KCS @ home

Eighth Grade
Math

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Name _____

Interpret and Graph Proportional Relationships

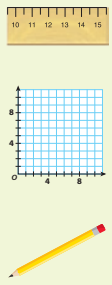
I Can graph proportional relationships from a table or equation, calculate the unit rate, and determine whether the graph should be continuous or discrete.

Spark Your Learning

PAIRS

An airplane is traveling toward its destination at a constant speed. The distance that the airplane has traveled at different points in time is shown in the table. How can you find the speed of the airplane?

Commercial Plane	
Time (h)	Distance (mi)
0	0
1	400
2	800
3	1200



Turn and Talk Discuss how you found the speed of the airplane. How were the tools helpful?

During the *Spark Your Learning,* listen and watch for strategies students use. See samples of student work on this page.

Compute Slope Using Points

Strategy 1

The points from the table are on a straight line through the origin, so the relationship is proportional.

The airplane's speed is represented by the slope.

(2, 800) and (3, 1200) are two points on the line.

$$\text{slope} = \frac{1200-800}{3-2} = \frac{400}{1} = 400$$

The airplane's speed is 400 miles per hour.

If students . . . graph the data and correctly use any two points to compute the slope, they understand the concept of slope as the ratio of change in *y* to change in *x*, and they understand that the slope represents the unit rate, which is the speed of the airplane.

Have these students . . . share and explain how they computed the change in *y* and the change in *x*. **Ask:**

- Q Would you find the same slope if you used two different points? How do you know?

Find Unit Rate Using the Table

Strategy 2

The table shows that the airplane traveled 400 miles in 1 hour, so the unit rate is:

$$\frac{400}{1} = 400$$

The airplane's speed is 400 miles per hour.

If students . . . simply use the information in the second row to determine the airplane's speed, they may not understand that they must first check that the relationship is proportional.

Activate prior knowledge . . . by having these students graph the data. **Ask:**

- Q Is the relationship proportional?
- Q How does slope relate to the airplane's speed?
- Q If the table did not include the point (1, 400), how could you determine the airplane's speed?

COMMON ERROR: Ignores Units

$$\frac{400}{1} = 400$$

The speed is 400.

If students . . . do not use units in their response, they may not understand that slope is the unit rate, which represents the speed of the airplane.

Then intervene . . . by encouraging students to write units when doing their calculations. **Ask:**

- Q What do the *x*-values represent?
- Q What do the *y*-values represent?
- Q How can you use this information to determine units associated with the speed of the airplane?

Name _____

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Spark Your Learning

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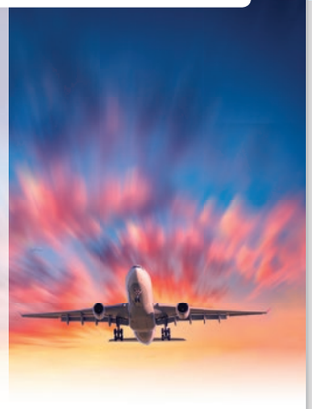
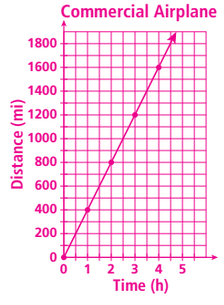
An airplane is traveling toward its destination at a constant speed. The distance that the airplane has traveled at different points in time is shown in the table. How can you find the speed of the airplane?



Commercial Plane	
Time (h)	Distance (mi)
0	0
1	400
2	800
3	1200

Possible answer: Graph the points given in the table. Because the points lie on a line through the origin, there is a proportional relationship between the times and distances in the table.

The airplane's speed is the unit rate for the proportional relationship, which is the slope of the line. So, the speed of the airplane is $\frac{800 \text{ miles}}{2 \text{ hours}} = 400$ miles per hour.



Turn and Talk Discuss how you found the speed of the airplane. How were the tools helpful? See possible answer at the right.

SUPPORT SENSE-MAKING • Three Reads

Tell students to read the question stem three times and prompt them with a different question each time.

1. What is the situation about?
   Possible answer: the speed of an airplane
2. What are the quantities in the situation?
   Possible answer: The airplane traveled 0 miles after 0 hours, 400 miles after 1 hour, and 800 miles after 2 hours.
3. What are possible mathematical questions that you could ask for the situation?
   Possible questions: How far does the airplane travel each hour? What is the airplane's constant rate? How far does the airplane travel in 6 hours?

1 Spark Your Learning

MOTIVATE

Introduce the problem. **Ask students:** What do you know about airplanes and airplane travel? Invite students to discuss and share with their partner or team members in a small group.

SUPPORT SENSE-MAKING Three Reads
Have students read the problem three times. Use the questions in the Three Reads box below for a different focus each time.

PERSEVERE

If students need support, guide them by asking:

- **Assessing** Is the relationship proportional? Why or why not? yes; Possible answer: The points given pass through the origin and the $\frac{\text{rise}}{\text{run}}$ ratio is the same for each set of points.
- **Assessing • Use Tools** Which tool could you use to solve the problem? Students' choices of tools will vary.
- **Assessing • Use Tools** How could a graph help you understand the relationship between time and distance traveled? Possible answer: A graph would show how far the airplane had traveled over different amounts of time, so you could see how the distance increases over time.

Turn and Talk Discuss how graphs and tables show the change in the airplane's distance. If students are struggling, ask how far the airplane traveled in each hour. Then ask how they can use this information to determine the airplane's speed. Possible answer: I found the airplane's speed by making a graph. The slope of the graph represents the airplane's speed.

BUILD SHARED UNDERSTANDING

Select students who used various strategies and tools to share with the class how they solved the problem. Have students discuss why they chose a specific strategy or tool.

Name _____ Date _____ Class _____

UNIT 2

Proportional and Nonproportional Relationships and Functions

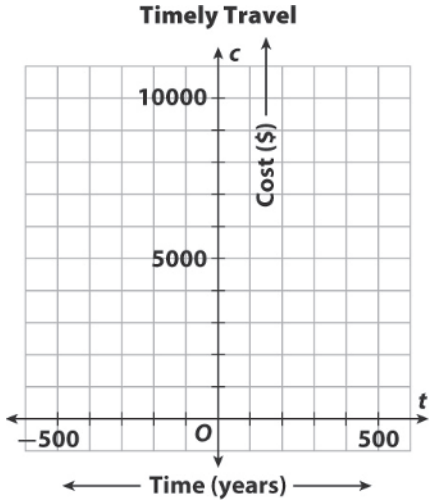
Performance Task

Back to the Future

Although time travel often occurs in movies and books, it isn't possible in real life. But if it were possible, companies would probably exist to sell trips!

1. Imagine that Timely Travel charges $5 per year to go forward in time. Complete the table for this relationship. Draw the graph on the grid at the right.

Years (*t*)	200	400	500
Cost (*c*)			



2. Write an equation for the graph. _____

3. Timely Travel charges $15 per year to go backward in time. Complete this table and draw the graph.

Years (*t*)	−200	−400	−500
Cost (*c*)			

4. Write an equation for the graph._____

5. Compare the constants of proportionality. Why is one positive and one negative?

_____

First and Last is a competing time-travel company. Here are their prices.

First and Last Time Travel

Years (*t*)	−500	−300	−100	100	300	500
Cost (*c*)	$3,300	$3,100	$2,900	$2,100	$2,300	$2,500

6. Find the two equations, one for traveling forward to the future and one for traveling backward in time. Add the graphs to the grid above.

   forward ($t > 0$) _____ backward ($t < 0$) _____

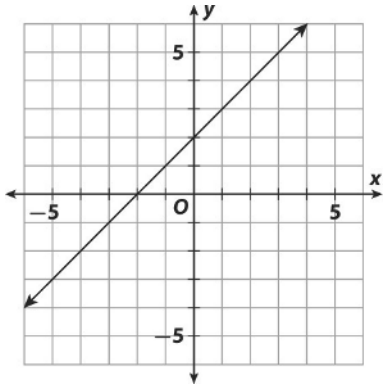
7. Compare the functions for Timely with those for First and Last. Which are linear? Which are proportional?

_____

8. When does Timely cost more than First and Last?

_____

Unit 2 Test: D

1. B
2. C
3. A
4. B
5. B
6. A
7. A
8. C
9. slope is 20; speed is 20 km/h
10. $y = 20x$
11. 

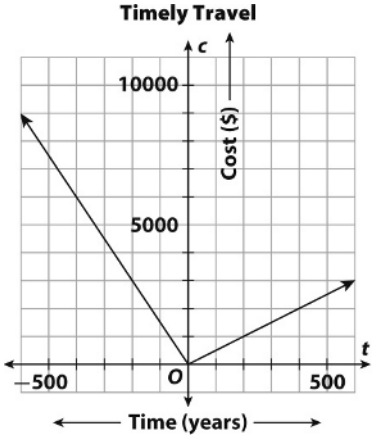
12. 5
13. 75; 150
14. Sample answers: Car B does not drive the same number of miles per hour. The speed is not constant.
15. Car A. It gets home in 10 hours.

Unit 2 Performance Task

1.

Years (*t*)	200	400	500
Cost (*c*)	$1,000	$2,000	$2,500

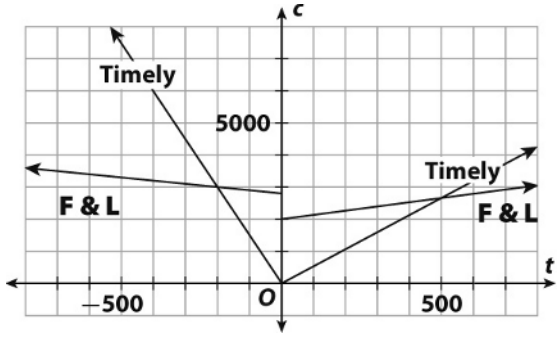
Graphs for 1. and 3.



2. $c = 5t$
3.

Years (*t*)	–200	–400	–500
Cost (*c*)	**$3,000**	**$6,000**	**$7,500**

4. $c = -15t$
5. Sample answer: The values for time going backward are negative, but the cost will always be positive. So, the constant of proportionality must be negative.
6. forward: $c = t + 2{,}000$; backward: $c = -t + 2{,}800$



7. All of the functions are linear. The Timely functions are proportional; the First and Last functions are not proportional.
8. Traveling to the future, when $t > 500$ years; traveling back in time, when $t < -200$ years.

UNIT 3 Solving Equations and Systems of Equations

Unit 3 Test: A

1. C
2. A
3. A
4. C
5. B
6. C
7. C
8. A
9. B
10. $80x$; in 3 h
11. $12.4 + 1.5x$; in 5.1 s
12. 900; $22,300
13. 6

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Eighth Grade
Social Studies

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Immigration in 19th Century American

8.39 Identify the push-pull factors for Irish and German immigrants, and describe the impact of their arrival in the U.S. prior to the Civil War.

Resources and Materials:

- Page 102 from 8th Grade Social Studies textbook (Gallopade)
- Dueling Documents (credit to Middle Tennessee State University's Teaching with Primary Sources and Taylor Kilgore from Whitewell Middle School)
- Matching Game (also from MTSU and Taylor Kilgore)
- Pencil or pen
- Scissors

Background: Many of you will have completed the Sectionalism and Reform (1790s to 1850s) module. To refresh you memory, a copy of page 102 (Gallopade textbook) has been provided.

Activities: Read and analyze the *American Citizens!* and *The Land of Gold. Reality versus fiction* documents.

Checking for Understanding: Cut out the square of the Matching Game. Play repeatedly to access your learning.

Conclusion: These immigrant groups came to the United States to escape poverty and to find a better life. Despite being confronted with anti-immigrant prejudices, these groups made lasting contributions to the continued development of the United States of America.

Immigration–Push-Pull Factors

The two largest immigration groups in the early 1800s were the **Irish** and **Germans**. They were drawn due to **push factors**, which "pushed" them to leave their home countries, and **pull factors**, which "pulled" them toward the United States.

GROUP	PUSH FACTORS	PULL FACTORS
Irish Immigrants	**Poverty, lack of jobs** **Potato famine destroyed Ireland's main food crop, leading to starvation**	**Stability, safety, freedom** **Jobs building canals, roads, and railways, and mining**
German Immigrants	**Religious persecution, poverty** **Many fled political unrest due to European Revolution of 1848**	**Freedom, stability, safety** **Farming and factory jobs**

Impact of Irish and German Immigration

Many native-born Protestant-Americans opposed the immigration of Irish and Germans. They were suspicious of the Irish because most were Catholic, and the Germans because they spoke a foreign language. Germans who immigrated for political reasons were often wrongly seen as political extremists. The anti-immigrant and anti-Catholic feelings of these **nativists** led to the formation of the Know-Nothing Party in American politics.

Vocabulary

nativist: *a person opposed to immigrants and favors only people born in the United States*

assimilated: *adopted the ways of another culture*

The immigrants, however, were resilient. They worked hard and **assimilated** into American culture and society.

The Irish:

became a powerful political force in U.S. cities where they lived in large numbers

changed city politics by putting men of working class origin in positions of power

organized, led, and supported union efforts for better working conditions

The Germans:

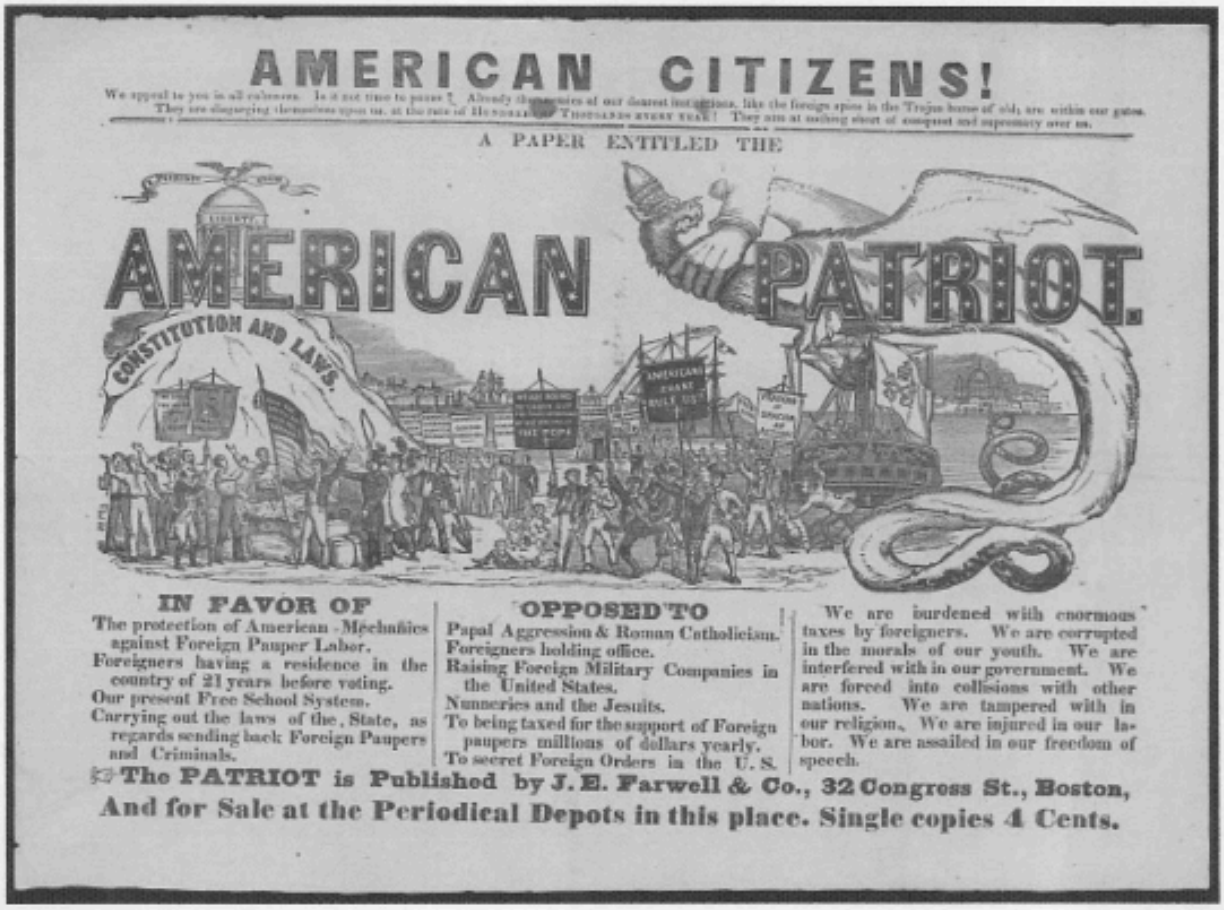
settled in cities and rural areas from Pennsylvania to Oregon with farmers moving west for farmland

changed the U.S. educational system by starting the first kindergartens in the United States

organized, led, and supported union efforts for better working conditions

Critical Thinking

Describe the similarities in the experiences of Irish and German immigrants.



AMERICAN CITIZENS!

We appeal to you in all calmness. Is it not time to pause? Already the enemies of our dearest institutions, like the foreign spies in the Trojan horse of old, are within our gates. They are disgorging themselves upon us, at the rate of Hundreds of Thousands Every Year! They aim at nothing short of conquest and supremacy over us.

A PAPER ENTITLED THE

AMERICAN PATRIOT.

CONSTITUTION AND LAWS.

IN FAVOR OF

The protection of American Mechanics against Foreign Pauper Labor.
Foreigners having a residence in the country of 21 years before voting.
Our present Free School System.
Carrying out the laws of the State, as regards sending back Foreign Paupers and Criminals.

OPPOSED TO

Papal Aggression & Roman Catholicism.
Foreigners holding office.
Raising Foreign Military Companies in the United States.
Nunneries and the Jesuits.
To being taxed for the support of Foreign paupers millions of dollars yearly.
To secret Foreign Orders in the U. S.

We are burdened with enormous taxes by foreigners. We are corrupted in the morals of our youth. We are interfered with in our government. We are forced into collisions with other nations. We are tampered with in our religion. We are injured in our labor. We are assailed in our freedom of speech.

☞ **The PATRIOT is Published by J. E. Farwell & Co., 32 Congress St., Boston, And for Sale at the Periodical Depots in this place. Single copies 4 Cents.**

American citizens! We appeal to you in all calmness. Is it not time to pause? . . . A paper entitled the American patriot [1852] https://www.loc.gov/item/2008661538/

1. Across the top of the article, it reads, "Already the enemies of our dearest institutions, like the foreign spies in the Trojan horse of old, are within our gates. They are disgorging themselves upon us, at the rate of Hundreds of Thousands Every Year! They aim at nothing short of conquest and supremacy over us." Explain the reference to the "Trojan horse of old".

2. List anti-immigrant references from the article.

3. According to this article, why were the Irish so hated?

The land of gold. Reality versus fiction

https://www.loc.gov/resource/calbk.075

Is this Chinese immigration desirable? I think not; and, contrary to the expressed opinions of many of the public prints throughout the country, contend that it ought not to be encouraged. It is not desirable, because it is not useful; or, if useful at all, it is so only to themselves—not to us. No reciprocal or mutual benefits are conferred. In what capacity do they contribute to the advancement of American interests? Are they engaged in anything that adds to the general wealth and importance of the country? Will they discard their clannish prepossessions, assimilate with us, buy of us, and respect us? Are they not so full of duplicity, prevarication and pagan prejudices, and so enervated and lazy, that it *is impossible* for them to make true or estimable citizens? I wish their advocates would answer me these questions; if they will do it satisfactorily, I will interrogate them no further. Under the existing laws of our government, they, as well as all other foreigners, are permitted to work the mines in California as long as they please, and as much as they please, without paying any thing for the privilege, except a small tax to the State. Even this has but recently been imposed, and half the time is either evaded or neglected. The general government, though it has sacrificed so much blood and treasure in acquiring California, is now so liberal that it refuses to enact a law imposing a tax upon foreign miners; and as a matter of course, it receives no revenue whatever from this source. But the Chinese are more objectionable than other foreigners, because they refuse to have dealing or intercourse with us; consequently, there is no chance of making any thing of them, either in the way of trade or labor. They are ready to take all they can get from us, but are not willing to give anything in return. They did not aid in the acquisition or settlement of California, and they do not intend to make it their future home. They will not become permanent citizens, nor identify their lives and interests with the country. They neither build nor buy, nor invest capital in any way that conduces to the advantage of any one but themselves. They have thousands of good-for-nothing gewgaws and worthless articles of virtu for sale, 94 and our people are foolish enough to buy them; but their knowledge of the laws of reciprocity is so limited, that they never feel in any need of American commodities.

1. List reasons why Chinese were "undesirable".

2. Compare and contrast the feelings about the Chinese with the feelings about the Irish.

Nativism Assimilation	Chinese The process of fitting into a culture Immigrant	Irish A person who comes to live permanently in a foreign country Asian immigrant	Chinese Angel Island
Policy of protecting the interests of the native-born against those of immigrants Northwestern Europe Chinese at Angel Island	Transcontinental Railroad Irish Irish San Francisco Bay	Great Potato Famine Spoke English European immigrants Processed rather quickly	Spoke their native language Ellis Island Uncle Sam
Possibly detained for days Subjecting people to cruel treatment because of their ethnic origin Push factors	Angel Island Persecution Asia Ethnic	Irish at Ellis Island Chinese New York Harbor Irish Immigrants	National personification of the United States Ellis Island Pull factor
War, famine, disease, political unrest, religion and money Anti-immigrant and anti-Catholic political party	Common racial, national, tribal, religious, or cultural background Know Nothing Party Popular nativist sign	Caused a dislike of Catholics No Irish Need Apply Prohibited all immigration of Chinese laborers	Chance for a better life Chinese Exclusion Act

Answer Key

American Citizens!

1. The Trojan Horse is a story from the Trojan War about the subterfuge that the Greeks used to enter the independent city of Troy and win the war. Immigrants would, apparently, innocently enter the United States with the intent of subverting American society.

2. possible answers: economic burden; corrupting inference on society

3. religious differences (anti-Catholic)

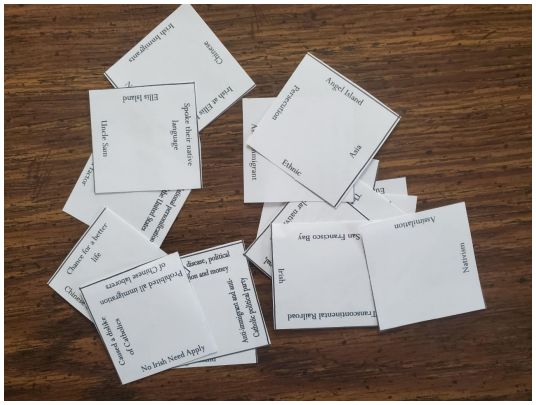
The land of gold. Reality versus fiction.

1. possible answers: they are not permanent citizens; they do not invest capital to aid in the development of the Country; take money from Americans without spending money in return

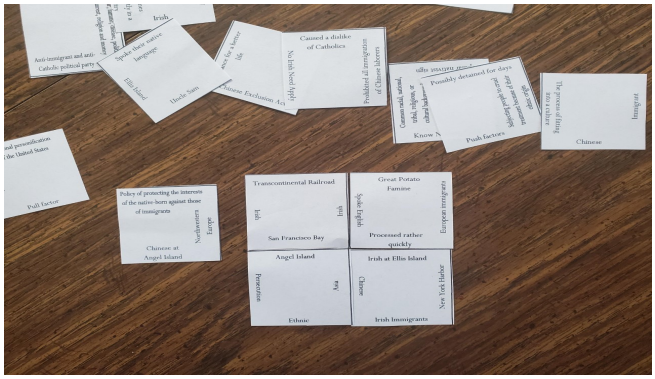
2. possible answers: both groups were seen as an economic and a cultural threat to America; however, the Chinese were additionally seen as a hindrance to the development of America since many of them were seen as temporary residents who would ultimately return to their homeland taking their economic gains with them

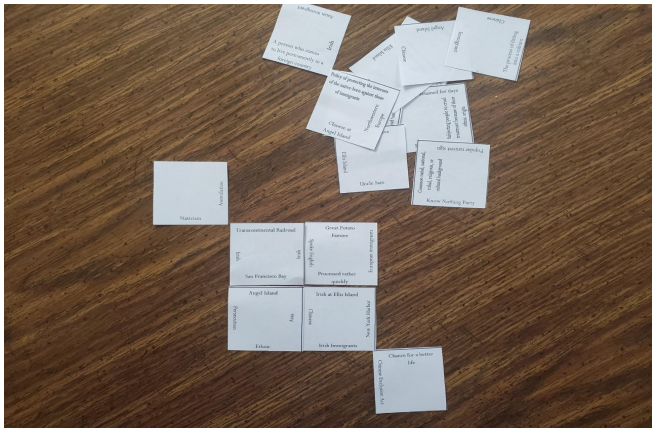
Instructions for playing the Matching Game:

Cut apart the 16 squares.



The goal is to organize the squares so that the information in an individual square aligns with all adjacent squares. For example:





Eighth Grade
ELA

knoxschools.org/kcsathome

Name: _____ Class: _____

How an 11-Year-Old Boy Invented the Popsicle

By Shelby Pope for NPR
2015

Frank Epperson is responsible for inventing the popsicle at 11 years old in 1905. What started as a delicious accident, evolved into a world-wide phenomenon that is still enjoyed today. Epperson's original invention has changed much since the idea's conception in 1905, changing hands between big companies, feeling the effects of the Great Depression, and sparking heated debates. Regardless, the popsicle has maintained its reputation as an iconic, icy treat. As you read, take notes on how Frank Epperson's frozen treat became such a success.

[1] The next time you pop a Popsicle in your mouth, think about this: You're enjoying the fruits of an 11-year-old entrepreneur's[1] labor.

"Popsicle" by Alysa is licensed under CC BY-NC-ND 2.0.

Back in 1905, a San Francisco Bay Area kid by the name of Frank Epperson accidentally invented the summertime treat. He had mixed some sugary soda powder with water and left it out overnight. It was a cold night, and the mixture froze. In the morning, Epperson devoured the icy concoction,[2] licking it off the wooden stirrer. He declared it an Epsicle, a portmanteau of icicle and his name, and started selling the treat around his neighborhood.

In 1923, Epperson decided to expand sales beyond his neighborhood. He started selling the treat at Neptune Beach, a nearby amusement park. Dubbed a "West Coast Coney Island," the park featured roller coasters, baseball and an Olympic-sized swimming pool. Neptune flourished in the pre-Depression[3] days, and consumers eagerly consumed[4] Epsicles and snow cones (which also made their debut[5] at Neptune).

Buoyed[6] by this success, Epperson applied for a patent[7] for his "frozen confection[8] of attractive appearance, which can be conveniently consumed without contamination by contact with the hand and without the need for a plate, spoon, fork or other implement"[9] in 1924. The patent illustrates the requirements for a perfect ice pop, including recommendations on the best wood for the stick: wood-bass, birch and poplar. Eventually, Epperson's children urged him to change the ice pop's name to what they called it: a Pop's 'Sicle, or Popsicle.

1. **Entrepreneur** ***(noun):*** a person who starts a business
2. **Concoct** ***(verb):*** to create something magical or unusual by mixing different ingredients
3. The Great Depression was a worldwide economic decline that lasted from 1929 to 1939.
4. **Consume** ***(verb):*** to eat or drink something
5. **Debut** ***(noun):*** the first public appearance
6. made (by something) to feel confident; encouraged

[5] This origin story is charming, if somewhat apocryphal[10] (sources differ on the details), but it didn't have a happy ending for the inventor. A broke Epperson sold the rights to his creation to the Joe Lowe Co. in the 1920s, much to his regret: "I was flat[11] and had to liquidate all my assets,"[12] he later said. "I haven't been the same since."

The Lowe Co. went on to catapult Epperson's invention to national success. During the Great Depression, the company debuted the two-stick version of the Popsicle to help consumers stretch their dollar — the duo sold for 5 cents.

But this delicious duo faced competition from Good Humor, which had recently debuted its own chocolate-covered ice cream on a stick, and Lowe was sued for copyright infringement.[13] The court's compromise? Popsicle could sell water-based treats, and Good Humor could sell ice cream pops. Popsicle tested the limits of the agreement, selling a "Milk Popsicle," and the two companies tussled in court about the definitions of sherbet and ice cream over the years through a series of lawsuits.

The giant food corporation Unilever scooped up the Popsicle brand in 1989, expanding the brand beyond its original fruity flavors. It also bought Good Humor, ending the feud[14] between the two icy competitors.

Over the years, Epperson's childhood invention has achieved iconic status, standing in for any frozen treat the way Kleenex means a tissue. That explains why also over the years, Unilever has worked to keep the name Popsicle its and its alone: In 2010, the company threatened legal action against artisan[15] Brooklyn ice pop makers People's Pops for using the word "popsicle" on its blog.

[10] As for Epperson, he died in 1983 and is buried in Oakland's Mountain View Cemetery, where he's featured on a tour celebrating local food luminaries[16] including chocolate mogul[17] Domingo Ghirardelli and mai tai[18] inventor Victor "Trader Vic" Bergeron.

His story lives on in many forms — from the official Popsicle website, where it's illustrated in comic form, to an inspirational Christian self-help book about trusting in God's grand plan for your life. Epperson's childhood invention, born randomly on a freezing night, has also proved to be resoundingly successful and long lived: These days, some 2 billion Popsicles are sold each year.

7. a license that ensures a right or title for a set period, often the right to prevent others from making, using, or selling an invention
8. a dessert made with sweet ingredients
9. a tool
10. **Apocryphal** ***(adjective):*** well-known but probably not true
11. "Flat" can mean utterly ruined or destroyed.
12. to sell one's valuables in exchange for cash
13. legal term that describes the use of a concept, artistic work, or invention that belongs exclusively to someone else
14. **Feud** ***(noun):*** a long-standing argument or conflict
15. describes products made in a traditional way (often by hand)
16. **Luminary** ***(noun):*** a very famous, successful, or inspirational person
17. a powerful person in one or more specific industries (such as the chocolate industry)
18. a popular alcoholic drink

Grade 8 English, Week 1
Article of the Week "How an 11-Year-Old Boy Invented the Popsicle"

Monday
Read the article and annotate it. Consider annotating by underlining key ideas, circling unknown vocabulary words, and asking questions you have about the text in the margins.

Tuesday
Paraphrase the article by explaining it to someone in your home. Share the key points the author makes and your thoughts and impressions of the article.

Wednesday
Review the article and write a summary.

Thursday
Answer the following text-dependent questions. Be sure to write in complete sentences.

1. What is one central idea presented in the text?

2. Cite at least one piece of evidence from the text that supports the central idea.

Grade 8 English, Week 1
Article of the Week "How an 11-Year-Old Boy Invented the Popsicle"

3. In the context of paragraph 2, what does the word "portmanteau" mean?

   A. Collision
   B. Embodiment
   C. Combination
   D. Division

4. Which section from paragraph 2 best supports the answer to Part A?

   A. "accidentally invented"
   B. "summertime treat."
   C. "icy concoction"
   D. "icicle and his name,"

Friday

Answer the following question in a complete paragraph. Include text evidence from the article. How was Frank Epperson impacted by his decision to sell the rights to the popsicle?

KCS @ home

Eighth Grade
Science

knoxschools.org/kcsathome

8th Science
Week 1: April 6

DIRECTED Inquiry

30 min

Modeling Sea-Floor Spreading

Problem

INQUIRY FOCUS
Make Models, Observe, Infer

How does sea-floor spreading add material to the ocean floor and what happens to this material over time?

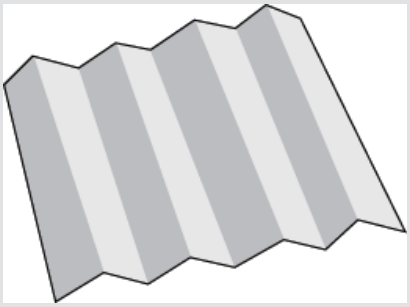
Materials

scissors
colored marker
metric ruler
2 sheets of unlined paper

Procedure

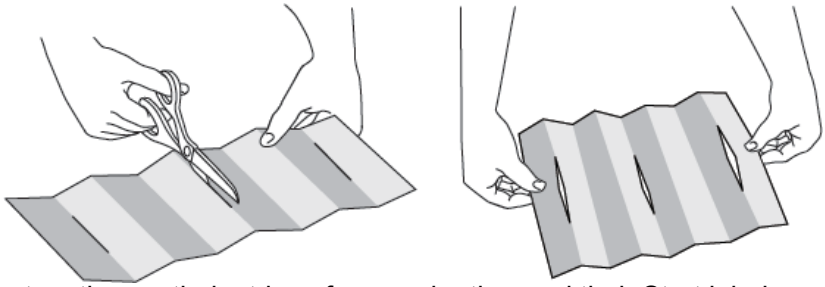
1. Use the ruler and marker to draw stripes across one sheet of paper, parallel to the short sides of the paper. The stripes should vary in spacing and thickness as shown to the right. Fold the paper in half lengthwise and write the word "Start" at the top of each half of the paper.

2. Using the scissors, carefully cut the paper in half along the fold line to form two strips.



3. Lightly fold the second sheet of paper crosswise into eighths as shown to the left. Then unfold it, leaving creases in the paper

4. Now fold the second sheet of paper in half crosswise. Starting at the center fold, draw lines 5.5 cm long (wide enough for your strips to slide through) on the middle crease and the two creases closest to the ends of the paper. Carefully cut along the lines you drew. Unfold the paper. There should be three slits, each 11 cm long, in the center of the paper as shown below.



5. Put the two striped strips of paper together so their stripes face each other and their Start labels touch one another. Insert the Start ends of the strips up through the center slit and then pull them toward the side slits. (See the diagram below.)

6. Insert the Start ends of the strips into the side slits as shown below. Pull the ends of the strips and watch what happens at the center slit.

7. Practice pulling the strips until you can make the two strips come up through the center and go down through the sides at the same time.

Analyze and Conclude

1. **Make Models** What part of the ocean floor does the center slit represent? What do the side slits in the model represent? What do the stripes on the strips represent?

2. **Observe** To model sea-floor spreading even more accurately, how should the model "rocks" closer to the center slit differ from the model rocks closer to the side slits?

3. **Analyze Models and Systems** Why was it important that your model have identical patterns of stripes on both sides of the center slit?

4. **Predict** Over time, what could happen to an underwater island that forms near a mid-ocean ridge?

5. **Form an Operational Definition** Use your observations from this lab to define, in your own words, the processes of sea-floor spreading and subduction.

Lab Investigation

Modeling Sea-Floor Spreading

Unlocking the Key Concept

Directed Inquiry This activity will help students visualize the basic processes that take place at mid-ocean ridges and subduction zones.

Inquiry Focus

Directed Inquiry:
Make Models—creating a physical representation of a mid-ocean ridge and a deep-sea trench and the processes that occur along each structure
Observe—using the senses to gather information about two major tectonic processes
Infer—suggesting a possible explanation as to why the model sea-floor magnetic "stripes" are identical on either side of the model ridge

Answers—Analyze and Conclude

Directed Inquiry:

1. The center slit represents the central valley of a mid-ocean ridge. The side slits represent deep-ocean trenches. The stripes represent the magnetic pattern in the rocks of the ocean floor.

2. The model rocks closer to the center slit should be younger, hotter, and less dense than the rocks closer to the side slits (deep- ocean trenches), which should be older, cooler, and denser.

3. The stripes in the model represent the magnetic pattern recorded in the rocks that make up the ocean floor. Because spreading takes place at an equal rate in both directions, the pattern of magnetic "stripes" is the same on both sides of the mid-ocean ridge.

4. Sample Answer: An island formed at a mid- ocean ridge would eventually sink below the sea as the area of sea floor it sits upon grew colder and denser.

5. Look for answers that mention the eruption of molten material along a mid-ocean ridge, the spreading of the sea floor, and the eventual sinking of oceanic crust along deep-ocean trenches.