8th Grade FUESD Study Plan Week of May 18th

Week 9 Monday/ lunes	Tuesday/ martes	Wednesday/ miércoles	Thursday/ jueves	Friday/viernes

ELA
• Read 30 minutes independently
• 1 Lexia/or Reading Plus Lesson
• Daily Writing Journal
 	
Science
• Read *Genetic Variation and Student Guide*
• Work on the Comprehension Activities
 	
Social Studies/ ELD Connection
• ELD Monday
  • Read *The First Presidential Administration*
  • Work on Google Slides Presentation or One Pager (not both)
 	
Math
• 1 Dreambox or ST Lesson
  • Real Numbers Notes
  • Real Numbers Practice
  • Real Numbers Answer Sheet
 	
PE
• PE Week 9
 	
"Leadership" Activities:
Leadership Activities:
• Coping with Emotions
• SEL Managing Emotions
	ELA
	• Read 30 minutes independently
	• 1 Lexia/or Reading Plus Lesson
	• Read: *Pet Adoption Rise Amid Coronavirus*
	• Answer the Multiple Choice questions
	
	Science
	• Read *Genetic Variation and Student Guide*
	• Work on the Comprehension Activities
	
	Social Studies/ ELD Connection
	• ELD Tuesday
	• Read *The First Presidential Administration*
	• Work on Google Slides Presentation or One Pager (not both)
	
	Math
	• 1 Dreambox or ST Lesson
	• Representing Relationships Notes 1
	• Representing Relationships Notes 2
	• Representing Relationships Practice
	• Representing Relationships Answer Sheet
	
	PE
	• PE Week 9
	
	Leadership Activities:
	• Coping with Emotions
	• SEL Managing Emotions
		ELA
		• Read 30 minutes independently
		• 1 Lexia/or Reading Plus Lesson
		• Daily Writing Journal
		
		Science
		• Read *Genetic Variation and Student Guide*
		• Work on the Comprehension Activities
		
		Social Studies/ ELD Connection
		• ELD Wednesday
		• Read *Whose Vision of America Won Out*
		• Work on Google Slides Presentation or One Pager (not both)
		
		Math
		• 1 Dreambox or ST Lesson
		• Relations Notes
		• Relations Practice
		• Relations Answer Sheet
		
		PE
		• PE Week 9
		
		Leadership Activities:
		• Coping with Emotions
		• SEL Managing Emotions
			ELA
			• Read 30 minutes independently
			• 1 Lexia/or Reading Plus Lesson
			• Read *Pet Adoption Rise Amid Coronavirus*
			• Answer the text dependent questions
			
			Science
			• Read *Gene Therapy*
			  • Answer Text Dependent Questions
			  • Optional: Solve the Outbreak Game
			
			Social Studies/ ELD Connection
			• ELD Thursday
			• Read *Whose Vision of America Won Out*
			• Work on Google Slides Presentation or One Pager (not both)
			
			Math
			• 1 Dreambox or ST Lesson
			• Functions Notes
			• Functions Practice
			• Functions Answer Sheet
			
			PE
			• PE Week 9
			
			Leadership Activities:
			• Coping with Emotions
			• SEL Managing Emotions
				ELA
				• Read 30 minutes independently
				• 1 Lexia/or Reading Plus Lesson
				• Daily Writing Journal
				
				Science
				• Read *Gene Therapy*
				• Answer Text Dependent Questions
				  • Optional: Solve the Outbreak Game
				
				Social Studies/ ELD Connection
				• ELD Friday
				• Finish the One Pager or The Google Slides Presentation
				
				Math
				• 1 Dreambox or ST Lesson
				• Linear Functions Notes 1
				• Linear Functions Notes 2
				• Linear Functions Practice
				• Linear Functions Answer Sheet
				
				Math Challenge Yourself
				  • Diapers
				  • Diapers Answer Sheet
				
				PE
				• PE Week 9
				
				Leadership Activities:
				• Sharpen the Saw
				  • Coping with Emotions
				  • SEL Managing Emotions

8 Grado - Plan de Estudio de FUESD - 18 de mayo

Semana 9 lunes	martes	miércoles	jueves	viernes

ELA/ SS
• Leer 30 minutos independiente
• 1 Lección del programa Lexia/o Reading Plus en la computadora
• Escribir en su diario de entrada de todos los días
 	
Ciencias
• Leer *Genetic Variation and Student Guide*
• Actividad de Comprensión
 	
Coneccion de ELD/SS
• ELD lunes
• Leer *The 1st Presidential Administration*
• Trabajar en Presentación de Google Slides or trabajo de una página
 	
Matematicas
• 1 leccion del programa Dreambox o ST Math
  • Real Numbers Notes
  • Real Numbers Practice
  • Real Numbers Answer Sheet
 	
PE
• PE semana 9
 	
Actividades de "Leadership":
• Coping with Emotions
• SEL Managing Emotions
	ELA/ SS
	• Leer 30 minutos independiente
	• 1 Lección del programa Lexia/o Reading Plus en la computadora
	• Leer *Pet Adoptions Rise Amid the Coronavirus*
	• Contestar las preguntas de comprensión
	
	Ciencias
	• Leer *Genetic Variation and Student Guide*
	• Actividad de Comprensión
	
	Coneccion de ELD/SS
	• ELD martes
	• Leer *The 1st Presidential Administration*
	• Trabajar en Presentación de Google Slides or trabajo de una página
	
	Matematicas
	• 1 leccion del programa Dreambox o ST Math
	  • Representing Relationships Notes 1
	  • Representing Relationships Notes 2
	  • Representing Relationships Practice
	  • Representing Relationships Answer Sheet
	
	PE
	• PE semana 9
	
	Actividades de "Leadership":
	• Coping with Emotions
	• SEL Managing Emotions
		ELA
		• Leer 30 minutos independiente
		• 1 Lección del programa Lexia/o Reading Plus en la computadora
		• Escribir en su diario de entrada de todos los días
		
		Ciencias
		• Leer *Genetic Variation and Student Guide*
		• Actividad de Comprensión
		
		Coneccion de ELD/SS
		• ELD miércoles
		• Leer Whose Vision of America Won Out
		• Trabajar en Presentación de Google Slides or trabajo de una página
		
		Matematicas
		• 1 leccion del programa Dreambox o ST Math
		  • Relations Notes
		  • Relations Practice
		  • Relations Answer Sheet
		
		PE
		• PE semana 9
		
		Actividades de "Leadership":
		• Coping with Emotions
		• SEL Managing Emotions
			ELA
			• Leer 30 minutos independiente
			• 1 Lección del programa Lexia/o Reading Plus en la computadora
			• Leer *Pet Adoptions Rise Amid the Coronavirus*
			• Contestar las preguntas de comprensión
			
			Ciencias
			• Leer *Gene Therapy*
			• Actividad de Comprensión
			• Opcional: Solve the Outbreak Game
			
			Coneccion de ELD/SS
			• ELD jueves
			• Leer Whose Vision of America Won Out
			• Trabajar en Presentación de Google Slides or trabajo de una página
			
			Matematicas
			• 1 leccion del programa Dreambox o ST Math
			  • Functions Notes
			  • Functions Practice
			  • Functions Answer Sheet
			
			PE
			• PE semana 9
			
			Actividades de "Leadership":
			• Coping with Emotions
			• SEL Managing Emotions
				ELA
				• Leer 30 minutos independiente
				• 1 Lección del programa Lexia/o Reading Plus en la computadora
				• Escribir en su diario de entrada de todos los días
				
				Ciencias
				• Leer *Gene Therapy*
				• Actividad de Comprensión
				• Opcional: Solve the Outbreak Game
				
				Coneccion de ELD/SS
				• ELD viernes
				• Terminar Presentación de Google Slides or trabajo de una página
				
				Matematicas
				• 1 leccion del programa Dreambox o ST Math
				  • 1 Dreambox or ST Lesson
				  • Diapers
				
				Math Challenge Yourself
				Linear Functions Notes 1
				• Linear Functions Notes 2
				• Linear Functions Practice
				• Linear Functions Answer Sheet
				
				PE
				• PE semana 9
				
				Actividades de "Leadership":
				• Coping with Emotions
				• SEL Managing Emotions

The Cure

Writing Prompts Ideas

- The scientists have had a breakthrough….
- We have discovered the cure for…..
- After many weeks of hard work, we have finally….

Five Ws and One H

Who...

- Who is the character?

Where…

- Where is the character?

When…

- When did the event take place?

Why...

- Why is the character there?
- Why did this happen?
- Did something cause this to happen?

What...

- What is happening?
- Can you provide more detailed information?

How...

- How did the character get there?
- How did the character get out of their situation?
- How did this happen?
- Can you provide more information to prove this?

Monday: Write the beginning of the story using one of the given "**Writing Prompt Ideas**."

Wednesday: Write the middle of the story.

Friday: Write the end of the story.

Alone no more: People are turning to dogs, cats and chickens to cope with self-isolation

By Washington Post, adapted by Newsela staff on 03.30.20
Word Count **982**
Level **1020L**

Since local governments have asked people to stay inside to reduce the spread of coronavirus, animal shelters across the country have seen more pet adoptions than usual. Photo: Marek Szturc/Unsplash

Lucky Dog Animal Rescue holds adoption events at the PetSmart in Gaithersburg, Maryland. At a typical event, the group would find homes for about 15 dogs.

As coronavirus news started to spread the week of March 16, the waiting list jumped from 10 to 40 would-be adopters. Coronavirus is a flu-like illness that began in China and has been spreading across the globe since December 2019. Health officials have been encouraging social distancing. This means staying home and staying away from other people to help slow the spread of the virus.

Mirah Horowitz, who runs the rescue, said they had 30 adoptions in just three hours.

Forget toilet paper, milk and hand sanitizer. People are rushing to stock up on cats, dogs, rabbits and fish. Some are even getting chickens.

Millions Forced To Self-Isolate During Outbreak

The new coronavirus can make some people very sick. It is spreading quickly across the United States. Millions of people must now work from home, and schools are closed to slow the spread. The promise of companionship while in isolation is causing some to take in animals. Many say they finally have the time to properly train and care for a new pet. Animal rescuers across the country say they are seeing sharply increasing interest in adoption and fostering.

In California, 40 million residents were ordered on March 19 to stay home except for essential jobs or trips. Governor Gavin Newsom noted an important exception.

"You can still walk your dog," he said.

That was part of the reason Kathy Shield, a University of California, Berkeley graduate student, adopted a 2-year-old dog and named him Atom. The timing was ideal because Shield is working from home and can help Atom adjust to his new environment. She is also excited to have someone to talk to, even if he does not talk back. Plus, he will help keep her on schedule.

"Having a dog is going to force me to get up early in the morning because at an absolute minimum, I have to let it out to pee," Shield said.

"There's no question that animals provide incredible comfort and companionship, especially during times of crisis — and they certainly appreciate the attention — so we encourage people to continue to adopt or temporarily foster animals in need," said Matt Bershadker. He is head of the American Society for the Prevention of Cruelty to Animals (ASPCA), a national animal rescue.

Animals Need To Be Cared For During Outbreak

Shelters need the help. Some animal rescues in big cities are closing to help prevent the spread of coronavirus between people, but the animals still need to be cared for. Many organizations are hoping to find foster homes for their remaining animals.

Animal Care Centers of NYC (ACC), an animal rescue in New York City, put out a call for additional foster homes on March 13.

"We thought we'd get 50," said Katy Hansen, who works at the rescue. "We got 2,000 people who filled out the application." The vast majority, Hansen says, are young adults who live with a roommate, have no kids and are either working from home or suddenly out of a job.

The ASPCA says it has seen an increase in people interested in fostering and adopting animals in recent weeks. It has managed to find temporary foster homes for most of its animals. Animal rescues in Arizona, California and New York have seen similar increases in adoptions and fostering.

Not Just Dogs And Cats Being Adopted

Fostering also works well for those who can only help out during this uncertain period.

Maya Dangerfield, a video producer, is usually too busy for a pet, so she and her husband decided to foster a dog while working from home in New York City. They picked up a poodle-mix named JWoww on March 19.

"It's nice to have a little doggy. Just someone to hang out with," said Dangerfield.

It isn't just dogs. People are bringing home all kinds of living creatures for companionship during this time of social isolation. They're sharing photos on social media to provide a break from less positive news.

Pets can also entertain younger family members at home. Kenneth Lynch and Lauren Wakefield bought a blue and silver betta fish named Freddy for their two young children, hoping that feeding and cleaning the tank will instill a sense of responsibility. Lynch said the fish will help their son occupy some of his time in a more healthy manner while he's home from school.

Some people are getting animals for more practical reasons.

"We're kind of stuck at home; grocery stores are empty and now we have these chickens that are laying eggs for us," said Kelly Bordas. She is a new chicken owner in Oviedo, Florida.

The chickens, Daisy Duck and Mabel, have been a source of entertainment as much as food. Bordas' young daughter also helps take care of the birds.

"She loves them, she always goes out there and she wants to pet them. She wants them to be her best friends," said Bordas.

"It Feels Like The Right Thing To Do"

For Julianna Caplan, the coronavirus scare became the perfect time to finally get a dog for her 13-year-old daughters because the whole family is home from work and school. They went to the Homeward Trails Adoption Center in Fairfax Station, Virginia and left with a 2-year-old blue heeler.

They named the dog Pepper Corona for her gray and white patches of fur and for her entrance into their lives during this moment in history.

"It feels good to adopt, and the kids are happy. It feels like the right thing to do now on a psychological level," Caplan says. "I look at this dog and say to her, 'I don't know what your past has been, but your future is about to be awesome.'"

Quiz

1 Which section from the article BEST explains why animal shelters are currently struggling?

(A) "Millions Forced To Self-Isolate During Outbreak"

(B) "Animals Need To Be Cared For During Outbreak"

(C) "Not Just Dogs And Cats Being Adopted"

(D) "It Feels Like The Right Thing To Do"

2 Read the following claim.

Many say they finally have the time to properly train and care for a new pet.

Which sentence from the article provides the BEST support for the above statement?

(A) "Having a dog is going to force me to get up early in the morning because at an absolute minimum, I have to let it out to pee," Shield said.

(B) The ASPCA says it has seen an increase in people interested in fostering and adopting animals in recent weeks.

(C) People are bringing home all kinds of living creatures for companionship during this time of social isolation.

(D) For Julianna Caplan, the coronavirus scare became the perfect time to finally get a dog for her 13-year-old daughters because the whole family is home from work and school.

3 According to the article, WHY did the Wakefield parents buy a blue and silver betta fish?

(A) They hoped it would teach their kids how to be responsible for a pet.

(B) They wanted their son to have a pet he could show to his classmates.

(C) They thought their daughter should learn how to clean fish tanks.

(D) They believed the fish would keep them entertained at home.

4 How did adopting a dog affect Kathy Shield?

(A) It inspired her to go to graduate school.

(B) It kept her from going outside during a crisis.

(C) It helped her to establish a daily routine.

(D) It caused her to stay home from her school.

Answer Sheet and Text Dependent Questions

Tuesday: Answer the multiple choice questions. Type your answer in the box.

1.	
2.	
3.	
4.	
5.	

Thursday: Use the RACE Strategy to answer the following text dependent questions.

1. What is the central idea of the text? Use evidence from the text to support your answer.

2. Why are so many people trying to adopt pets during COVID 19? Use evidence from the text to support your answer.

3. In your opinion, should people be adopting pets at this time? Why or why not?

MONDAY AND TUESDAY: What Is Genetic Variation, and How Does It Occur?

Organisms get many traits from their parents. Eye color, face shape, and hair color are examples of traits that are passed from human parents to their children. They are not acquired traits. Examples of acquired traits are learning how to throw a curveball or playing a guitar. However, the exact form taken by these inherited traits may vary. This is because different genes or parts of genes are passed on from a parent to the child. Each child might inherit different traits from the parents. When parents have several **offspring**, the offspring may have different eye colors. They can even have different hair colors. One child's face may be round. Another child's face might be more oval. These natural differences in traits within a **species** are called **genetic variation**.

Mutations

Every **organism** has a genetic code. This genetic code determines the organism's features. It can also determine some of its behaviors. Genes are copied from the parent to the offspring. However, the copying process is not always perfect. Sometimes mistakes are made in an organism's genetic code. The order of **DNA** nucleotides in genes on chromosomes is translated into molecules. These molecules make up proteins. These changes are called mutations. The proteins coded by genes determine all of an organism's characteristics.

What happens if one of these nucleotides in DNA gets changed when the DNA is copied? It depends. Sometimes, a **mutation** will not alter the protein. Sometimes, the change in DNA will cause a small change in the protein. And sometimes, changing one nucleotide will completely change the protein that is translated from the gene.

Watch the following video on Discovery Ed for more information about DNA Mutations:

https://clever.discoveryeducation.com/learn/videos/d17607c2-0af5-421f-a16f-033555fb6f31/

Mutations provide the raw material for **natural selection** and **adaptation**. Sometimes a mutation will offer a useful trait to an organism. In these cases, the organism's offspring are more likely to **survive** and reproduce. As more offspring survive, the gene will become more common in the population. The adaptation it produces will become more common, too. It often takes many mutations to cause wide-scale change in an entire species. Also, mutations are usually not favorable and sometimes lethal or deadly. So, most mutations do not get passed onto future generations.

Text Dependent Questions:

1) What is "genetic variation"? _____

_____

Give an example: _____

2) What are mutations and how do they occur?

_____

_____

3) Adaptations result from beneficial traits produced as a result of a mutation. Do mutations usually get passed down onto future generations? Why or why not?

WEDNESDAY: Genetic Variation

In most populations, there are many versions of a gene. These versions of genes are called **alleles.** They produce the genetic variation we see in populations. For example, wolves' coats can be many different colors. These coat colors are the result of a variety of alleles for coat color and genetic variation within the wolf population. Almost all natural populations display genetic variation.

Most multicellular organisms within a population differ from each other. This is because their genes are always being reshuffled during reproduction. This reshuffling of genes appears in their offspring. The genetic variation that populations display may include traits for structural or behavioral variations. Structural variations are things such as size or coat color. Behavioral variations are things such as parental care. However, not all variations you see in a population are the result of inherited characteristics.

Beans: An example of Genetic Variation and Diversity

4) These beans represent an example of genetic variation and diversity. What is the cause of this variation and diversity and how might it help individual bean plants survive?

Assignment condensed from "DNA Mutations." *Discovery Education*, Cerebellum, 2010, app.discoveryeducation.com/learn/videos/d17607c2-0af5-421f-a16f-033555fb6f31.

Gene therapy

Gene therapy is a revolutionary new technique for treating people with health problems. Up until very recently, the most commonly available methods for treating patients were either through drugs or surgical procedures. Gene therapy provides a third option for treatment by **altering** or replacing cells with new genetic materials and instructions. Because these changes are at the molecular level, scientists can be very precise in the kinds of alterations they make in patients.

Gene therapy works by using a delivery system, such as a virus, to enter a patient's body. Once inside the body, the virus binds to a host cell and delivers the new DNA. The proteins then begin to repair the affected cells. New techniques have focused on removing cells from the patients and altering ***them*** outside the body before re-introducing them to the patient.

The two types of gene therapy are called somatic and germline. Somatic therapy refers to changing or replacing a somatic cell. In this case, the treatment is restricted to the patient only. This will not affect the patient's future children because the patient's germ cells are unaffected. In germline therapy, the patient germ cells are treated. Because these changes are in heritable genes, this may affect the patient's future offspring. This is highly controversial because it is not clear exactly how this might affect them and further generations. For this reason, many countries have enacted laws that either **prohibit** or outright ban this kind of treatment.

Despite the promise of gene therapy, there are still many hurdles that need to be overcome before it comes into widespread use. One of the issues is that the use of viruses to deliver DNA may actually cause unexpected problems in patients if the virus grows and attacks the body. Another problem is the nature of many diseases is very **complex** and spread throughout multiple genes. The use of gene therapy to change a single gene in the body would probably not be adequate as a cure. Finally, the costs of gene therapy are prohibitive. Some gene therapy procedures may cost over $1 million to undertake and require specialized doctors, equipment, and facilities.

Gene Therapy Text Dependent Questions

1. According to the article, what is gene therapy?
    a) a scientific theory that has yet to be put into practice
    b) a contemporary method for treating people with health problems
    c) a revolutionary new technique for treating people with shopping addictions
    d) a revolutionary new technique for treating people with heart defects
2. The word "altering" in paragraph 1 could be replaced with:
    a) accepting
    b) modifying
    c) destroying
    d) continuing
3. The word "them" in paragraph 2 refers to:
    a) cells
    b) patients
    c) proteins
    d) techniques
4. Paragraph 2 is about:
    a) how gene therapy works
    b) two types of gene therapy
    c) why people need gene therapy
    d) how gene therapy creates new DNA
5. According to the article, why is germline therapy controversial?
    a) because this form of treatment is considered far too expensive
    b) because scientists are not sure how this therapy might affect a patient's children
    c) because a patient's future children and their germ cells are unaffected
    d) because many countries have laws that either prohibit medical treatment
6. The word "prohibit" in paragraph 3 could be replaced with:
    a) forbid
    b) assist
    c) permit
    d) erase
7. The word "complex" in paragraph 4 could be replaced with:
    a) vague
    b) intricate
    c) dangerous
    d) obvious

8. Paragraph 4 is about:

a) issues relating to viruses and multiple genes

b) issues relating to gene therapy treatment

c) why there are not enough specialized doctors

d) how gene therapy promises so much but delivers so little

9. What would be a good title for this passage?

a) Scientists are very precise in the kinds of surgery they perform

b) Why gene therapy procedures are ridiculously expensive

c) A dangerous new technique for treating people with health problems

d) A contemporary progressive method for treating people with health problems

ESL at Home 6-8 Weeks 3-4

Use notebook paper to complete these activities. Do one each day!

Monday	Tuesday	Wednesday	Thursday	Friday
Pick a page from a book. Change all of the nouns to things you see right in front of you in your house, then read it aloud.	Make a T-chart. Make a list of things you like about learning at home versus at school. **Home** | **School**	Find food in your house, like crackers or water bottles. Write or draw a word problem. **Omar has 346 crackers. Neveah ate one hundred three. How many are left?**	Go outside and look up at the clouds. Draw what you see.	Choose two animals. Draw and label their food web. Create a Venn diagram to compare their ecosystems.

Monday	Tuesday	Wednesday	Thursday	Friday
Create a shadow puppet story on the wall. Write the title, characters, problem, solution, and ending to your story.	Use crackers or candy to build a castle. How tall can you make it? How many pieces did you use? List your materials.	Take a walk in your neighborhood and search for items in nature that form the shape of letters. Draw what you see. 	Think of someone you would like to interview. Write them a letter with at least three questions.	Use the food in your house to create a menu with prices. Use them to write word problems. **Example:** **Milk = $21.00** **Bananas = $33.00** **Ice cream = $12.00**

ESL en Casa 6-8 Semanas 3-4

Usar una hoja de libreta para completer las actividades. Hacer uno por dia.

Lunes	Martes	Miercoles	Jueves	Viernes
Escoge una pagina de un libro. Cambio todos los sustantivos a cosas que ves entre de tu casa y despues lee la pagina de nuevo en voz alta.	Crear una grafica T. Hacer una lista de cosas que te gusta aprender major que en casa que en la escuela. **Casa** | **Escuela**	Encontrar comida en tu casa, como galletas o botellas de agua. Escribe una historia de problema matematica. **Omar tiene 346 galletas. Neveah comio ciento-tres. Cuantos quedan?**	Ve afuera y voltea a ver las nubes. Dibuja lo que ves.	Escoge dos animals y agrega que es lo que comen. Crear un diagrama que compare sus ecosistemas.

Lunes	Martes	Miercoles	Jueves	Viernes
Crear un espectaculo de marioneta de sombras con tus manos y la pared. Escribe el titulo, personajes, problema, solucion y el fin de la historia.	Usar galletas o dulces para hacer un castiilo? Que tan alto lo hiciste? Cuantas piezas usaste? Hacer una lista de los materiales que usaste.	sal a caminar en tu vecindad y busca cosas que parezcan letras. Dibjua lo que ves. 	Piensa en alguien a quien te gustaria entrevistar. Escribeles una carta con almenos tres preguntas.	usa la comida que tienes en casa para crear un menu con precios. Usalos para escribir problemas. **Ejemplo:** **Leche = $21.00** **Platanos = $33.00** **Nieve = $12.00**

The first presidential administration in the United States

By USHistory.org, adapted by Newsela staff on 09.05.19
Word Count **662**
Level **1050L**

Image 1. George Washington (center) arrives at Congress Hall in Philadelphia, Pennsylvania, March 4, 1793, for his inauguration as the first president of the United States in this painting by Jean Leon Gerome Ferris. Image from Universal History Archive/Universal Images Group via Getty Images

The Revolutionary War was over by 1783, and George Washington was ready to retire to the countryside. He resigned his post in the military and prepared to settle into farming at his Mount Vernon, Virginia, home.

But Washington would be called on to lead the country again — this time not in war, but in peace.

During the critical period of the 1780s Washington was privately worried. The Articles of Confederation, the new governing documents of the United States, called for a weak central government. Washington believed that this threatened the long-term health of the nation. He supported the call for a Constitutional Convention, and after some hesitation, attended as a delegate where he was elected the presiding officer.

He took a relatively limited role, however, in the debate that created the proposed U.S. Constitution. He also did not publicly favor confirming it. It seems that his personally reserved

attitude prevented him from actively campaigning. As he was likely to become the first president, Washington did not want to appear to be self-serving. So, he did not aggressively support the Constitution in public.

Pressure On The First Presidency

The significance of the first presidential administration under the Constitution is hard to overstate. The U.S. Constitution provided a bare structural outline for the federal government, but how it would actually come together was unclear. The precedent, or standard, established by the first president would be enormous.

Washington generally proceeded with great caution. For the most part, he continued precedents that had been established under the Articles of Confederation. For instance, he carried over the three departments of the government that had existed before the Constitution.

Washington was still a Nationalist. He favored a stronger central government and made sure that executive authority was independent of total legislative control.

For instance, Washington appointed his own head to each department of government whom the legislature could only accept or reject. Furthermore, Washington identified the three leaders as his personal "Cabinet" of advisers, which demonstrated his power as the executive leader. These Cabinet leaders would be Thomas Jefferson as secretary of state, Alexander Hamilton as head of the treasury, and Henry Knox of war.

Washington's Second Term Suffered Turmoil

Particularly in his first term as president from 1789-1792, Washington had enormous personal popularity and stature. This made the modest new national government seem more solid and valid.

Unfortunately for Washington, events in his second term somewhat clouded his extraordinary success. For one, his own Cabinet split apart. Thomas Jefferson increasingly disagreed with the economic policies proposed by Alexander Hamilton, most of which Washington supported.

Even more disturbing to Washington was the emergence of a new form of political activity: the public had divided into opposing political parties. Although now a fundamental feature of modern democracy, Washington and many others perceived organized opposition to the government as treasonous.

So, there were clouds at the end of George Washington's public career. Like the difficulties of his first military command in the 1750s, these clouds remind us that even this most impressive of the Founding Fathers hardly glided through public life without controversy. Washington had been impressive and even essential to the creation of the new nation. Still, he remained a leader with qualities that could not appeal to all of the people all of the time. Most interestingly perhaps,

is that some of the personal qualities that made him extraordinarily effective are also qualities that might make him unpopular today.

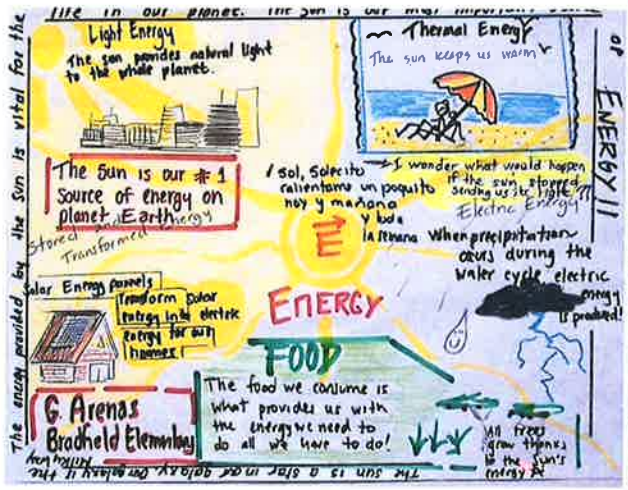
Washington consciously cultivated a distance from the public and a personal reserve that made him appear to be a bit of a loner. He was a curious combination of late-18th-century qualities — a regal republican whose dislike for democratic excess helped give life, power and respectability to what would soon become the world's first modern democracy.

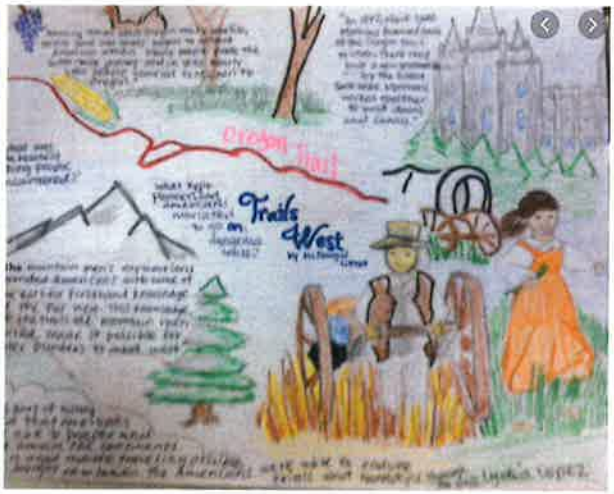
One Pager

You will need a blank piece of paper or a blank Google Doc (if you choose do complete this electronically). After you finish reading the articles complete one of the following:

- Sketch or insert a picture that represents what you have read
- Write out two quotations from the text
- Make connections between the text and current events using sketches and text
- Include a statement about one thing you connected with in the reading
- Identify three symbols through sketches or text.

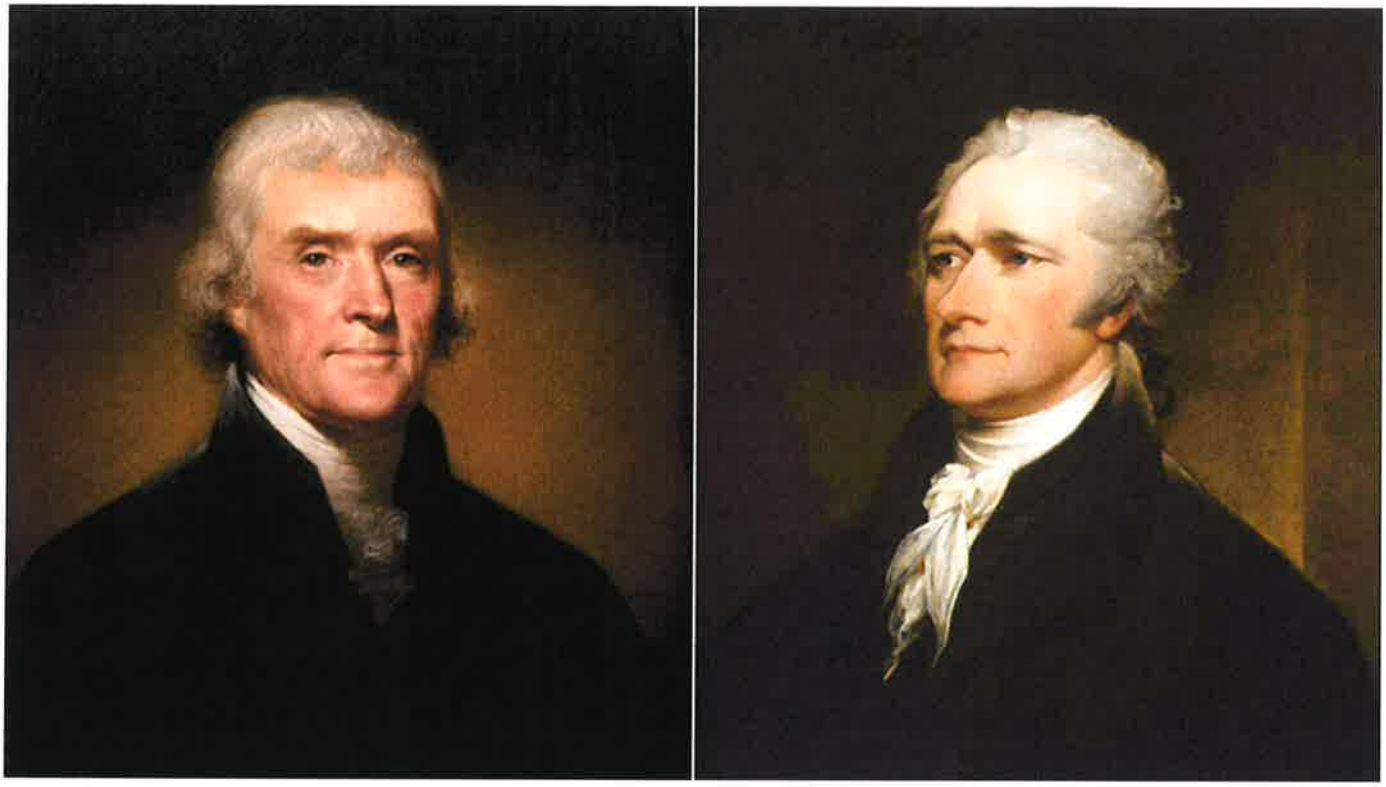
I have included some samples to motivate you. Have fun and be creative!





Whose vision of America won out, Hamilton's or Jefferson's?

By History.com, adapted by Newsela staff on 08.05.19
Word Count **1,196**
Level **1100L**



A portrait of Thomas Jefferson by Rembrandt Peale in 1800 (left) and a portrait of Alexander Hamilton by John Trumbull in 1806. Photos via Wikimedia Commons

America's foremost Founding Father is Alexander Hamilton, says Stephen F. Knott. He is a professor of national security affairs at the United States Naval War College.

"We live, without question, in Hamilton's America," says Knott, the co-author of "Washington and Hamilton: The Alliance That Forged America."

Hamilton, he says, foresaw the United States emerging as a power that would outgrow Europe's great nations, including Britain. He also created policies that convinced his fellow Americans to "think continentally."

"He wanted the citizenry to think of themselves first and foremost as Americans — not New Yorkers or Virginians," Knott says.

"Hamilton became the nation's first treasury secretary at a time when the citizens of South Carolina and New Hampshire" had little in common, he continued. "Hamilton succeeded in

creating an American sense of identity in part by creating institutions that would bind the people to the national government, not their respective states." This was done by making institutions like the national bank. When the Revolutionary War ended, many states faced huge debts. The national bank promised to take over these debts.

The Father Of American Capitalism

The United States emerged as a superpower in the 20th century, due to its strength in manufacturing. Knott believes that without Hamilton's contributions, it would have been next to impossible for this to have happened.

"Hamilton was the father of American capitalism, which arguably produced one of the highest standards of living in the world," Knott says. His policies at the Treasury Department were designed to help the development of manufacturing.

"His economic policies such as a national bank, tariffs to protect American manufacturing, and the stabilization of the nation's finances" allowed the country to establish a good credit rating, meaning other countries trusted that the United States could pay back debts. All this added to the country's wealth and strength, Knott says.

Knott also notes that Hamilton was the driving force behind the publication of the "Federalist Papers." Hamilton wrote 51 of the 85 essays while working in concert with Founding Fathers James Madison and John Jay. These laid the blueprint for an "energetic executive," or president, a model followed closely by George Washington.

"From the beginning to the end of this most important first presidency, Washington followed Hamilton's advice, much to Thomas Jefferson's distress," he says. Standards would have been different if Jefferson were in charge, he said.

Hamilton, he adds, was determined to bring many "elements of energy and permanence" into a new national government under the Constitution. This, hopefully, would allow the nation to defend itself from foreign attacks and domestic uprisings. It could also provide an environment healthy for economic development.

Knott points out that Hamilton's vision of a United States in which its citizens thought "continentally" actually led, long after his death, to a great crisis: the Civil War.

The concept of union, of American nationhood, was built deeply enough in parts of the North "that Union soldiers were prepared to die for that principle," he says.

Jefferson's Visions Of Economic And Land Growth

Kevin R.C. Gutzman opens his new book, "Thomas Jefferson — Revolutionary: A Radical's Struggle to Remake America," with an assertion that Thomas Jefferson's influence on American political history is greater than that "of any other figure." He argues that Jefferson gave the United States the republican spirit that has characterized the country since its birth.

"Jefferson is chiefly responsible for the disentanglement of government and religion and the general consensus at the time of the Revolution that the government would be republican and most of its office-holders elected," Gutzman tells History.com. He points to Republican principles

championed by Jefferson such as local control of education, democratizing land-holding and decentralized government.

In addition, he says the Louisiana Purchase orchestrated by Jefferson is the primary reason that America became a transcontinental country. This purchase from France added 800,000 square miles of land to the United States west of the Mississippi River. This, he believes, allowed the country to eventually become an economic, military and diplomatic superpower.

Gutzman also points to the principles in the Virginia Statute for Religious Freedom that was drafted by Jefferson and widely copied by other states and put into the U.S. Constitution by James Madison. In England, you could not attend the excellent universities Oxford or Cambridge or serve in Parliament if you were not Episcopalian, the prevailing form of Christianity back then. "Jefferson thought that was wrong," he says. Jefferson's view is that the government can only hurt religion, and thus people's consciences, "so it shouldn't be involved."

Jefferson himself owned land and was a member of Virginia's aristocracy. However, he spearheaded the breakup of a system that had prevented landholders from dividing properties to future generations.

"In colonial Virginia, 85 families owned about two-thirds of the land, and you can't have a republic with 85 families owning most of the land," Gutzman says. "With the change, instead of an aristocratic land distribution, you had free distribution from one generation to another and land highly divided. It's an extremely republican ideal."

The "Mother Ship" Of American Education

Jefferson's grave marker lists his founding of the University of Virginia, but not his time in the White House, as one of his primary achievements. Gutzman says there is a good reason for that. People do not even realize Jefferson is the man who dreamed up how we think of universities these days, he says.

Prior to the founding of the University of Virginia, "The centerpiece of the curriculums were Greek and Latin. Students came to class to recite what they memorized," Gutzman says. "Jefferson believed instead that students should study what they desired and thought useful. Instead, students demonstrated their knowledge with essay exams, which weren't used anywhere before the opening of the University of Virginia in 1825. Every post-secondary school in America is now the University of Virginia. It's the mother ship of American post-secondary education."

Jefferson advocated the power of state governments so much that when Jefferson talked about his "country," he was referring to Virginia, Gutzman says. "In general Jefferson thought that to have a republican society it had to be highly decentralized. It didn't mean, though, that he thought it wasn't necessary for the federal government to have all the necessary strength when it came to diplomatic and military matters."

Visions Compete in Election Of 1800

Gutzman argues that the debate over the competing visions of Jefferson and Hamilton was settled in the election of 1800.

In the 1790s, Hamilton wanted to use the military to tamp down political rebellion, "and his party was responsible for the Sedition Act, which made it a crime to speak out against the government. I think that was the route America would have followed if not for the Republican success in the election of 1800. The victory meant that an aristocratic model of government was done. That was a lasting victory."

That year, John Adams, who was a member of Hamilton's Federalist Party, lost to Jefferson's Democratic-Republican Party.

To Jefferson, the election of 1800 "was a revolution of government principles," Gutzman says. "The contest between the two was so lopsided that Hamilton's party literally ceased to exist."

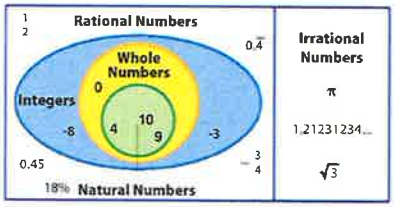
Key Concept

Real Numbers

	Rational Number	Irrational Number
Words	A rational number is a number that can be expressed as the ratio $\frac{a}{b}$, where a and b are integers and $b \neq 0$.	An **irrational number** is a number that *cannot* be expressed as the ratio $\frac{a}{b}$, where a and b are integers and $b \neq 0$.
Examples	$-2, 5, 3.\overline{76}, -12\frac{7}{8}$	$\sqrt{2} \approx 1.414213562\ldots$

Numbers that are not rational are called irrational numbers. The square root of any number that is not a perfect square number is irrational. The set of rational numbers and the set of irrational numbers together make up the set of **real numbers**. Study the Venn diagram below.

Real Numbers



STOP and Reflect

Explain below how you know that $\sqrt{2}$ is an irrational number.

Examples

Name all sets of numbers to which each real number belongs.

1. $0.2525\ldots$ The decimal ends in a repeating pattern. It is a rational number because it is equivalent to $\frac{25}{99}$.

2. $\sqrt{36}$ Since $\sqrt{36} = 6$, it is a natural number, a whole number, an integer, and a rational number.

3. $-\sqrt{7}$ $-\sqrt{7} \approx -2.645751311\ldots$ The decimal does not terminate nor repeat, so it is an irrational number.

Got It? Do these problems to find out.

a. $\sqrt{10}$ b. $-2\frac{2}{5}$ c. $\sqrt{100}$

a. _____

b. _____

c. _____

Compare and Order Real Numbers

You can compare and order real numbers by writing them in the same notation. Write the numbers in decimal notation before comparing or ordering them.

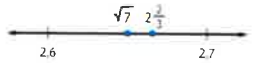
Examples

Fill in each ◯ with <, >, or = to make a true statement.

4. $\sqrt{7}$ ◯ $2\frac{2}{3}$

$\sqrt{7} \approx 2.645751311\ldots$

$2\frac{2}{3} = 2.666666666\ldots$

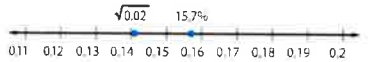


Since $2.645751311\ldots$ is less than $2.66666666\ldots$, $\sqrt{7} < 2\frac{2}{3}$.

5. 15.7% ◯ $\sqrt{0.02}$

$15.7\% = 0.157$

$\sqrt{0.02} \approx 0.141$



Since 0.157 is greater than 0.141, $15.7\% > \sqrt{0.02}$.

6. **Order the set $\left\{\sqrt{30}, 6, 5\frac{4}{5}, 5.3\overline{6}\right\}$ from least to greatest. Verify your answer by graphing on a number line.**

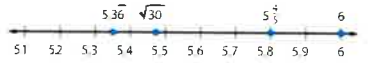
Write each number as a decimal. Then order the decimals.

$\sqrt{30} \approx 5.48$

$6 = 6.00$

$5\frac{4}{5} = 5.80$

$5.3\overline{6} \approx 5.37$



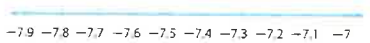
From least to greatest, the order is $5.3\overline{6}$, $\sqrt{30}$, $5\frac{4}{5}$, and 6.

Got It? Do these problems to find out.

d. $\sqrt{11}$ ◯ $3\frac{1}{3}$ e. $\sqrt{17}$ ◯ 4.03 f. $\sqrt{6.25}$ ◯ 250%

g. Order the set $\left\{-7, -\sqrt{60}, -7\frac{7}{10}, -\frac{66}{9}\right\}$ from least to greatest. Verify your answer by graphing on the number line below.

g. _____



NAME _____ DATE _____ PERIOD _____

Lesson 10 Homework Practice

Compare Real Numbers

Name all sets of numbers to which the real number belongs.

1. -9

2. $\sqrt{144}$

3. $\sqrt{35}$

4. $\frac{8}{11}$

5. 9.55

6. $5.\overline{3}$

7. $\frac{20}{5}$

8. $-\sqrt{44}$

Replace each ○ with <, >, or = to make a true statement.

9. $\sqrt{8}$ ○ 2.7

10. $\sqrt{15}$ ○ 3.9

11. $5\frac{2}{5}$ ○ $\sqrt{30}$

12. $2\frac{3}{10}$ ○ $\sqrt{5.29}$

13. $\sqrt{9.8}$ ○ $3.\overline{1}$

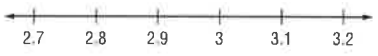
14. $8.\overline{2}$ ○ $8\frac{2}{9}$

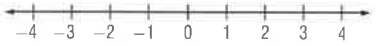
Order each set of numbers from least to greatest. Verify your answer by graphing on a number line.

15. $\sqrt{10}, \sqrt{8}, 2.75, 2.\overline{8}$

16. $5.01, 5.0\overline{1}, 5.\overline{01}, \sqrt{26}$

17. $-\sqrt{12}, \sqrt{13}, -3.5, 3.5$





18. ALGEBRA The *geometric mean* of two numbers a and b is $\sqrt{ab}$. Find the geometric mean of 32 and 50.

19. ART The area of a square painting is 600 square inches. To the nearest hundredth inch, what is the perimeter of the painting?

Tables, Graphs, and Equations

Recall that an equation is a mathematical sentence stating that two quantities are equal. A **linear equation** is an equation with a graph that is a straight line. Some equations contain more than one variable.

Variables
Recall you can use any letter to represent the independent and dependent variables. If you graph the equation, label your axes using those letters.

Examples

Tutor

The table shows the number of liters in quarts of liquid.

1. **Write an equation to find the number of liters in any number of quarts. Describe the relationship in words.**

Quarts, q	Liters, ℓ	
1	0.95	
2	1.9	+0.95
3	2.85	+0.95
4	3.8	+0.95
5	4.75	+0.95

The rate of change is the rate that describes how one quantity changes in relation to another quantity. The rate of change of quarts to liters is $\frac{1.9 - 0.95}{2 - 1} = \frac{0.95}{1}$ or 0.95 liter in every quart.

Let ℓ represent the liters and q represent the quarts. The equation is $\ell = 0.95q$.

2. **About how many liters are in 8 quarts?**

$\ell = 0.95q$ Write the equation.

$\ell = 0.95(8)$ Replace q with 8.

$\ell = 7.6$ Multiply.

There are about 7.6 liters in 8 quarts.

Got It? **Do these problems to find out.**

The total cost of tickets to the school play is shown in the table.

Number of Tickets, t	Total Cost ($), c
1	4.50
2	9.00
3	13.50
4	18.00

a. Write an equation to find the total cost of any number of tickets. Describe the relationship in words.

a. _____

b. Use the equation to find the cost of 15 tickets.

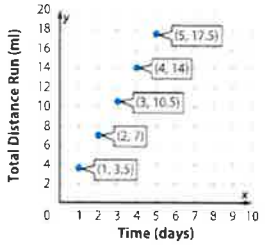
b. _____

Examples

Tutor

The total distance Marlon ran in one week is shown in the graph.

3. **Write an equation to find the number of miles run y after any number of days x.**



Find the rate of change or the slope of the line.

Step 1 $m = \frac{y_2 - y_1}{x_2 - x_1}$ Definition of slope

$m = \frac{14 - 7}{4 - 2}$ $(x_1, y_1) = (2, 7)$ & $(x_2, y_2) = (4, 14)$

$m = \frac{7}{2}$ or 3.5 Simplify.

Step 2 To find the y-intercept, use the slope and the coordinates of a point to write the equation of the line in slope-intercept form.

$y = mx + b$ Slope-intercept form

$y = 3.5x + b$ Replace m with the slope, 3.5.

$7 = 3.5(2) + b$ Use the point $(2, 7)$; $x = 2$, $y = 7$.

$0 = b$ Solve for b.

The slope is 3.5 and the y-intercept is 0. So, the equation of the line is $y = 3.5x + 0$ or $y = 3.5x$.

4. **How many miles will Marlon run after 2 weeks?**

$y = 3.5x$ Write the equation.

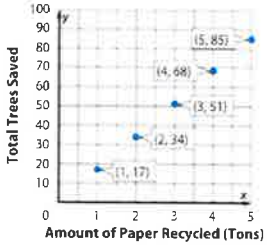
$y = 3.5(14)$ There are 14 days in 2 weeks. Replace x with 14.

$y = 49$ Multiply.

Marlon will run 49 miles in 2 weeks.

Got It? Do these problems to find out.

The number of trees saved by recycling paper is shown.



c. Write an equation to find the total number of trees y that can be saved for any number of tons of paper x.

c. _____

d. Use the equation to find how many trees could be saved if 500 tons of paper are recycled.

d. _____

Key Concept **Multiple Representations of Linear Equations**

Words

Distance traveled is equal to 12 miles per second times the number of seconds.

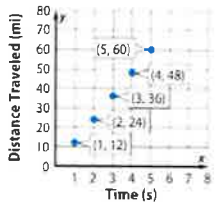
Equation

$d = 12s$

Table

Time (seconds)	Distance (miles)
1	12
2	24
3	36
4	48
5	60

Graph



Words, equations, tables, and graphs can be used to represent linear relationships.

Examples

Chloe competes in jump rope competitions. Her average rate is 225 jumps per minute.

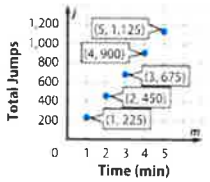
5. **Write an equation to find the number of jumps in any number of minutes.**

Let j represent the number of jumps and m represent the minutes.

The equation is $j = 225m$.

6. **Make a table to find the number of jumps in 1, 2, 3, 4, or 5 minutes. Then graph the ordered pairs.**

m	$225m$	j
1	225(1)	225
2	225(2)	450
3	225(3)	675
4	225(4)	900
5	225(5)	1,125



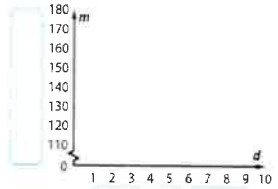
Got It? Do these problems to find out.

Financial Literacy **Paul earns $25 for grooming a dog plus $18.50 per day for boarding the same dog.**

e. Write an equation to find the amount of money Paul earned m for grooming a dog once and boarding it for any number of days d.

e. _____

f. Make a table to find his earnings for 5, 6, 7, or 8 days. Then graph the ordered pairs.



STOP and Reflect

A gym charges an annual membership fee of $10 but you must pay $7.50 for each visit. What equation could be used to represent this real-world situation?

NAME _____ DATE _____ PERIOD _____

Lesson 1 Homework Practice

Representing Relationships

1. **PRODUCTION** A manufacturer produces 950 light bulbs per day.

   a. Write an equation to find the number of bulbs b the manufacturer makes in any number of days d.

   b. Use the equation to determine how many bulbs the manufacturer will make in 25 days.

Days, d	Bulbs, b
1	950
2	1,900
3	2,850
4	3,800

2. **WATER** The workers at a plant drink 38 gallons of water per day.

   a. Write an equation to find the number of gallons g the workers drink in any number of days d.

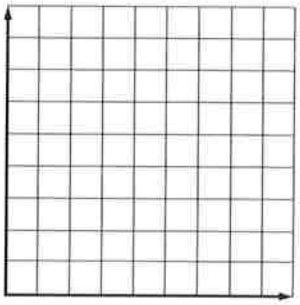
   b. Use the equation to determine how many gallons of water the workers will drink in 30 days.

Days, d	Gallons, g
1	38
2	76
3	114
4	152

3. **ALLOWANCE** Chet gets $12 per week as allowance.

   a. Write an equation to find the amount of allowance a Chet receives in any number of weeks w.

   b. Make a table to find the amount of allowance Chet receives in 5, 6, 7, or 8 weeks. Then graph the ordered pairs.

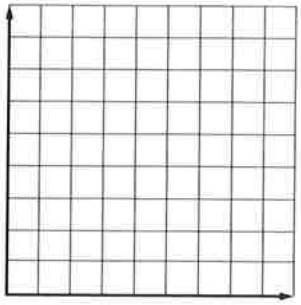


Weeks, w	Allowance, a

4. **MEASUREMENT** There are 16 ounces in a pound.

   a. Write an equation to find the number of ounces n in any number of pounds p.

   b. Make a table to find the number of ounces in 2, 3, 4, or 5 pounds. Then graph the ordered pairs.



Pounds, p	Ounces, n

Key Concept Relations

Watch

Ordered Pairs

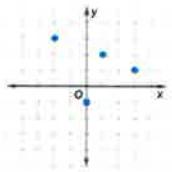
(−2, 3)
(1, 2)
(0, −1)
(3, 1)

The domain is {−2, 0, 1, 3}.
The range is {−1, 1, 2, 3}.

Table

x	y
−2	3
1	2
0	−1
3	1

Graph



A **relation** is any set of ordered pairs. Relations can be represented as a table and as a graph. The **domain** of the relation is the set of *x*-coordinates. The **range** of the relation is the set of *y*-coordinates.

Example

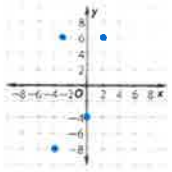
Tutor

1. Express the relation {(2, 6), (−4, −8), (−3, 6), (0, −4)} as a table and a graph. Then state the domain and range.

Place the ordered pairs in a table with *x*-coordinates in the first column and the *y*-coordinates in the second column.

x	y
2	6
−4	−8
−3	6
0	−4

Graph the ordered pairs on a coordinate plane.



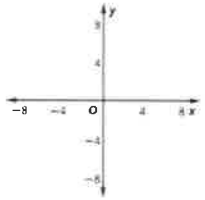
The domain is {−4, −3, 0, 2}. The range is {−8, −4, 6}.

Domain and Range
If a term in the domain or range appears more than once, only write it one time. In Example 1, the value 6 appears twice in the range.

Got It? Do this problem to find out.

a. Express the relation {(−5, 2), (3, −1), (6, 2), (1, 7)} as a table and a graph. Then state the domain and range.

x	y



a. _____

Example

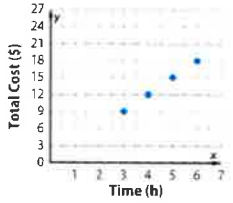
Tutor

2. It costs $3 per hour to park at the Wild Wood Amusement Park.

a. Make a table of ordered pairs in which the *x*-coordinate represents the hours and the *y*-coordinate represents the total cost for 3, 4, 5, and 6 hours.

x	y
3	9
4	12
5	15
6	18

b. Graph the ordered pairs.

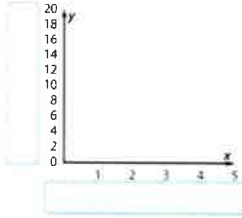


Got It? Do these problems to find out.

A movie rental store charges $3.95 per movie rental.

b. Make a table of ordered pairs in which the *x*-coordinate represents the number of movies rented and the *y*-coordinate represents the total cost for 1, 2, 3, or 4 movies.

c. Graph the ordered pairs.



x	y

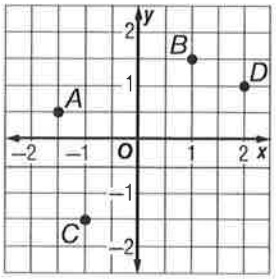
b. _____

NAME _____ DATE _____ PERIOD _____

Lesson 2 Homework Practice

Relations

Name the ordered pair for each point.



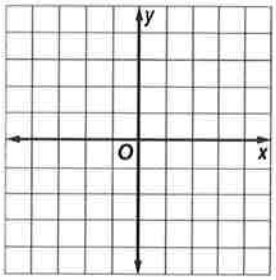
1. A

2. B

3. C

4. D

Graph each ordered pair on a coordinate plane.



5. $\left(1, \frac{1}{2}\right)$

6. $(1, -2)$

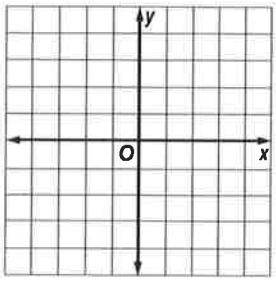
7. $\left(-\frac{1}{2}, 2\right)$

8. $\left(2, -\frac{1}{2}\right)$

Express the relation as a table and a graph. Then state the domain and range.

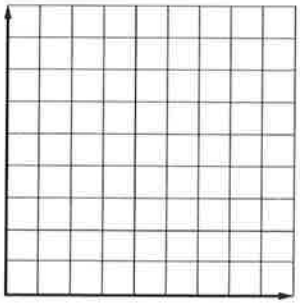
9. $\{(3, -4), (2, 0), (-4, -1), (0, -3)\}$

x	y



10. **TELEVISION** Alton pays \$48 per month for satellite television service.

x	y



a. Make a table of ordered pairs in which the x-coordinate represents the number of months and the y-coordinate represents the total cost for 1, 2, 3, or 4 months.

b. Graph the ordered pairs.

Functions

To find the value of a function for a certain number, substitute the number for the variable x.

$f(x) = 15x$

f(x) is read the function of x, or f of x. It is the output or range.

The input x is any real number. It is the domain.

Example

1. **Find $f(-3)$ if $f(x) = 2x + 1$.**

$f(x) = 2x + 1$ Write the function.

$f(-3) = 2(-3) + 1$ Substitute −3 for x into the function rule.

$f(-3) = -6 + 1$ or -5 Simplify.

So, $f(-3) = -5$.

Got It? **Do these problems to find out.**

Find each function value.

a. $f(2)$ if $f(x) = x - 4$

b. $f(11)$ if $f(x) = \frac{1}{2}x + 5$

a. _____

b. _____

Function Tables

You can organize the input, rule, and output into a **function table**. The variable for the domain is called the **independent variable** because it can be any number. The variable for the range is called the **dependent variable** because it depends on the domain.

Example

2. **Choose four values for x to make a function table for $f(x) = x + 5$. Then state the domain and range of the function.**

Substitute each domain value x into the function rule. Then simplify to find the range value.

The domain is $\{-2, -1, 0, 1\}$.

The range is $\{3, 4, 5, 6\}$.

Domain	Rule	Range
x	$f(x) = x + 5$	$f(x)$
−2	$-2 + 5$	3
−1	$-1 + 5$	4
0	$0 + 5$	5

Got It? **Do this problem to find out.**

c. Choose four values for x to complete the function table for the function $f(x) = x - 7$. Then state the domain and range of the function.

x	$f(x) = x - 7$	$f(x)$

c. _____

Examples

There are approximately 770 peanuts in a jar of peanut butter. The total number of peanuts $p(j)$ is a function of the number of jars of peanut butter purchased j.

3. **Identify the independent and dependent variables.**

Since the total number of peanuts depends on the number of jars of peanut butter, the number of peanuts $p(j)$ is the dependent variable and the jars of peanut butter j is the independent variable.

4. **What values of the domain and range make sense for this situation? Explain.**

Only whole numbers make sense for the domain because you cannot buy a fraction of a jar. The range values depend on the domain values, so the range will be multiples of 770.

5. **Write a function to represent the total number of peanuts. Then determine the number of peanuts in 7 jars of peanut butter.**

Words	The number of peanuts	equals	770 times	the number of jars
Function	$p(j)$	=	770 ·	j

The function $p(j) = 770j$ represents the situation.

To find the number of peanuts in 7 jars of peanut butter, substitute 7 for j.

$p(j) = 770j$ Write the function.

$p(j) = 770(7)$ or 5,390 Substitute 7 for j.

There are 5,390 peanuts in 7 jars of peanut butter.

STOP and Reflect

What are the similarities and difference among the terms domain, range, independent variable, and dependent variable? Explain below.

NAME _____ DATE _____ PERIOD _____

Lesson 3 Homework Practice

Functions

Find each function value.

1. $f(6)$ if $f(x) = 4x$
2. $f(8)$ if $f(x) = x + 11$
3. $f(3)$ if $f(x) = 2x + 4$
4. $f(5)$ if $f(x) = 3x - 2$
5. $f(-6)$ if $f(x) = 4x + 7$
6. $f(-14)$ if $f(x) = 2x - 3$
7. $f\left(\frac{2}{9}\right)$ if $f(x) = 3x + \frac{1}{3}$
8. $f\left(\frac{3}{4}\right)$ if $f(x) = 2x - \frac{1}{4}$
9. $f\left(\frac{4}{5}\right)$ if $f(x) = 4x - \frac{1}{5}$

Choose four values for x to make a function table for each function. Then state the domain and range of the function.

10. $f(x) = 5x - 4$

x	$5x - 4$	$f(x)$

11. $f(x) = 2 - 3x$

x	$2 - 3x$	$f(x)$

12. $f(x) = 6 + 2x$

x	$6 + 2x$	$f(x)$

13. $f(x) = x - 7$

x	$x - 7$	$f(x)$

14. $f(x) = 9x$

x	$9x$	$f(x)$

15. $f(x) = 3x + 5$

x	$3x + 5$	$f(x)$

16. **JACKETS** The school baseball team wants to have each player's name imprinted on the player's jacket. The cost is $75 plus $8.50 for each name. Write a function to represent the cost $c(n)$ for n names. What is the cost to have names imprinted on 25 jackets?

17. **LEMONADE** Gene sold 10 glasses of lemonade while setting up his lemonade stand. After opening, he sold an average of 20 glasses each hour. Write a function to represent the approximate number of glasses $g(h)$ sold after h hours. About when did he sell the 100th glass of lemonade?

Graph a Function

Sometimes functions are written using two variables. One variable, usually x, represents the domain and the other, usually y, represents the range. When a function is written in this form it is an equation.

Like equations, functions can be represented in words, in a table, with a graph, and as ordered pairs. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

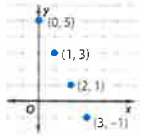
Example

1. **The school store sells book covers for \$2 each and notebooks for \$1. Toni has \$5 to spend. The function $y = 5 - 2x$ represents the number of book covers x and notebooks y she can buy. Graph the function. Interpret the points graphed.**

Step 1 Choose values for x and substitute them in the function to find y.

x	$5 - 2x$	y
0	$5 - 2(0)$	5
1	$5 - 2(1)$	3
2	$5 - 2(2)$	1
3	$5 - 2(3)$	−1

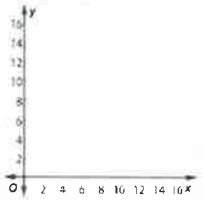
Step 2 Graph the ordered pairs (x, y).



She cannot buy negative amounts. So she can buy 0 covers and 5 notebooks, 1 cover and 3 notebooks, or 2 covers and 1 notebook.

Got It? **Do this problem to find out.**

a. The farmer's market sells apples for \$2 per pound and oranges for \$1 per pound. Marjorie has \$10 to spend. The function $y = 10 - 2x$ represents the number of apples x and oranges y Marjorie can purchase. Graph the function and interpret the points graphed.



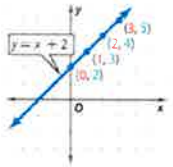
Example

2. **Graph $y = x + 2$.**

Step 1 Make a function table. Select any four values for the domain x. Substitute these values for x to find the value of y, and write the corresponding ordered pairs.

x	$x + 2$	y	(x, y)
0	$0 + 2$	2	(0, 2)
1	$1 + 2$	3	(1, 3)
2	$2 + 2$	4	(2, 4)
3	$3 + 2$	5	(3, 5)

Step 2 Graph each ordered pair. Draw a line that passes through each point.



The line is the complete graph of the function. The ordered pair corresponding to any point on the line is a solution of the equation $y = x + 2$.

Check It appears that $(-2, 0)$ is also a solution. Check this by substitution.

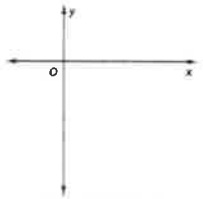
$y = x + 2$ Write the function.

$0 \stackrel{?}{=} -2 + 2$ Replace x with -2 and y with 0.

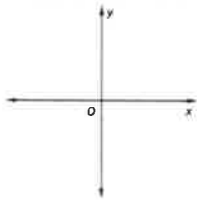
$0 = 0$ ✓ Simplify.

Got It? **Do these problems to find out.**

b. $y = x - 5$



c. $y = -2x$



Function Notation
The equation $y = 5 - 3x$ can also be written in function notation as $f(x) = 5 - 3x$.

Solutions
The solutions of an equation are ordered pairs that make an equation representing the function true.

Key Concept Representing Functions

Words The value of y is one less than the corresponding value of x.

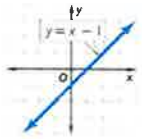
Equation $y = x - 1$

Ordered Pairs $(0, -1), (1, 0), (2, 1), (3, 2)$

Table

x	y
0	−1
1	0
2	1
3	2

Graph



Continuous and Discrete

If the domain of a function is integers, this is an example of a discrete function. If the domain is all real numbers, this is an example of a continuous function.

A **linear function** is a function in which the graph of the solutions forms a straight line. Therefore, an equation of the form $y = mx + b$ is a *linear function*.

A function can be considered continuous or discrete. **Continuous data** can take on any value, so there is no space between data values for a given domain. **Discrete data** have space between possible data values. Graphs of continuous data are represented by solid lines and graphs of discrete data are represented by dots.

Continuous Data	Discrete Data
the number of ounces in a glass	the number of glasses in a cupboard
the weight of each chocolate chip	the number of chocolate chips in a bag

You can determine if data that model real-world situations are discrete or continuous by considering whether all numbers are reasonable as part of the domain.

Examples

Tutor

Each person that enters a store receives a coupon for $5 off his or her entire purchase.

3. Write a function to represent the total value of the coupons given out.

Let y represent the total value of the coupons and x represent the number of people. The function is $y = 5x$.

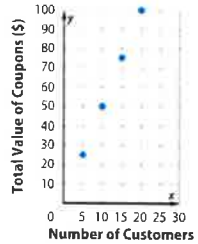
4. Make a function table to find the total value of the coupons given out to 5, 10, 15, and 20 customers.

x	$5x$	y
5	5(5)	25
10	5(10)	50
15	5(15)	75
20	5(20)	100

5. Graph the function. Is the function continuous or discrete? Explain.

Use the ordered pairs from the function table to graph the function.

There can only be a whole number amount of customers. The function is discrete. So, the points are not connected.



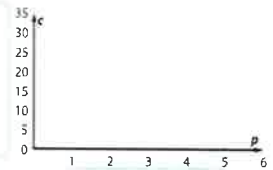
Got It? **Do these problems to find out.**

A store sells assorted nuts for $5.95 per pound.

d. Write a function to represent the total cost of any number of pounds of nuts.

e. Complete the function table below to find the total cost of 1, 2, 3, 4, or 5 pounds of nuts.

f. Graph the function. Is the function continuous or discrete? Explain.



STOP and Reflect

Explain below how a function table can be used to graph a function.

d. _____

f. _____

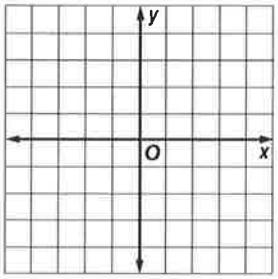
NAME _____ DATE _____ PERIOD _____

Lesson 4 Homework Practice

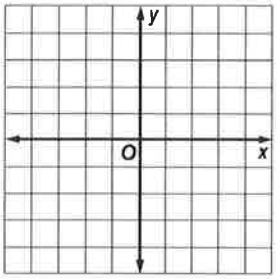
Linear Functions

Graph each function.

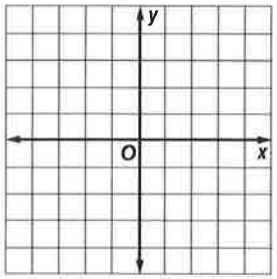
1. $y = 2x$



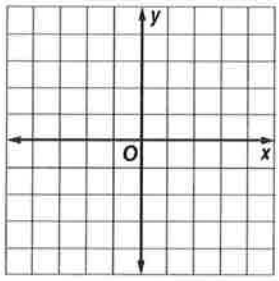
2. $y = -4x$



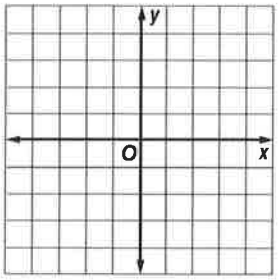
3. $y = x - 4$



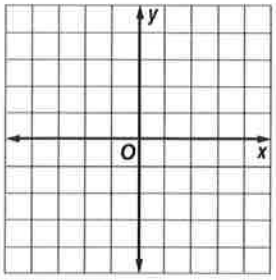
4. $y = x + 3$



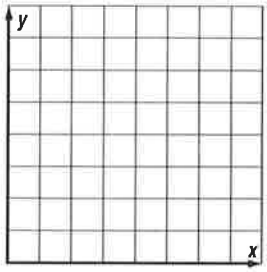
5. $y = 3x + 1$



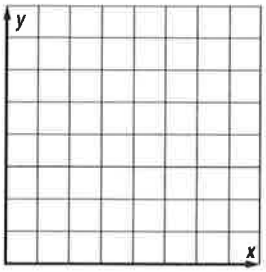
6. $y = \frac{1}{4}x + 2$



7. **CARPENTRY** Mrs. Valdez can assemble a chair in 1 day and a table in 4 days. Graph the function $y = 5 - \frac{1}{4}x$ to determine how many of each type of furniture Mrs. Valdez can assemble in 20 days. Is the function continuous or discrete? Explain.



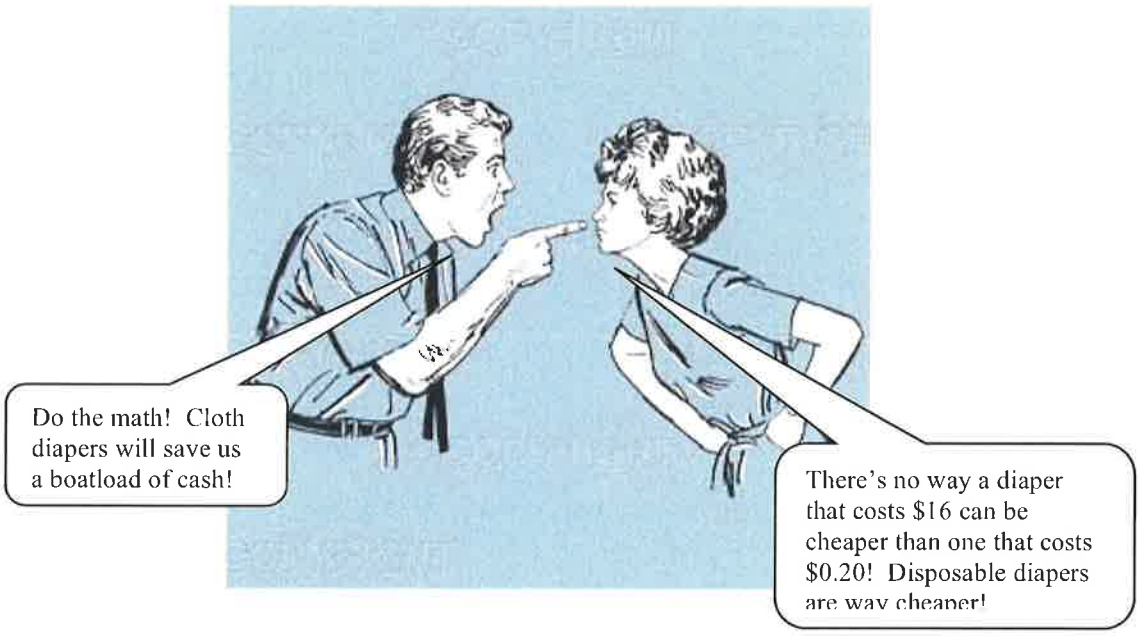
8. **FITNESS** A fitness center has set a goal to have 500 members. The fitness center already has 150 members and adds an average of 25 members per month. The function $f(x) = 150 + 25x$ represents the membership after x months. Graph the function to determine the number of months it will take for the fitness center to reach its membership goal. Is the function continuous or discrete? Explain.



DIAPERS

Did you know that you used to wear diapers? Your mom and/or dad changed your diapers quite a bit. Sounds bad? What is even worse than changing your smelly diapers is buying them! Diapers are not cheap and unfortunately you probably went through about ten a day.

In appreciation of Mother's Day and Father's Day it is time to do a little diaper cost analysis. This will give you an idea of how much, in today's dollars, your parents spent on diapers for you. We will also determine which type of diaper is cheaper: cloth or disposable diapers? Mr. Fehlner had a debate with his wife about it. See below:



Who was right, Mr. Fehlner or his wife?

Information:

- On average, babies use between 8 and 10 diapers daily.
- Disposable diapers cost $0.20 each.
- The fancy cloth diapers Mr. Fehlner wanted to buy are $16 each, and he'll need to buy 20 of them.
- To clean cloth diapers, it costs about $5 a month (to pay for the water, detergent, and electricity).

What you need to do with this information:

- Make an input/output table for the cost of using disposable diapers per month for 6 months.
- Write an equation that represents the cost of buying disposable diapers, and graph the equation through 36 months.

Then ....

- Make an input/output table for the cost of buying cloth diapers per month for 6 months.
- Write an equation that represents the cost of buying cloth diapers, and graph the equation through 36 months.

Which is cheaper? *Be specific about which situation you're talking about.*

Help Sheet:

- Argument for disposable:

Diapers per day	Diapers per month	Cost Per Diaper	Cost Per Month for ____ diapers

- Argument for cloth:

Initial purchase	Cleaning cost per month

1. Complete the table to show the cost of disposable diapers for the various numbers of months:

Months	2	3	4	5	6	7	8	10	12	18	24	30	36
Cost													

2. If a youngster wore diapers for 48 months, what math would you do to find the total cost of disposable diapers over 48 months (don't do the math, just explain the math you would do)?

3. What math are you doing over and over again to find the total cost regardless of the number of months?

4. Write a rule or equation that gives the total cost (c) for any number of months (m) of using disposable diapers.

5. Complete the table to show the cost of cloth diapers for the various numbers of months:

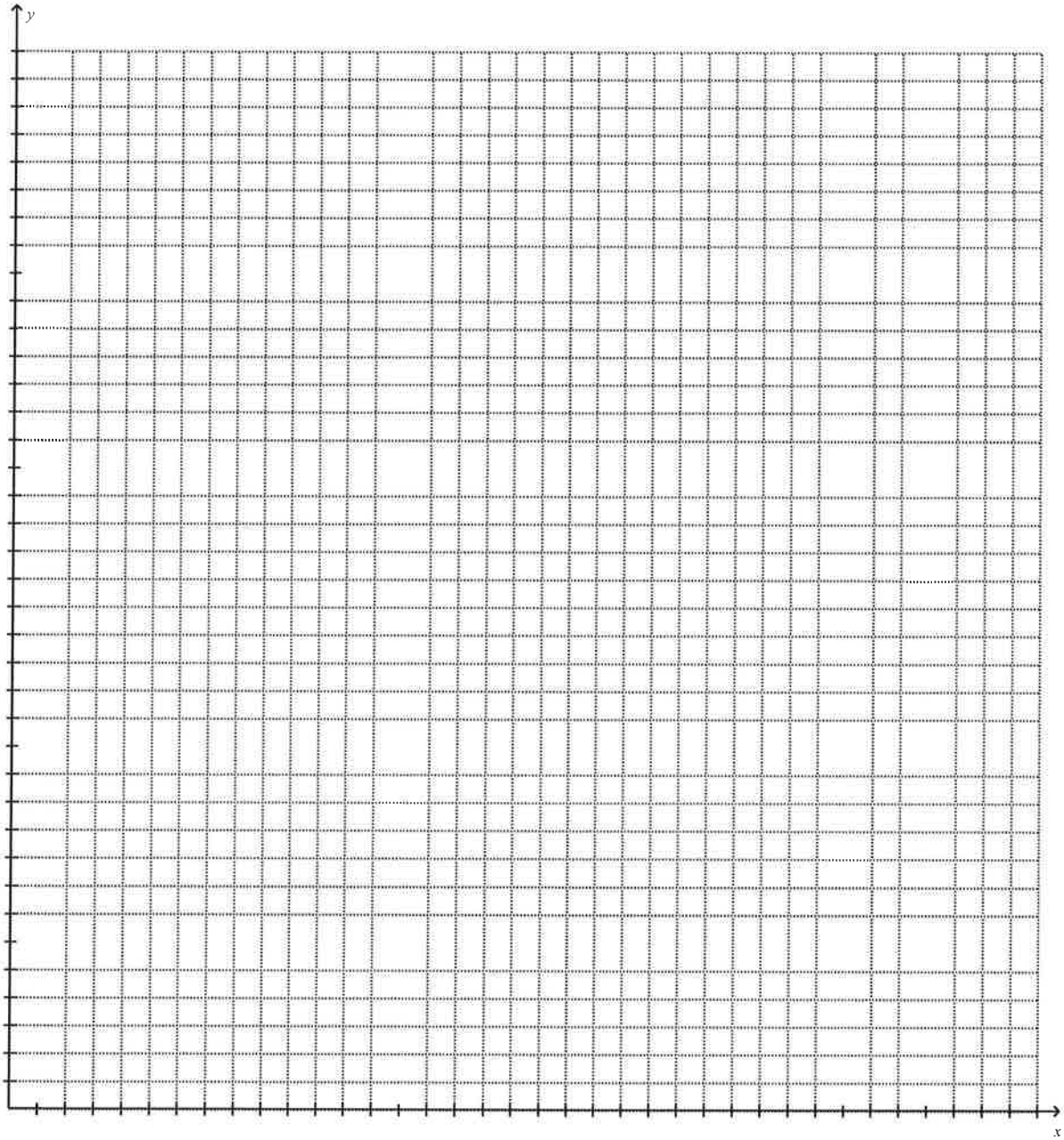
Months	2	3	4	5	6	7	8	10	12	18	24	30	36
Cost													

6. If a youngster wore diapers for 48 months, what math would you do to find the total cost of cloth diapers over 48 months (don't do the math, just explain the math you would do)?

7. What math are you doing over and over again to find the total cost of cloth diaper usage regardless of the number of months?

8. Write a rule or equation that gives the total cost (c) for any number of months (m) of cloth diaper usage.

9. Graph the cost of using each diaper on the graph on the next page. Carefully consider what intervals to use on each axis.



10. Do the graphs intersect? What does this point tell us about the cost of the two different types of diapers? Be specific and use math in your response.

11. Knowing that babies/toddlers go through 8 – 10 per day, typically for 3 years (maybe more or less), which type of diaper seems like a better deal?

12. Lets assume you wore disposal diapers for about three years. How much in today's money did you cost your parents/caregivers in diapers?

13. Your homework is to go home and interview someone who might know how long you used diapers for and what type of diapers you wore. Get detailed information on your diaper experience and use that to determine how much you cost your caregivers in diapers.

14. Due to inflation, costs keep going up and up. For example, years ago, a candy bar that costs about 80 cents today only cost 25 to 40 cents back in the early 80's. This is also true for diapers. Try to find out how much diapers actually cost about 10 to 15 years ago, so that you can get a better idea of how much your caregivers spent on diapers for you. Use that diaper cost to find a better estimate of your cost in diapers.

15. You should be pretty thankful to your parents or who ever your caregivers were for buying and changing your diapers for all those years. You know you might have a child some day and you will have to buy and change their diapers! Ha! Which type of diaper will you go with? Assume that the cost of diapers goes up about 3% a year and you have a baby 15 years from now. How much should you expect to spend on diapers for your baby? Make sure to show all your work below.

Remember to thank your mom, dad or whoever took care of your diapers for you!

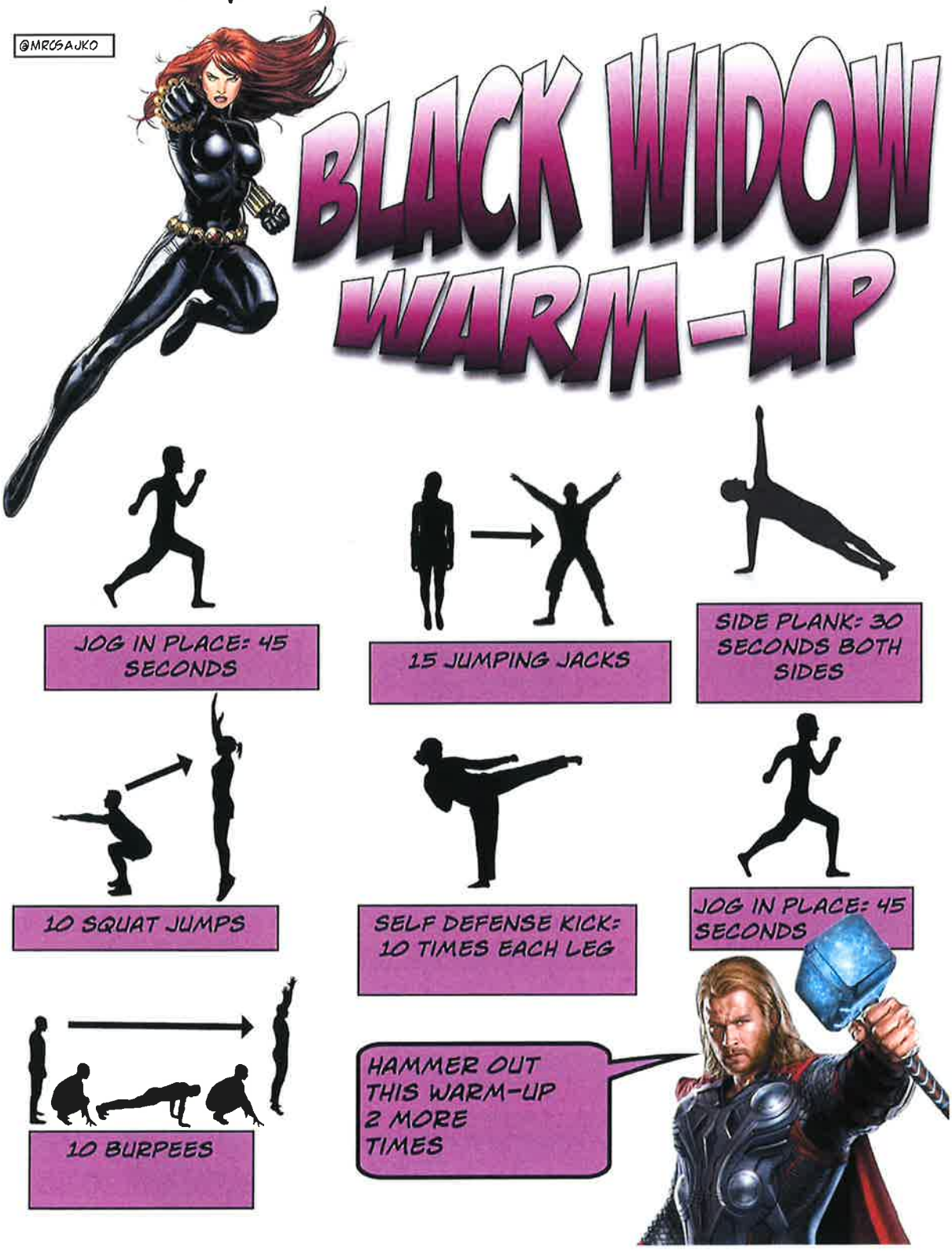
Activity shared to you by www.yummymath.com via Andy Fehlner, 8th grade teacher in Newton MA, who wrote and shared the original activity with us.

Activity updated by his friends at YummyMath.com.

BLACK WIDOW

WARM-UP

Complete three rounds of each exercise!



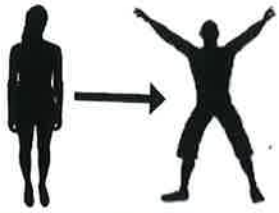
IRON MAN

WARM-UP

Complete three rounds of each exercise!

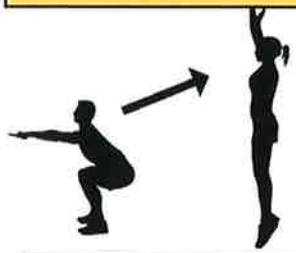
IRON MAN WARM-UP

JOG IN PLACE: 30 SECONDS

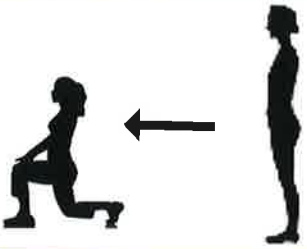


30 JUMPING JACKS

10 PLANKS WITH ROTATION

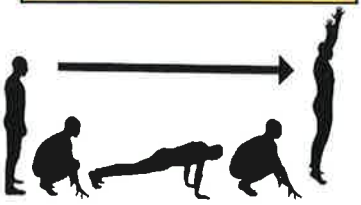


5 SQUAT JUMPS



5 LUNGES EACH LEG

10 LEG LIFT CRUNCHES



5 BURPEES

REPEAT THIS WARM UP 2 MORE TIMES. THEN...YOU...ARE... IRON MAN!

FLASH

WARM-UP

Complete three rounds of each exercise!

JOG IN PLACE:
15 SECONDS

SPRINT IN PLACE:
15 SECONDS

JOG IN PLACE:
15 SECONDS

PUSH UP POSITION:
30 SECONDS

SPRINT IN PLACE:
15 SECONDS

JOG IN PLACE:
30 SECONDS

SPRINT IN PLACE:
15 SECONDS