisms or samples that do NOT receive the treatment (the independent variable) that is being tested. Scientists can then compare normal changes in organisms or samples with those that might have occurred because of the treatment. The idea of a "control group" is not the same as a "controlled variable." Suppose a scientist is doing an experiment to determine the effect of a cancer drug on mice with lymphoma.

    a. What are some of the variables the scientist should control in the experiment?

    b. Describe the control group for this experiment.

SOCIAL STUDIES – 8TH GRADE

Name: _____

Lesson 2

Subject: Advancements in Technology during the 19th Century

Objective: In this lesson, students will explore the significant advancements in technology that took place during the 19th century in the United States. They will understand how these innovations revolutionized various aspects of daily life, industry, and communication during this transformative period in American history.

Advancements in Technology during the 19th Century

Imagine living in the 1800s without the technologies we have today and the challenges people faced, and what might their lives have been like.

Industrial Revolution and Technological Advancements:

The 19th century saw a significant shift from handmade and homemade based economies to industrialized mass produced societies. Key technological advancements were those that had effects on industries, transportation, and communication.

Read about the items below and answer the following questions

a. The Telegraph:

The telegraph key, pictured above, was pressed repeatedly to send a pattern of long and short signals. This key was used by Samuel Morse to send the famous message "What hath God wrought?" in 1844.

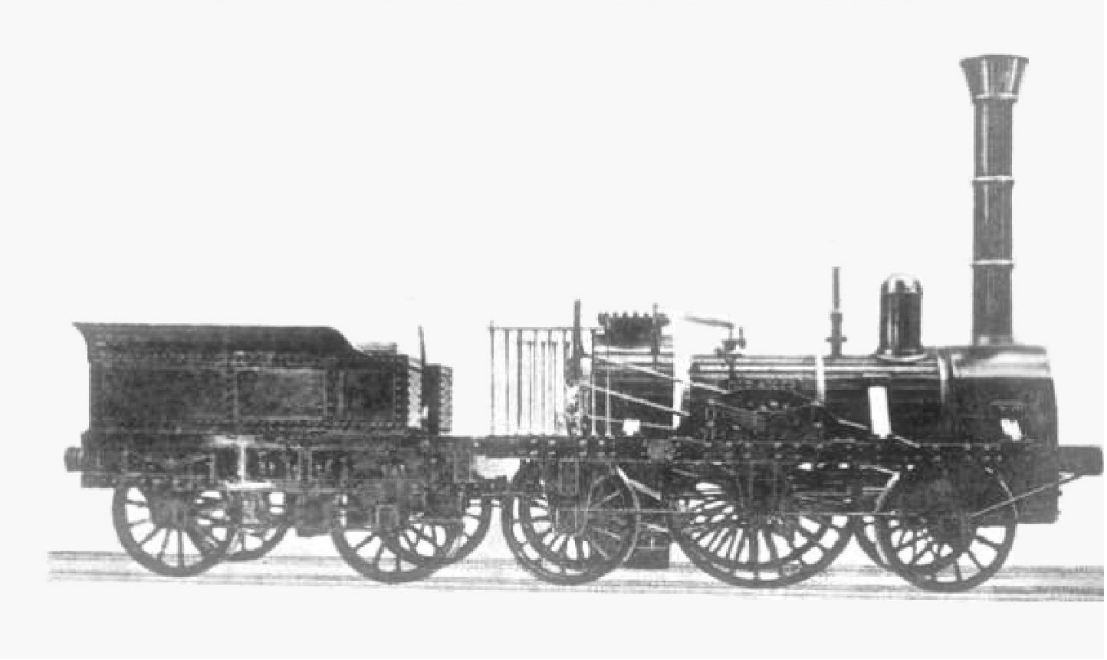
Image credit: Smithsonian Art Museum
http://americanart.si.edu/exhibitions/online/helios/secrets/darkchamber-noframe.html?/exhibitions/online/helios/secrets/secrets_innovation.html

The telegraph was a groundbreaking communication technology that emerged in the 19th century. Invented by Samuel Morse in the 1830s, it revolutionized long-distance communication by transmitting electrical signals over telegraph lines. The system utilized Morse code, a series of dots and dashes representing letters and numbers, enabling the rapid exchange of messages across vast distances and greatly impacting global communication and commerce.

1. How does the historical development of the telegraph in the 19th century relate to today's advancements in communication technologies and their impact on global communication and commerce?

   _____
   _____
   _____
   _____

b. The Steam Engine:



Steam locomotive. (2023, July 15). In *Wikipedia*. https://en.wikipedia.org/wiki/Steam_locomotive

Steamboat. (2023, July 14). In *Wikipedia*. https://en.wikipedia.org/wiki/Steamboat

In the 1800s, steam-powered inventions like locomotives, boats, and factories brought about significant benefits to society. Steam locomotives revolutionized transportation, allowing people and goods to travel faster and farther than ever before. This led to the expansion of trade and opportunities for people to explore new places. Steam boats, on the other hand, improved water transportation, making it easier to move goods and people along rivers and across oceans. This boosted trade and communication, connecting distant regions and promoting economic growth. Additionally, steam-powered factories transformed manufacturing processes, leading to increased production and efficiency. These factories played a crucial role in the Industrial Revolution, creating job opportunities and accelerating technological advancements. Overall, the widespread adoption of steam technology in the 1800s had a profound impact on society, contributing to the growth of economies, the spread of ideas, and the improvement of people's lives.

1. How does the widespread adoption of steam-powered inventions in the 1800s relate to energy developments and technologies today?

_____
_____
_____
_____

c. The Light Bulb:

Replica of Thomas Edison's first lightbulb.

NPS Photo

The light bulb is a revolutionary invention that transformed the way we illuminate our surroundings. It was first successfully created by Thomas Edison in the late 19th century. By harnessing electricity to produce light, the light bulb provided a safe, convenient, and efficient alternative to traditional gas and oil lamps, ushering in a new era of artificial lighting and profoundly impacting modern society. The invention allowed for widespread use of electric lighting, it transformed daily life, work, and leisure activities. These technological advancements changed society, particularly in urban areas, changed industries, living conditions, and job opportunities.

3. How has the invention of the light bulb in the late 19th century continued to shape and impact modern society today?

_____
_____
_____
_____

ENGLISH LANGUAGE ARTS – 8TH GRADE

Name: _____

8th Grade ELA
AMI Day #2 Assignment
Directions: Read the following article and then answer the questions that follow the article.

Keeping Up with the Joneses

By CommonLit Staff 2014

When everyone is getting the latest version of a smartphone, do you feel the pressure to buy one, too? The phrase "keeping up with the Joneses" describes the habit of trying to compete with your peers' social status, wealth, and possessions. As you read, take notes on the historical origin and examples of keeping up with the Joneses.

Origins

"Glenview Mansion 2" by Mr. Tin DC is licensed under CC BY-NC-ND 2.0.

[1] "Keeping up with the Joneses" is an idiom, or popular phrase, that refers to the pressure to "keep up" with your neighbor's social status, wealth, or popularity. It refers to the way people constantly compare themselves to a neighbor and strive to accumulate the same material goods.

The origins of this phrase are not exactly clear. One explanation is that the Joneses were a prominent,[1] wealthy family from New York. The Joneses and other rich New Yorkers began to build country mansions in the Hudson Valley. Soon, the houses in this area became grander and grander. In 1853, Elizabeth Schermerhorn Jones built a 24-room mansion called Wyndcliffe, described as being very ornate[2] and in the style of a Scottish castle. Reputedly,[3] the mansion spurred[4] more and more building by other families who wanted to show that they were of equal or greater wealth, a phenomenon described as "keeping up with the Joneses."

By the mid-century, the Joneses had built up their wealth and enjoyed a grand lifestyle, thanks to their ties to a powerful New York bank. The family started hosting elaborate parties and made a list of four-hundred elite members of society to invite. Being on the "Four-Hundred List" was a sign of respect and popularity, and as a result, earning a spot on it became very competitive.

Prominent ***(adjective)*** widely and popularly known
Ornate ***(adjective)*** covered with decorations; usually fancy patterns and shapes
according to what people say or believe; supposedly
Spur ***(verb)*** to cause or promote something into action

History

In Old World Europe, social status depended on one's family name and connections to royalty. Because of this, it was very difficult for a person to change his or her social status or rank — it was something you were born with or you weren't. In the United States, the widespread availability of luxury products such as cars, technology, and homes that show a person's status is one thing that has made social mobility[5] possible. Some say that it is possible in the U.S. to "buy your way to the top." With the increasing availability and appeal of "status goods," people became more inclined[6] to define themselves by what they possessed. The quest for higher social status accelerated.

Effects

[5] The "keeping up with the Joneses" philosophy has widespread effects on some societies — some positive, and some negative. On one hand, it means that it is possible for people to enter into a higher social class. On the other hand, it means that people in a society sometimes become preoccupied[7] with the accumulation[8] of wealth and status, and there may be winners and losers. Some people may not be able to "keep up with the Joneses" and feel dissatisfied or inferior. The "keeping up with the Joneses" phenomenon can happen in any community where people defined by their own success in relation to the success of peers and compete to meet a competitive standard.

The term has been a commercial and cultural buzzword for over a century, but the phenomenon still resonates[9] today. Especially with society now more interconnected than ever, it is easy for people to notice — and become jealous of — what their neighbors have that they don't. But even in countries where the desire for upward social mobility through consumerism[10] is strong, the poor may not be able to better themselves. Doug Henwood observed that "both the US and British poor were more likely to stay poor for a long period of time: almost half of all people who were poor for one year stayed poor for five or more years, compared with 30% in Canada and 36% in Germany. And, despite claims of great upward mobility in the US, 45% of the poor rose out of poverty in a given year, compared with 45% in the UK, 53% in Germany, and 56% in Canada. And of those who did exit poverty, 15% of Americans were likely to make a round trip back under the poverty line, compared with 16% in Germany, 10% in the UK, and 7% in Canada." In other words, the more unequal the population of a country, the less likely people will be able to move up or down the ladder of social prominence and wealth.

"Social mobility" refers to the ability to move up in social ranking or status.

Inclined ***(adjective)*** wanting to do something or likely to do something
Preoccupy ***(verb)*** to think about something a lot or too much
Accumulation ***(noun)*** a collection or the act of collecting
Resonate ***(verb)*** to have particular meaning or importance for someone
the belief that it is good for people to spend a lot of money on goods and services

CommonLit/https://www.commonlit.org/en/texts/keeping-up-with-the-joneses/text/retrieved July 24/2023

Text-Dependent Questions

Directions: For the following questions, answer in complete sentences.

1. How does the creation of the "Four-Hundred List" contribute to the idea of "Keeping Up With the Joneses"?

2. What is one danger to "Keeping up with the Joneses"?
   A. People can become obsessed with physical or economic gains
   B. People can hit a plateau or "ceiling"
   C. People who do not believe physical assets are important are left out
   D. The philosophy does not transfer to other countries

3. How is the phenomenon of "Keeping up with the Joneses" a distinctly American concept?
   A. "Jones" is a typically American name, so the concept of "Keeping Up With The Joneses" pertains to anyone in America that is worth aspiring to
   B. Unlike in Europe, anyone in America was thought to be capable of achieving wealth and status
   C. In America, it was believed that one's social status was tied to their family name (e.g. Jones)
   D. The Joneses and the people who kept up with them desired things that did not indicate high social status in other countries

4. PART A: What is the reality of upward mobility in the United States?
   A. People are more likely to achieve upward mobility in the United States than anywhere else in the world
   B. People who were born poor in the United States tend to remain poor until they die
   C. People who were born poor in the United States tend to have much more motivation to remedy their fi situation than in other countries
   D. People are no more likely to achieve upward mobility in the United States as they are in many other countries

5. PART B: Which detail from the text best supports the answer to Part A?

   A. "...even in countries where the desire for upward social mobility through consumerism is strong, the poor may not be able to better themselves." (Paragraph 6)

   B. "...almost half of all people who were poor for one year stayed poor for fi or more years..." (Paragraph 6)

   C. "...in the US, 45% of the poor rose out of poverty in a given year, compared with 45% in the UK, 53% in Germany, and 56% in Canada." (Paragraph 6)

   D. "...15% of Americans were likely to make a round trip back under the poverty line..." (Paragraph)

Written Response: Your response must be at least 2 paragraphs in length.

Why do people follow the crowd? Use evidence from this text, your own experience, and other literature, art, or history in your answer.

Name: _____

DISTRIBUTIVE PROPERTY

The Distributive Property shows how to express sums and products in two ways: $a(b+c)=ab+ac$. This can also be written $(b+c)a=ab+ac$.

Factored form	Distributed form	Simplified form
$a(b+c)$	$a(b)+a(c)$	$ab+ac$

To simplify: Multiply each term on the inside of the parentheses by the term on the outside. Combine terms if possible.

For additional information, see the Math Notes boxes in Lessons 2.3.4 and 7.3.2 of the *Core Connections, Course 1* text, Lesson 4.3.3 of the *Core Connections, Course 2* text, or Lesson 3.2.5 of the *Core Connections, Course 3* text. For additional examples and practice, see the *Core Connections, Course 1* Checkpoint 8A materials.

Example 1

$$\begin{aligned}2(47) &= 2(40+7)\\ &= (2\cdot 40)+(2\cdot 7)\\ &= 80+14=94\end{aligned}$$

Example 2

$$\begin{aligned}3(x+4) &= (3\cdot x)+(3\cdot 4)\\ &= 3x+12\end{aligned}$$

Example 3

$$\begin{aligned}4(x+3y+1) &= (4\cdot x)+(4\cdot 3y)+4(1)\\ &= 4x+12y+4\end{aligned}$$

Problems

Simplify each expression below by applying the Distributive Property.

1. $6(9+4)$
2. $4(9+8)$
3. $7(8+6)$
4. $5(7+4)$
5. $3(27)=3(20+7)$
6. $6(46)=6(40+6)$
7. $8(43)$
8. $6(78)$
9. $3(x+6)$
10. $5(x+7)$
11. $8(x-4)$
12. $6(x-10)$
13. $(8+x)4$
14. $(2+x)5$
15. $-7(x+1)$
16. $-4(y+3)$
17. $-3(y-5)$
18. $-5(b-4)$
19. $-(x+6)$
20. $-(x+7)$
21. $-(x-4)$
22. $-(-x-3)$
23. $x(x+3)$
24. $4x(x+2)$
25. $-x(5x-7)$
26. $-x(2x-6)$

PHYSICAL EDUCATION – 8TH GRADE

Name: _____

AMI Day 2
Fitness Menu

Use the checklist below and choose 3 activities from each category of cardio, upper body, lower body and core. Do each activity for 1 minute. Take a 2-3 minute rest and complete those same activities again for 1 minute each. Take a 2-3 minute break and complete those same activities one last time for one minute each. Use the box next to each exercise to check off the activity you choose. As you complete your exercises, please make check marks in the box next to the exercise.

Cardio		Upper Body		Lower Body		Core	
	Jump Rope		Push Ups		Squats		Sit Ups
	Run in Place		Tricep Dips		Lunges		Crunches
	Burpees		High Plank		Calf Raises		V-Ups
	Mountain Climbers		Arm Circles		Leg Raises		Bicycles
	Speed Skaters		Downward Dog		Jump Squat		Scissors
	Jumping Jacks		Shoulder Taps		Side Lunges		Plank

Make sure to stretch after you complete three rounds of the activities you choose. Use the space below to reflect and write which activities were easiest for you and which activities were more challenging. What can you do to make the more challenging activities easier to increase your strength and endurance?

READING – 8TH GRADE

Name: _____

For each AMI snow day, students should spend 20 minutes reading. Please use the space below to log your reading.

Title: _____

Format (mark one)

_____ Book

_____ Magazine

_____ eBook

_____ Other: _____

Minutes spent reading: _____

ELECTIVES – 8TH GRADE

Student Name: _____

Directions: Choose **ONE** activity from this list of options to complete for each day of AMI work. Please have an adult initial any activities that you complete for AMI days.

Art	Draw or paint a still life picture of something in your home. _____ **initials** _____ **date**	Create a short movie about what you like to do on a snow day _____ **Initials** _____ **date**
Music	Practice your band instrument. _____ **initials** _____ **date**	Listen to your favorite song and sing along, or . . . Compose an original song. _____ **Initials** _____ **date**
Industrial Tech PLTW EbD	Repair something in your home, or . . . Build a fort, either inside your home or with snow outside. _____ **initials** _____ **date**	Create a Rube Goldberg machine, or . . . Build a bridge out of something in your home. _____ **Initials** _____ **date**
Drama	Act our or record a skit with a family member or friend. _____ **initials** _____ **date**	Watch a comedy movie or musical. _____ **Initials** _____ **date**
Family and Consumer Science	Ask your adults about budgeting tips. _____ **initials** _____ **date**	Make yourself a snack using or creating a recipe. _____ **Initials** _____ **date**
World Language / Cultures	Find something in your home from another country and write or tell someone about it. _____ **initials** _____ **date**	List your favorite holiday traditions and ask family members or acquaintances about their origins. _____ **Initials** _____ **date**