Online Resources:

## Math

Reflex Math -
https://www.reflexmath.com/

IXL-

Ixl.com

Math Snacks

https://mathsnacks.com/

Math Games

https://www.mathgames.com/

Math Play

https://www.math-play.com/

Prodigy

https://sso.prodigygame.com/signup

## ELA

IXL-

ixl.com

Vocabulary.com

https://www.vocabulary.com/

Khan Academy

https://www.khanacademy.org/ela

Read Theory

https://readtheory.org/

EPIC!

https://www.getepic.com/

Education.com

https://www.education.com/games/ela/

## Notes:

- We recommend students spend 2-3 hours per day engaged in instructional activities to include the materials enclosed in this packet as well as reading and utilizing online resources.
- Many teachers have Google classrooms with links to resources. Please encourage your student to check these often.
- If your child is unsure of his or her password or username for IXL, Reflex math, or Brain Pop, please have him or her email the teacher.
- 6th grade students are encouraged to practice on Reflex.com for 20 – 30 minutes at least 3 days a week to foster factor fluency.
- If you do not have a paper copy of assignments, please feel free to record answers on notebook paper.
- Each student is encouraged to READ and record their progress on the reading log enclosed in this packet.
- PLEASE RETURN YOUR COMPLETED PACKET TO YOUR HOMEROOM TEACHER WHEN WE RETURN TO SCHOOL.

# READING LOG

| DATE | BOOK TITLE | AUTHOR | #PAGES | RATING |
|---|---|---|---|---|
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |
| | | | | ☆☆☆☆ |

Name: _____ Date: _____

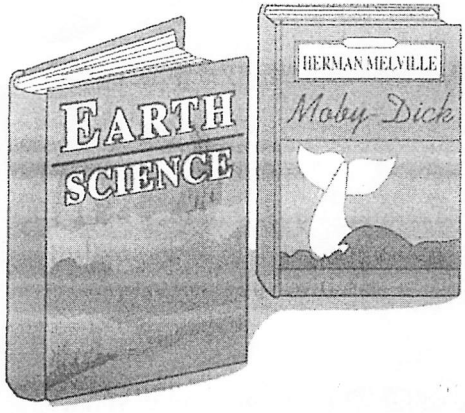
# Level III, Formative Survey 1

## Multiple Choice

*Identify the choice that best completes the statement or answers the question.*

**Passage 1**

**Liang and Bao**




1 Liang was standing in the hallway when she saw her younger brother, Bao, coming out of the earth science classroom. He didn't see her at first, and when he did, he looked embarrassed that she knew that he had stayed late to get extra help. Although they rarely talked about it, Liang knew Bao was having trouble understanding earth science, and the final was in a few days. Liang also knew how much it meant to him to do well on the test, but science was difficult for Bao.

2 Liang thought about her brother a lot. He was good at English and especially at writing. He loved to write stories about things that were happening and then have them printed in the school newspaper. He was the youngest person on the newspaper staff, and that was quite an honor. No one was sure why Bao was so talented in English—certainly his mother and father had no idea—but for as long as he could remember, he wanted to be a journalist. He hoped someday to be a foreign correspondent, traveling to faraway places and covering exciting stories. Liang remembered Bao as a child frequently reading and writing things, even before she was interested in doing so.

3 But now, Liang was worried about Bao and how he was doing in earth science. She had never had a problem with any kind of science course. She excelled at chemistry, which she was taking this term, and hoped one day to be a science teacher. She was three years older than Bao, and she felt much more secure than he did because she had more experience. She had had her problems in school but worked hard and mastered difficult subjects like English. While writing was second nature to Bao, Liang had to work hard at

it, but she was able, through revising and revising, to create a thoughtful and sound paper when she needed to do so.

4 Even though they sometimes disagreed about things, Liang and Bao were very close. They enjoyed the same movies and music, and they were both excellent runners. But there was something that kept Bao from feeling comfortable about asking his sister for help. He was very proud, and he felt he should be able to do everything on his own, just like Liang.

5 Liang was sure that if she helped him review the material, he would be able to master it. She knew she was a teacher at heart, and she felt frustrated that he didn't want her to help him in spite of the many times she offered. She decided that she had to figure out a way to make Bao want her to help him. Later that day, Liang and Bao were walking home together, and Liang decided to approach her brother in a new way.

6 "Bao, I have a paper due by the end of the week, and I wondered if you could take a look at what I've written so far and give me some advice."

7 Bao was surprised because he had never heard his sister ask him for help at doing anything—more often she was asking him if he needed help. He had always thought that Liang was independent and able to do anything she wanted. Bao was pleased that she would call on him since it made him feel important, a new role for him.

8 "Sure, I'll look at what you have done so far when we get home. What's your topic?" he asked.

9 "It's a report on Herman Melville, the American writer," she answered, "You know he wrote *Moby Dick*, about the search for the white whale."

10 *Moby Dick* was one of Bao's favorite novels, and Liang knew that. She also knew that Bao knew a lot about Herman Melville, so she thought he might like the opportunity to help Liang with her paper. She was right. Bao said he would read through her first draft when they got home. He was excited by the prospect of Liang needing his help.

11 Later he read Liang's draft and realized that it was very good, but he thought he should make some recommendations anyway. He asked himself why his sister would ask for help when she didn't really need any.

12 Bao found Liang in the kitchen, reading a book. He turned to her and said, "I think your paper is very good, but if you made an outline of what you want to say, and then make some other little changes, it would be even better." Bao started to bubble over with other kinds of suggestions, and then he stopped and looked more closely at what Liang was reading. "I've always loved earth science," Liang said to Bao. "I just wanted to review some of the material—I've forgotten a lot since I took it in my freshman year, and if I want to be a science teacher, I should keep reviewing all aspects of science."

13 Bao smiled to himself as he began to realize what Liang was trying to do. His sister's motives were a bit transparent, but he thought, if she wants to help me that much, I guess I should let her.

14 "Would you mind if I reviewed the material with you too? I'm a little confused about some of the things that we are required to know," he asked his sister, who smiled and nodded yes.

15 "Pull up a chair," she said.

16 Several days later, the final exam was over, and Bao was pleased with his grade. He went to his sister and thanked her. "You went to a lot of trouble for me. Thanks. It means a lot," he told her.

____ **1. What is the MAIN difference between Liang and Bao?**
a. Liang is a better athlete than Bao.
b. Bao has more ambitious goals than Liang.
c. Bao enjoys music, while Liang prefers movies.
d. Liang does well in science, while Bao excels in English.

____ **2. What is one theme of the passage?**
a. People appreciate help when it is offered in a considerate way.
b. Competition can bring harm to the strongest relationships.
c. The harder one works, the greater the reward.
d. It is always better to admit one's mistakes.

____ **3. In a class discussion, you are asked to state the main conflict in the story. What is the BEST answer?**
a. Bao needs Liang's book to study.
b. Liang tries to write an essay without Bao's help.
c. Bao and Liang need to find the time to work together.
d. Liang wants to find a way to help Bao study.

____ **4. In a student essay about the story, which literary reference would be MOST relevant and accurate?**
a. Bao's science exam is like Herman Melville's great white whale.
b. Unlike Cain when asked about his brother in the Old Testament, Liang feels that she *is* her brother's keeper.
c. Bao is like Hans Christian Andersen's ugly duckling, discovering that he is smarter than he first thinks.
d. The characters are like a brother and sister in a folk tale.

____ **5. Paragraphs 14 through 16 are important to this story MAINLY because they**
a. provide a resolution to the story.
b. emphasize a lesson learned by a character.
c. explain the motivation of a character.
d. describe the setting of the story.

____ **6. Suppose your class is dramatizing the story. Which change to the story in your script would have the MOST effect on the story's main ideas?**
a. The older sibling is a boy and the younger is a girl.
b. Liang asks Bao for advice about running a race instead of writing a paper.
c. Liang's report is about Nathaniel Hawthorne instead of Herman Melville.
d. Liang is one year older than Bao instead of three years older.

## Passage 2

### Song of the Pineapple

Oh, so many miles, across the deep blue sea
Where the waves roll in, foaming ivory
Past the soft sandy beach, and the sleepy palm tree
My brother picks the pine just to share with me.
*De pine like dis is de fruit o' kings*
*De pine like dis wit' de golden rings*
He hacks off the top, like one leafy green crown
Then he slices off the sides, all that prickly brown
And he cuts out the core, makes one juicy sound
Then he slices it all up, just like they do in town.
*De pine like dis is de fruit o' kings*
*De pine like dis wit' de golden rings*
The fruit so sweet, dripping down my face
The rings I eat, leave one sticky-sticky trace
My big brother's off to work, he's got to keep up the pace
Picking plenty of good pine for the can-fruit place.
*De pine like dis is de fruit o' kings*
*De pine like dis wit' de golden rings*

____ **7. In Stanza 1, the word sleepy MOST LIKELY means that the palm tree**

a. looks best at night.
b. has a curved shape.
c. is cut down.
d. is motionless.

____ **8. Suppose you are asked to orally summarize "Song of the Pineapple." Which is the BEST summary?**

a. People far away work hard to pick pineapple and cut it for the canning factory.
b. As he eats canned pineapple, the narrator pictures his brother picking and preparing the fruit.
c. Dis pine is delicious and juicy because my brother made it.
d. Pineapple is called the fruit of kings because its top looks like a crown and it has golden rings when it is cut.

____ **9. Which of these lines uses sensory details to capture both the taste and feel of eating the pineapple?**

a. "Then he slices off the sides, all that prickly brown"
b. "And he cuts out the core, makes one juicy sound"
c. "The fruit so sweet, dripping down my face"
d. "The rings I eat, leave one sticky-sticky trace"

____ **10. Read this sentence from a student essay about the poem.**

The theme of the poem is that simple things bring pleasure.

**Which line from the poem BEST supports the argument stated in the sentence?**

a. "My big brother's off to work, he's got to keep up the pace."
b. "He hacks off the top, like one leafy green crown."
c. "The fruit so sweet, dripping down my face."
d. "Picking plenty of good pine for the can-fruit place."

____ **11. Read the lines from the poem.**

*De pine like dis is de fruit o' kings*
*De pine like dis wit' de golden rings*

**For which research thesis statement could the lines best be used as evidence?**

a. Some poems' narrators do not speak grammatically.
b. Some poets use unusual spellings to call attention to their characters and main ideas.
c. Some poems use dialect to help readers "hear" the spoken language of a particular region.
d. Some poets do not respect people who speak differently from themselves.

## Skills Questions Group 1

____ **12. Read the sentence.**

The lack of rain in some places has led to an acute shortage of water.

**Use this dictionary entry to answer the following question.**

**acute**, *adj.* **1. very keen or quick**
2. sharp, as pain, etc.
3. urgent or critical
4. high in pitch

**Which dictionary entry gives the BEST meaning of acute as it is used in the sentence?**

a. very keen or quick
b. sharp, as pain, etc.
c. urgent or critical
d. high in pitch

____ **13. Read the sentence below.**

As the jury member heard the last of the evidence, she felt that she now had absolute proof that the defendant was guilty.

**What does the word absolute mean in this sentence?**

a. late
b. worrisome
c. definite
d. possible

____ 14. Read the sentence below.

Above us, one giant marshmallow after another floated by, gradually gathering on the horizon.

**This sentence uses a metaphor to describe**

a. a dream.
b. a storm.
c. clouds.
d. pillows.

## Passage 3

**The following is a rough draft of a student's letter. It contains errors.**

### A Letter to Sixth Graders

Dear Future Sixth Graders,

(1) Recently, I completed eighth grade. (2) As I look forward to beginning high school next Fall, I cannot help reflecting on my years at Clark Middle School. (3) I recognize how much I have changed since I walked into this school as a sixth grader almost two years ago. (4) Middle school truly has improved my life; I urge you to apreciate middle school as you experience it. (5) Middle school has given me my first taste of freedom—from changing classes throughout the day to using a locker to store my books and school supplies. (6) At first, those challenges seemed exciting and a little scary at the same time. (7) Now that I am gratuating from the eighth grade, I realize how valuable those challenges to maturity were and how they will lead me to new challenges in high school.

(8) Although assignments in high school will be most difficulter and time-consuming, they also will be an important preparation for adult responsibilities after high school. (9) When I began middle school, a career and adulthood were the last things on my mind. (10) I was more interested in playing softball, basketball games, hanging out with friends, and music. (11) Now that I am beginning high school, I know I will take my studies more seriously. (12) Adulthood seems much closer.

(13) In four years, I will get my high school diploma. (14) When I am older, I will always have the fond memories of my middle school and high school years. (15) I will be especially grateful to the teachers. (16) They dedicated their time and energy to help me improve. (17) In more ways than one, they helped me prepare for the world of work. (18) My teachers taught me to pay attention to directions, to be on time, and respecting others.

(19) Soon you will be in my place, eagerly looking ahead to high school, and yet feeling sentimental about closing the door on an important part of your life; your years in middle school. (20) The years will go by in a flash. (21) The experiences you have in middle school will serve you well as you enter high school.

Sincerely,
Marisol Alvarez

____ **15. What evidence does the author give to support the statement that she has changed since she was a sixth-grader?**

a. At first the new challenges of middle school seemed scary.
b. She will take her studies more seriously in high school.
c. She is especially grateful to her middle school teachers.
d. She will get her high school diploma in four years.

____ 16. **Which sentence could BEST be added at the beginning of Paragraph 4 to attract the attention of the reader?**

a. Make the most of your middle school experience.
b. One of my favorite teachers was Ms. Tanaka.
c. I learned the most in my science class.
d. One benefit of middle school is being able to choose your elective classes.

____ 17. **In a class discussion, you are asked to state the thesis of the letter. Which is the BEST statement?**

a. Middle school is far less difficult than high school.
b. Many students find middle school classes challenging.
c. By working earnestly, students at any level can succeed at school.
d. Middle school experiences help to prepare students for high school.

____ 18. **Which sentence is NOT relevant to the main argument of the letter?**

a. Sentence 6
b. Sentence 11
c. Sentence 15
d. Sentence 21

____ 19. **According to the writer, which of the following is NOT a way high school will be different from middle school?**

a. She will study more in high school.
b. High school assignments will be more difficult.
c. She will not change classes throughout the day in high school.
d. She will think more about becoming an adult in high school.

____ 20. **Which sentence should be added between Sentences 11 and 12 to show the connection between ideas in the letter?**

a. I anticipate being even busier in high school.
b. I feel like I'm ready to be successful in high school.
c. I am ready for any new challenges that come my way.
d. I look forward to those new challenges and harder classes.

____ 21. **Read these two sentences from Paragraph 3 of the letter.**

I will be especially grateful to the teachers. They dedicated their time and energy to help me improve.

**What is the BEST way to combine the sentences?**

a. I will be especially grateful to the teachers; first, they dedicated their time and energy to help me improve.
b. I will be especially grateful to the teachers, dedicating their time and energy to help me improve.
c. I will be especially grateful to the teachers who dedicated their time and energy to help me improve.
d. I will be especially grateful to the teachers; therefore, they dedicated their time and energy to help me improve.

____ 22. **Read Sentence 4 from the letter:**

Middle school truly has improved my life; I urge you to apreciate middle school as you experience it.

**Which spelling of a word from the sentence is incorrect?**

a. truly
b. improved
c. apreciate
d. experience

____ 23. **Which best describes the connotation of the word reflecting in Sentence 2?**

a. a neutral connotation meaning realizing
b. a neutral connotation meaning expressing
c. a positive connotation meaning recalling thoughtfully
d. a negative connotation meaning turning away from

____ 24. **Suppose the student is giving a presentation to go with the letter. Which of the following graphic aids would be BEST to emphasize the information?**

a. a chart comparing middle school classes and high school classes
b. a slide show illustrating the writer studying
c. a video showing middle school extracurricular activities
d. an interactive web showing various careers

## Skills Questions Group 2

____ 25. **Read the sentences from a report.**

The California redwood tree is an evergreen tree that grows along the Pacific coast. Some of these redwoods are over 300 feet tall. And the most awesome thing is that some are over 600 years old!

**What is the best way to revise the last sentence to fit the style and tone of the report?**

a. And the coolest thing is that some are over 600 years old.
b. California redwoods may live for more than 600 years.
c. Some of the trees live over 600 years!
d. Plus the most exciting fact is that some are over 600 years old.

____ 26. **Which of the following sentences has an inappropriate shift in verb voice?**

a. After I finished reading *My Antonia*, a review recommending the book to other readers was written by me.
b. The author of *My Antonia* was Willa Cather who was just nine years old when her family moved to Nebraska from Virginia.
c. Cather's book *One of Ours* was published in 1922 and won the Pulitzer Prize in fiction one year later.
d. Many of Cather's books focused on the pioneers of the West and the hardships they faced.

____ 27. **Which of the following questions would be most effective to focus the research for a research project?**

a. How many mystery stories have been written?
b. How did detective fiction begin?
c. Who committed the crime in "The Hound of the Baskervilles"?
d. What is the most popular mystery story of the 20th century?

____ 28. **Read the sentence.**

The video presentation was created by Joel and me.

**Which revision is grammatically correct and best communicates meaning?**

a. The video presentation was created by Joel and I.
b. Joel and I created the video presentation.
c. The video presentation was created entirely by me and Joel.
d. Joel and me created the video presentation entirely.

____ 29. **Read the sentences.**

Some people write their first drafts using pen and paper. Others write using a computer.

**Which of the following is the BEST way to combine sentences?**

a. Some people write their first drafts using pen and paper, others write using a computer.
b. Some people write their first drafts using pen and paper and others write using a computer.
c. Some people write their first drafts using pen and paper; others write using a computer.
d. Some people write their first drafts using pen and paper: others write using a computer.

____ 30. **Read the following sentences.**

*Our Town* was written by Thornton Wilder in the 1930s. One important theme of the play is to appreciate life as you live it.

**Why is the passive voice used in the first sentence?**

a. to enable the writer to use the past participle of the verb write
b. to identify when the play was written
c. to acknowledge Thorton Wilder as the playwright
d. to place the emphasis on the play

# Answer Key

## Formative Surveys

ANS = Correct answer
PTS = Point value

**for *Formative Survey 1***

| | | | | |
|---|---|---|---|---|
| 1. | ANS: | D | PTS: | 1 |
| 2. | ANS: | A | PTS: | 1 |
| 3. | ANS: | D | PTS: | 1 |
| 4. | ANS: | B | PTS: | 1 |
| 5. | ANS: | A | PTS: | 1 |
| 6. | ANS: | B | PTS: | 1 |
| 7. | ANS: | B | PTS: | 1 |
| 8. | ANS: | B | PTS: | 1 |
| 9. | ANS: | C | PTS: | 1 |
| 10. | ANS: | C | PTS: | 1 |
| 11. | ANS: | C | PTS: | 1 |
| 12. | ANS: | C | PTS: | 1 |
| 13. | ANS: | C | PTS: | 1 |
| 14. | ANS: | C | PTS: | 1 |
| 15. | ANS: | B | PTS: | 1 |
| 16. | ANS: | A | PTS: | 1 |
| 17. | ANS: | D | PTS: | 1 |
| 18. | ANS: | A | PTS: | 1 |
| 19. | ANS: | C | PTS: | 1 |
| 20. | ANS: | D | PTS: | 1 |
| 21. | ANS: | C | PTS: | 1 |
| 22. | ANS: | C | PTS: | 1 |
| 23. | ANS: | C | PTS: | 1 |
| 24. | ANS: | A | PTS: | 1 |
| 25. | ANS: | B | PTS: | 1 |
| 26. | ANS: | A | PTS: | 1 |
| 27. | ANS: | B | PTS: | 1 |
| 28. | ANS: | B | PTS: | 1 |
| 29. | ANS: | C | PTS: | 1 |
| 30. | ANS: | D | PTS: | 1 |

# TRANSFORMATIONS: CONGRUENCE & SIMILARITY

## STUDY GUIDE

### TERMS TO KNOW:

① **Reflection:** Flip or mirror image
② **Rotation:** Turn around a set point
③ **Translation:** Slide in a specific direction or directions
④ **Dilation:** enlarge or reduce a shape using a set scale factor.
⑤ **Congruent:** shapes that are exactly the same—same shape and same size
⑥ **Similar:** shapes that have the same shape but different (proportional) size

### SYMBOLS TO KNOW:

$\cong$ means "is congruent to"
$\sim$ means "is similar to"
$m\angle x$ means "the measure of angle x"
$\overline{XY}$ means "line segment" or "side length" from point X to point Y
$\parallel$ "is parallel to"

### REVIEW TIPS:

#### G.1 – Corresponding Parts & Transfromations:

① When finding corresponding (matching) parts of two shapes after going through a transformation, if you choose to visualize the transformation, only focus on one point at a time.
② If the text gives you the names of the figures, one strategy is to "line up" the letter names to tell which parts will correspond.

#### G.3 – Coordinate Pairs & Transformations

① When dealing with specific coordinates (x, y), keep these rules in mind:

| REFLECTIONS | |
|---|---|
| X-AXIS | Y-AXIS |
| Keep X, Opposite Y $(x, y) \rightarrow (x, -y)$ | Opposite X, Keep Y $(x, y) \rightarrow (-x, y)$ |

| ROTATIONS | | |
|---|---|---|
| $90^0$ | | $180^0$ |
| CLOCKWISE: 1) Switch x & y 2) Opposite NEW y-value $(x, y) \rightarrow (y, -x)$ | COUNTER-CLOCKWISE: 1) Switch x & y 2) Opposite NEW X-value $(x, y) \rightarrow (-y, x)$ | Opposite both X & Y $(x, y) \rightarrow (-x, -y)$ |

| TRANSLATIONS | |
|---|---|
| FOLLOW GIVEN DIRECTIONS or FORMULA | |
| X+ | move RIGHT |
| X - | move LEFT |
| Y+ | move UP |
| Y - | move DOWN |

| DILATIONS | |
|---|---|
| MULTIPLY by the given SCALE FACTOR (K) | |
| K>1 | Enlarges |
| K = 1 | Remains the Same |
| K<1 | Shrinks |

#### G.2, G.4 – Sequences of Transformations producing Congruent and Similar Figures

① Remember that ROTATIONS, REFLECTIONS, and TRANSLATIONS **do not change the size** of a figure (they keep the figure congruent to the original).
② Remember that any time a DILATION is included in a sequence of transformations, **it will change the size** and produce a similar figure to the original (angles will be the same; side lengths will be proportional)
③ When attempting to visualize a "sequence" of transformations where the middle step is not shown, only test one point of the figure at a time.
④ Always identify the original figure before deciding on an answer.

# PRACTICE PROBLEMS

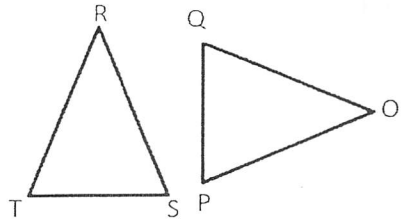
**❶** Figure RST has been rotated 90° clockwise to form figure OPQ. Which of the following statements is true?

Ⓐ $m\angle R \cong m\angle Q$

Ⓑ $m\angle S \cong m\angle P$

Ⓒ $\overline{RS} \cong \overline{PQ}$

Ⓓ $\overline{ST} \cong \overline{OP}$



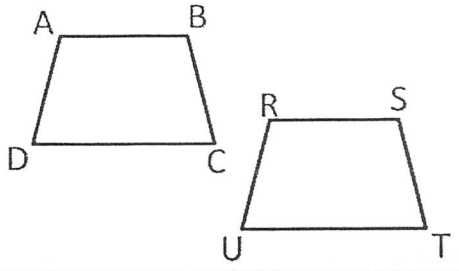

**❷** Trapezoid ABCD has been translated down and to the right to form trapezoid RSTU. Given that $\overline{AB} \parallel \overline{DC}$, which of the following statements is true concerning trapezoid RSTU?

Ⓐ $\overline{AB} \cong \overline{DC}$

Ⓑ $\overline{ST} \cong \overline{UT}$

Ⓒ $\overline{AB} \parallel \overline{RS}$

Ⓓ $\overline{RS} \parallel \overline{UT}$



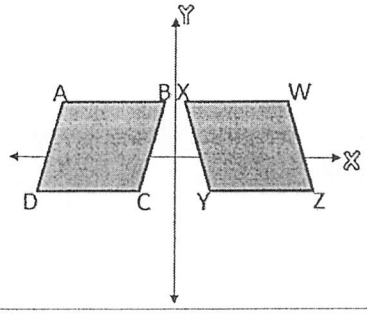

**❸** Figure *ABCD* has been reflected across the *y*-axis to form figure *WXYZ*. Which of the following statements is true?

Ⓐ $m\angle A \cong m\angle Y$

Ⓑ $m\angle D \cong m\angle X$

Ⓒ $\overline{AB} \cong \overline{WX}$

Ⓓ $\overline{AB} \cong \overline{YZ}$



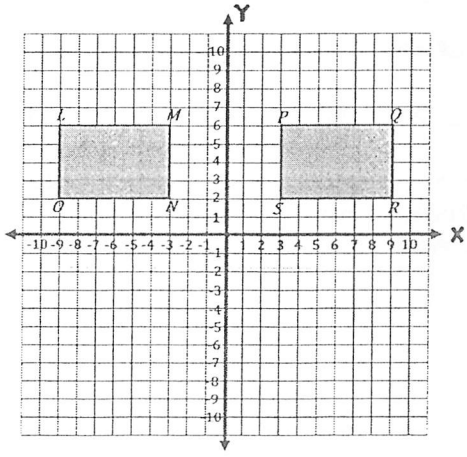

**❹** If figure $LMNO \cong PQRS$ as shown below, which transformation was most likely applied to $LMNO$ to produce $PQRS$?

Ⓐ Reflection

Ⓑ Rotation

Ⓒ Translation

Ⓓ Dilation




**❺** Two figures, $ABC$ and $XYZ$, are congruent. If $m\angle A = 50°$ and $\overline{XZ} = 3\ cm$, which statement below must be true?

Ⓐ $m\angle X = 50°$, $\overline{AC} = 3\ cm$

Ⓑ $m\angle B = 50°$, $\overline{YZ} = 3\ cm$

Ⓒ $m\angle X = 90°$, $\overline{AC} = 6\ cm$

Ⓓ $m\angle B = 90°$, $\overline{AC} = 6\ cm$

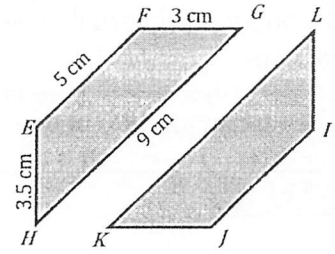
**❻** Given the figures below, $EFGH$ and $IJKL$ are congruent by a rotation of 180°, what is the length of $\overline{JK}$?

Ⓐ $\overline{JK} = 5\ cm$

Ⓑ $\overline{JK} = 3\ cm$

Ⓒ $\overline{JK} = 9\ cm$

Ⓓ $\overline{JK} = 3.5\ cm$



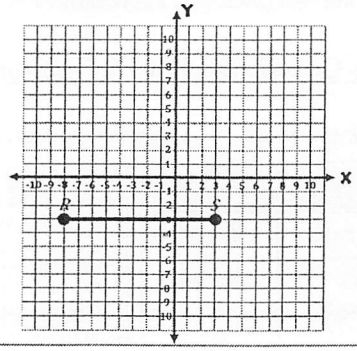

**❼** Line segment $\overline{RS}$ is shown below with coordinates $R(-8,-3)$ and $S(3,-3)$. Which coordinate below would represent $R'$ if point $R$ was reflected across the *x*-axis?

Ⓐ $(-8,3)$

Ⓑ $(3,3)$

Ⓒ $(8,-3)$

Ⓓ $(-3,-3)$



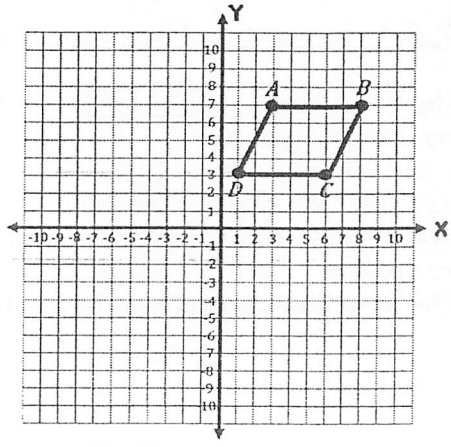

**❽** If parallelogram $ABCD$ is translated left 2 units and down 5 units, what is the resulting coordinate of $B'$ ?

Ⓐ $(10,2)$

Ⓑ $(8,2)$

Ⓒ $(6,7)$

Ⓓ $(6,2)$



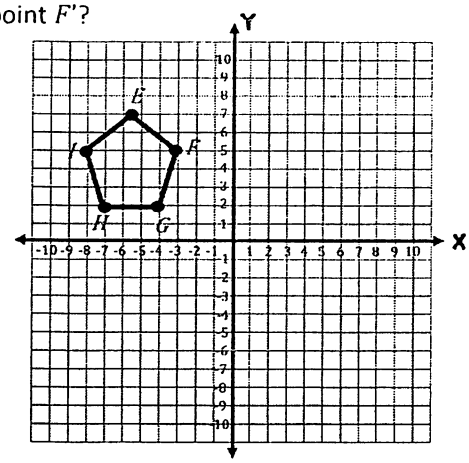
**9** If figure $EFGHI$ is rotated 270° counter-clockwise about the origin, What would be the resulting coordinate of point $F'$?

Ⓐ $(-3,-5)$

Ⓑ $(-5,-3)$

Ⓒ $(5,3)$

Ⓓ $(5,-3)$



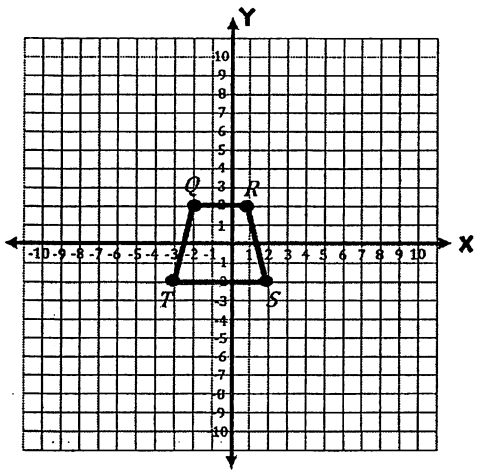

**10** If trapezoid $QRST$ is dilated about the origin by a scale factor *(k)* of 2, what is the resulting coordinate of point $T'$?

Ⓐ $(6,2)$

Ⓑ $(-5,-4)$

Ⓒ $(-6,-4)$

Ⓓ $(-1,-4)$



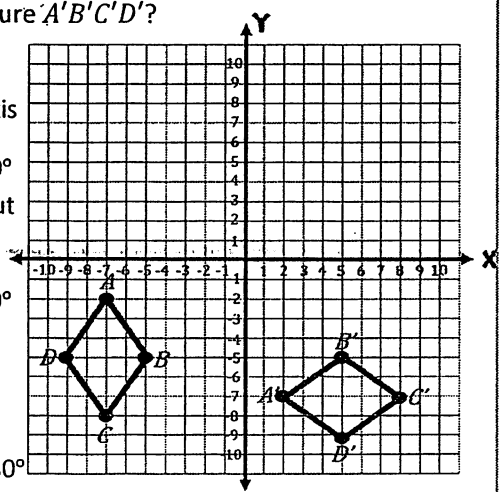

**11** Which transformation most likely maps figure $ABCD$ onto figure $A'B'C'D'$?

Ⓐ Reflection across the Y-axis

Ⓑ Rotation 90° Clockwise about the origin

Ⓒ Rotation 90° Counter-Clock-wise about the origin

Ⓓ Rotation 180° about the origin




**12** Based on the coordinates below, what transformation was most likely applied to figure $XYZ$ in order to obtain the coordinates of $X'Y'Z'$?

| $X(5,6)$ | $Y(0,3)$ | $Z(-4,8)$ |
|---|---|---|
| $X'(-5,-6)$ | $Y'(0,-3)$ | $Z'(4,-8)$ |

Ⓐ Reflection across the X-axis
Ⓑ Reflection across the Y-axis
Ⓒ Rotation 90° Clockwise about the origin
Ⓓ Rotation 180° about the origin

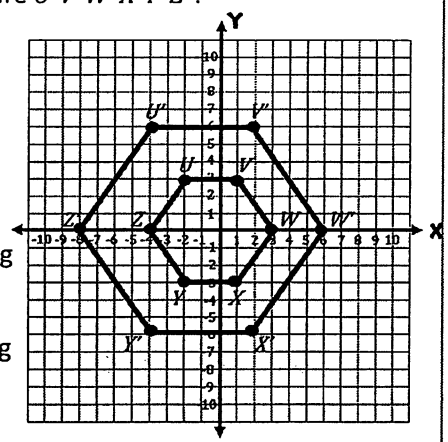
**13** Which transformation most likely maps figure $UVWXYZ$ onto figure $U'V'W'X'Y'Z'$?

Ⓐ Dilation using $k = 2$

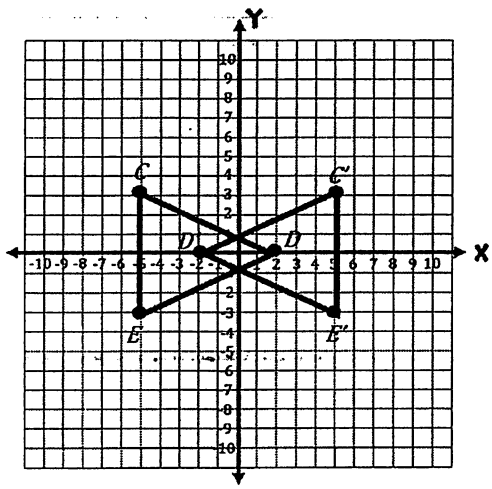
Ⓑ Dilation using $k = \frac{1}{2}$

Ⓒ Translation using $(x,y) \rightarrow (x+3,y)$

Ⓓ Translation using $(x,y) \rightarrow (x,y+3)$




**14** Which transformation most likely maps figure $CDE$ onto figure $C'D'E'$?




Ⓐ Rotation 180° about the origin
Ⓑ Reflection across the Y-axis
Ⓒ Reflection across the X-axis
Ⓓ Translation right 3 units

# EXPONENTS, RADICALS, SCIENTIFIC NOTATION & RATIONAL/IRRATIONAL NUMBERS

## TERMS TO KNOW:

① **Exponent:** part of a power that tells you how many times to use the base as a factor (multiplication)

② **Negative exponent:** tells you that a power is less than one and should be written as a fraction

③ **Square Root:** the number multiplied by itself to produce the area of a square

④ **Cube Root:** the number multiplied by itself three times (or written as a factor three times) to produce the volume of a cube

⑤ **Scientific Notation:** a way to write very large or very small numbers using powers of ten

⑥ **Rational Number**: any number that can be written as a ratio (fraction)

⑦ **Irrational Number:** any number whose decimal form never repeats and never ends (most common: $\sqrt{2}$, $\pi$)

## SYMBOLS TO KNOW:

$x^2$ means $x \cdot x$ or "x written as a factor twice"

$x^3$ means $x \cdot x \cdot x$ or "x written as a factor three times"

$x^{-2}$ means $\frac{1}{x} \cdot \frac{1}{x}$ or " the **reciprocal** of x written as a factor twice" or "the **opposite** of **multiplying** x by itself" (dividing)

$\sqrt{\ }$ means "the square root of" the number inside the box; is called a **radical** symbol

$\sqrt[3]{\ }$ means "the cube root of" the number inside the box

## REVIEW TIPS:

### Exponent Rules:

- **Multiplying:** Keep the base number, add the exponents [Example: $a^2 \cdot a^5 = a^{2+5} = a^7$]
- **Dividing:** Keep the base number, subtract the exponents [Example: $\frac{b^{10}}{b^4} = b^{10-4} = b^6$]
- **Negative**: move the power across the division bar and change the exponent from negative to positive [Example: $x^{-4} = \frac{1}{x^4}$ ]
- **Zero:** any number (except zero) to the zero power = 1 [Example: $4^0 = 1, 200^0 = 1, (-9)^0 = 1$]
- **Different Base Powers:** the exponents of different bases cannot be combined. [Example: $a^3b^4 = a^3b^4$]

### Radical Rules:

- To "un-square" a number, you must take the **square root**. [Example: $3^2 = 9$ therefore $\sqrt{9} = 3$]
- To "un-cube" a number, you must take the **cube root** [Example: $5^3 = 125$ therefore $\sqrt[3]{125} = 5$]
- Solving equations with exponents:

$x^2 = 25$ or $x^3 = 8$

$\sqrt{x^2} = \sqrt{25}$ $\sqrt[3]{x^3} = \sqrt[3]{8}$

$x = \pm 5$ $x = 2$

$(x = 5 \text{ or } -5)$

## Scientific Notation Rules:

- Numbers written in **scientific notation** must have only one number (1 - 9) in front of the decimal place.
  [Correct Example: $3.45 \times 10^6$ **Incorrect** Example: $34.5 \times 10^6$]
- Numbers with positive exponents are very large numbers (greater than 1) [Example: $3.45 \times 10^6 = 3{,}450{,}000$]
- Numbers with negative exponents are very small numbers (less than 1) [Example: $3.45 \times 10^{-5} = 0.0000345$]
- To **multiply** or **divide** numbers expressed in scientific notation, combine the coefficients first and the powers of ten second. Put in proper format if necessary.
  [Example: $(2.1 \times 10^4) \times (9 \times 10^5) = (2.1 \times 9) \times (10^4 \times 10^5) = 18.9 \times 10^9 = 1.89 \times 10^{10}$)
- To add or subtract numbers in scientific notation, re-write the numbers in standard form, combine, and *put back in scientific notation.* [Example: $(2.1 \times 10^3) + (9 \times 10^4) = 2{,}100 + 90{,}000 = 92{,}100 = 9.21 \times 10^5$)]
- Adjusting an answer to "proper" scientific notation:
  - **Too big?** Move the decimal and ADD to the exponent. [Example: $23.8 \times 10^4 = 2.38 \times 10^5$]
  - **Too small?** Move the decimal and SUBTRACT from the exponent. [Example $0.238 \times 10^9 = 2.38 \times 10^8$]
- Standard calculators will represent a power of ten by using and "E".
  [Example: $3.45 \times 10^8$ on a calculator would read $3.45\ E\ 8$]
- **Word Problem Phrases:** "How many TIMES bigger...?" means **divide**; "How MUCH bigger..." means **subtract.**

## Rational vs. Irrational Numbers:

- **Rational Numbers:** whole numbers, negatives, decimals (that end or repeat), perfect square roots, fractions.
  [Examples: $3, 8.9, ½, -6.709, 0.\overline{3}, \sqrt{25}, 7^2$]
- **Irrational Numbers:** numbers whose decimal form never repeats and never ends [Examples: $\pi, \sqrt{2}, 8.97425\ldots$]
- **Repeating decimals→ Fractions:** set up a system of equations that allows you to eliminate the repeating portion; solve the system. Example: $0.\overline{3} \rightarrow$

$$\begin{array}{rl} & 10x = 3.333\ldots \\ - & x = 0.333\ldots \\ \hline & 9x = 3 \end{array}$$

$$x = \frac{3}{9} \rightarrow \frac{1}{3}$$

## PRACTICE PROBLEMS

**1** Evaluate: $4^2 \cdot 4^2$

Ⓐ $16^4$ Ⓑ 256 Ⓒ 1 Ⓓ 65,536

**2** Evaluate: $\frac{3^7}{3^5}$

Ⓐ 36 Ⓑ $\frac{1}{9}$ Ⓒ 9 Ⓓ $3^{12}$

**3** Evaluate: $4^{-3}$

Ⓐ 64 Ⓑ $-64$ Ⓒ $-12$ Ⓓ $\frac{1}{64}$

**4** Evaluate: $58^0$

Ⓐ 1 Ⓑ 58 Ⓒ 0 Ⓓ $-58$

**5** Evaluate: $5^{10} \times 5^{-12}$

Ⓐ $-2$ Ⓑ $\frac{1}{25}$ Ⓒ $\frac{1}{10}$ Ⓓ 25

**6** What is the missing exponent in the equation below?

$$\frac{7^8}{7^{10}} = 7^x$$

Ⓐ $-2$ Ⓑ 2 Ⓒ 18 Ⓓ $-18$

**7** Simplify: $\frac{4^{12} \times 4^8}{4^{13}}$

Ⓐ $4^{33}$ Ⓑ $4^{-33}$ Ⓒ $4^7$ Ⓓ $4^{-7}$

**8** Evaluate: $\sqrt{100}$

Ⓐ 10 Ⓑ 50 Ⓒ 25 Ⓓ 98

**9** Evaluate: $\sqrt[3]{64}$

Ⓐ 10 Ⓑ 8 Ⓒ 21.3 Ⓓ 4

**10** Find the value of $x$: $x^2 = 16$

Ⓐ $\pm 4$ Ⓑ $\pm 8$ Ⓒ 4 Ⓓ 8

**11** Find the value of $x$: $x^3 = -8$

Ⓐ $\pm 4$ Ⓑ $\pm 2$ Ⓒ $-2$ Ⓓ $-4$

**12** What is $6.79 \times 10^5$ written in standard form?

Ⓐ 67,900,000 Ⓑ 679,000
Ⓒ 0.00000679 Ⓓ 0.0000679

**13** The width of a human hair is approximately $0.0002\ in.$ What is this width written in scientific notation?

Ⓐ $2 \times 10^3\ in.$ Ⓑ $2 \times 10^{-3}\ in.$
Ⓒ $2 \times 10^4\ in.$ Ⓓ $2 \times 10^{-4}\ in.$

**14** Evaluate: $(6.7 \times 10^4) \times (9.1 \times 10^6)$

Ⓐ $6.097 \times 10^{11}$ Ⓑ $6.097 \times 10^{10}$
Ⓒ $6.097 \times 10^9$ Ⓓ $60.97 \times 10^{10}$

**15** How many times larger is $(5.4 \times 10^6)$ than $(9 \times 10^3)$?

Ⓐ $0.6 \times 10^3$ Ⓑ $6 \times 10^3$
Ⓒ $6 \times 10^2$ Ⓓ $6 \times 10^4$

**16** Subtract: $(3.4 \times 10^5) - (2.1 \times 10^4)$

Ⓐ $3.19 \times 10^3$ Ⓑ $3.19 \times 10^5$
Ⓒ $1.3 \times 10^1$ Ⓓ $1.3 \times 10^5$

**17** Add: $12{,}000 + (3.4 \times 10^5)$

Ⓐ $4.6 \times 10^5$ Ⓑ $4.6 \times 10^9$
Ⓒ $3.52 \times 10^5$ Ⓓ $3.52 \times 10^3$

**18** Which value would be the most likely measurement of the distance from the earth to the moon?

Ⓐ $1.3 \times 10^9\ ft.$ Ⓑ $1.3 \times 10^{100}\ ft.$
Ⓒ $1.3 \times 10^{-9}\ ft.$ Ⓓ $1.3 \times 10^2\ ft.$

**19** The display on a calculator reads $9.378\,E-5$. Which value does this represent?

Ⓐ 937,800,000 Ⓑ 937,800
Ⓒ 0.00009378 Ⓓ 0.000009378

**20** Which of the following numbers is irrational?

Ⓐ 45.8 Ⓑ $\sqrt{50}$ Ⓒ $\sqrt{100}$ Ⓓ $0.1\overline{6}$

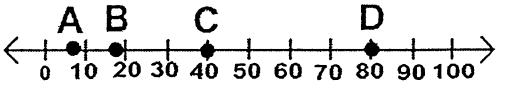
**21** Which of the following numbers is rational?

Ⓐ $\pi$ Ⓑ $\sqrt{2}$ Ⓒ 4.567 ... Ⓓ 23

**22** What is $0.\overline{5}$ in fraction form?

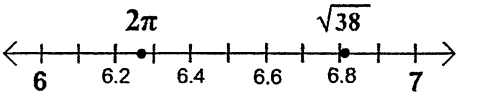
Ⓐ $\frac{1}{2}$ Ⓑ $\frac{1}{5}$ Ⓒ $\frac{5}{9}$ Ⓓ $\frac{5}{10}$

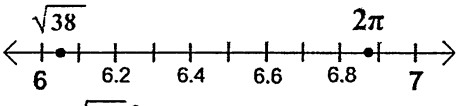
**23** Which point shows the approximate value of $\sqrt{40}$ on the number line below?

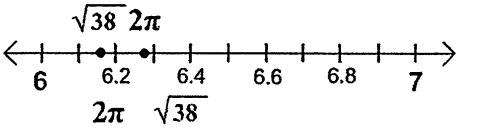


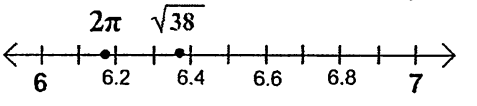

Ⓐ *Point A* Ⓑ *Point B* Ⓒ *Point C* Ⓓ *Point D*

**24** Which number line best represents the locations of $2\pi$ and $\sqrt{38}$?

Ⓐ 

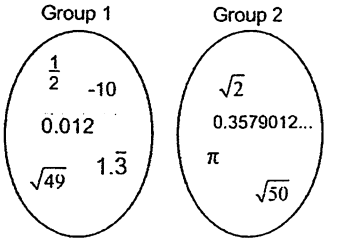

Ⓑ 


Ⓒ 


Ⓓ 


**25** Haley was attempting to classify the two groups of numbers shown below. Which titles would be most appropriate for the groups?

Ⓐ 1: Rational Numbers
2: Irrational Numbers
Ⓑ 1: Rational Numbers
2: Real Numbers
Ⓒ 1: Real Numbers
2: Imaginary Numbers
Ⓓ 1: Whole Numbers
2: Square Roots



# RELATIONSHIPS & FUNCTIONS

## TERMS TO KNOW:

① Function: a relationship between two variables where every input has exactly one output

② Rate of Change or Slope: $m = \left(\frac{rise}{run}\right)$ or $\frac{y_2-y_1}{x_2-x_1}$ The ratio of the change in height (y-values) to the change in forward movement (x-values)

③ Initial Value or Y-intercept: the point of a graph that touches the y-axis (0, y); the starting value or one-time event in a situation.

④ Linear Function: a function that forms a straight line when graphed (has a constant slope)

⑤ Proportional Relationship a linear function in which the ratio of $\frac{y}{x}$ is the same for every coordinate of the function

## REVIEW TIPS:

**Is it a Function or Not?**

- When testing to see if a graph is a function, use the "**Vertical Line Test**". IF any vertical line would touch more than one point at a time on a graph, it is NOT a function.
- When looking at a table or coordinates, check for repeating inputs only. If repeating inputs have different outputs, it is NOT a function.

**Linear or Nonlinear?**

- Graphs: straight line = linear. Any breaks, gaps, curves, or changes of direction make it nonlinear.
- Tables: check the slope (rise/run). Constant slope = Linear.
- Equations: check the variables for exponents, roots, absolute value symbols, or variables in the denominator. Variables with any of these = **non**linear. Variables without exponents or without the above mentioned functions= linear.

**Interpreting Word Problems:**

- "Interpret the Rate of Change" - means interpret the slope. In a word problem, the slope/rate of change will be the value that happens multiple times (and in an equation, it will be the number being multiplied by the variable).
- "Interpret the Initial Value" - means interpret the y-intercept. In a word problem, the y-intercept/initial value will be the beginning value of the situation. This value will only be counted one time in the situation (and in the equation, it will be the number without a variable).

**Proportional Relationships:**

- A relationship is proportional if it **starts at the origin (0, 0)** and continues in a **straight line** (at a constant slope).
- If the relationship is proportional, the rate of change can be found by finding rise/run OR by dividing the y-value by the x-value.
- Equations: equations are proportional if they do not show a y-intercept [Example: $y = 3x$ or $y = 0.2x$]
- Tables: Tables show a proportional relationship when every y-value can divide by its respective x-value and get the same number.
- Graphs: graphs show a proportional relationship if it starts at (0, 0) and continues in a straight line.
- Unit Rate: "how many in just 1"; you will use division to find unit rate. In a proportional relationship, **the unit rate is the slope.**
- Similar Triangles & Slope: the **slope is the same** between *any* 2 points on the same line, no matter how far apart the points may be.

# PRACTICE PROBLEMS

**1** Describe the relationship shown in the table of values.

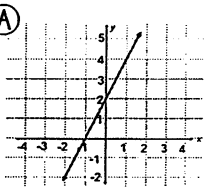
| x | 5 | 4 | 0 |
|---|---|---|---|
| y | 8 | 9 | 13 |

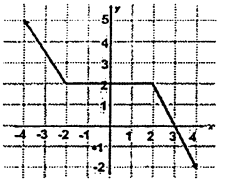
Ⓐ Relation only.
Ⓑ Function only.
Ⓒ Both relation and function.
Ⓓ Neither relation nor function.

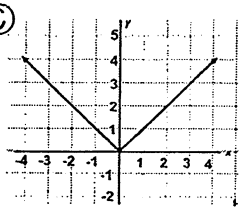
**2** Which of the following sets of ordered pairs represents a function?

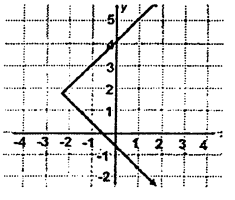
Ⓐ (2, 3), (6, 9), (10, 12), (2, -3)
Ⓑ (-9, 4), (-2, 10), (-2, 12), (0, 6)
Ⓒ (1, 2), (4, 9), (10, 22), (15, 7)
Ⓓ (0, 1), (0, 2), (0, 3), (0, 4)

**3** Which graph DOES NOT represent a function?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

**4** Which of the following relations does NOT represent a function?

Ⓐ {(5, 8), (10, 2), (12, -2), (15, -5)}

Ⓑ $y = \frac{1}{2}x + 8$

Ⓒ Multiplying each input by 10 to produce an output

Ⓓ

| *Age* | *13* | *14* | *12* | *13* |
|---|---|---|---|---|
| *Eye Color* | Brown | Blue | Green | Hazel |

**5** Choose the best description of the relation shown below:

$$\{(2, 10), (4, 15), (6, 20), (8, 25)\}$$

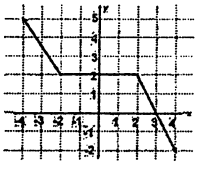
Ⓐ The relation is a function because every input has exactly one output
Ⓑ The relation is a function because every output has exactly one input
Ⓒ The relation is not a function because every input is different.
Ⓓ It is impossible to tell if the relation is a function without knowing more coordinates.

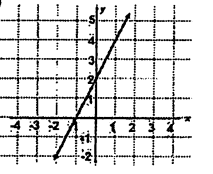
**6** Which equation shown below shows a linear relationship between $x$ and $y$?

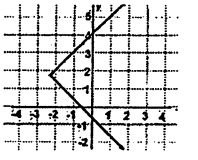
Ⓐ $y = 3x + 4$ Ⓑ $y = \frac{1}{2}x^2 - 1$

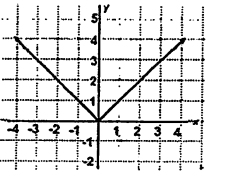
Ⓒ $2x^2 + y = 5$ Ⓓ $y = \frac{2}{x}$

**7** Which graph shows a linear relationship?

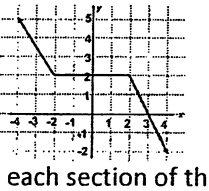
Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

**8** Choose the best description of the graph:



Ⓐ Linear because each section of the graph is a different straight line segment.
Ⓑ Nonlinear because each segment has a different slope.
Ⓒ Both linear and nonlinear because it is made up of straight line segments but is not a complete straight line.
Ⓓ Neither linear nor nonlinear because it is made up of straight line segments but is not a complete straight line.

**9** Which table shows a nonlinear relationship?

Ⓐ

| x | 5 | 4 | 0 |
|---|---|---|---|
| y | 8 | 9 | 13 |

Ⓑ

| x | -1 | 0 | 1 |
|---|---|---|---|
| y | 15 | 18 | 21 |

Ⓒ

| x | 5 | 7 | 9 |
|---|---|---|---|
| y | 15 | 11 | 5 |

Ⓓ

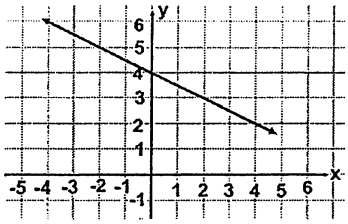
| x | 5 | 7 | 9 |
|---|---|---|---|
| y | 15 | 11 | 7 |

**10** Which equation represents the table?

| x | -1 | 0 | 1 |
|---|---|---|---|
| y | 15 | 18 | 21 |

Ⓐ $y = 18x + 3$
Ⓑ $y = 3x + 18$
Ⓒ $y = -3x + 18$
Ⓓ $y = \frac{1}{3}x + 18$

**11** Which equation represents the graph?



Ⓐ $y = 4x - 2$
Ⓑ $y = \frac{1}{2}x + 4$
Ⓒ $y = -2x + 4$
Ⓓ $y = -\frac{1}{2}x + 4$

**12** Which equation represents a line passing through the points (2, 5) and (4, 10)?

Ⓐ $y = \frac{5}{2}x$ Ⓑ $y = \frac{2}{5}x$
Ⓒ $y = 5x + 2$ Ⓓ $y = 2x + 5$

**13** David's allowance is $5 every week, plus $2 for each extra chore he does. Which equation shows his total allowance (*A*) every week, depending on the number of extra chores (*c*) he completes?

Ⓐ $A = 5c + 2$ Ⓑ $A = 2c + 5$
Ⓒ $A = 7c$ Ⓓ $A = 2 + 5$

**14** What is the slope of the equation below?

$$2y = 10x - 8$$

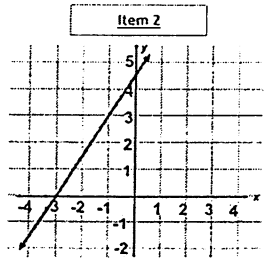
Ⓐ 2 Ⓑ $-8$ Ⓒ 10 Ⓓ 5

**15** Compare the equation in Item 1 with the graph in Item 2.

Item 1

$y = -3x + 4.5$

Item 2



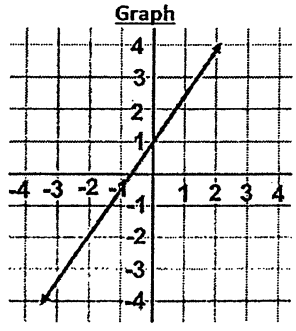
Ⓐ Items 1 and 2 have the same rate of change, and the same y-intercepts.
Ⓑ Items 1 and 2 have the same rate of change, but different y-intercepts.
Ⓒ Items 1 and 2 have different rates of change, but the same y-intercepts.
Ⓓ Items 1 and 2 have the different rates of change, and different y-intercepts.

**16** Consider the table of values and the graph below. Choose the statement below that best compares the two.

Table

| x | y |
|---|---|
| 4 | 2 |
| 8 | 5 |
| 12 | 8 |

Graph



Ⓐ The table has an increasing rate of change while the graph has a decreasing rate of change; the graph and the table have the same y-intercepts.

Ⓑ Both the table and graph have increasing rates of change; The y-intercept of the graph is greater than that of the table.

Ⓒ Both the table and graph have decreasing rates of change; The y-intercept of the table is greater than that of the graph.

Ⓓ The table has a decreasing rate of change while the graph has an increasing rate of change; The y-intercept of the graph is greater than that of the table.

# SYSTEMS OF EQUATIONS

## REVIEW TIPS

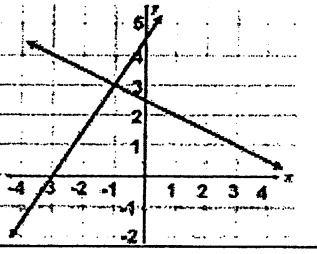
- A solution to a system means "the point (x,y) where the two lines intersect on a graph" or the (x,y) pair that the two equations would share.
- Graphing - systems set up for graphing will both start with "y = " [Example: $y = 2x - 7$ and $y = -3x$]
- Substitution: systems set up for substitution will have one equation starting with "y=" or "x=" and one in standard form [Example: $4x - y = 9$ and $y = -3x + 1$]
  - When solving using substitution, "plug in" what y equals to the other equation [Example: $4x - (-3x + 1) = 9$]
  - Solve the equation for x. When finished, plug your solution back into either equation for x, to solve for y.
  - Your final answer will be two numbers in coordinate pair format: (x, y).
- Elimination: systems set up for elimination will have both equations in standard form. [Example: $3x - 2x = 9$ and $7x + 2x = 10$].
  - In order to solve using elimination, either the x's or y's must "eliminate" when combining the two equations (they must have opposite (+/-) coefficients of the same absolute value like $2x$ and $-2x$).
  - After eliminating one variable, solve for the other.
  - After solving for one variable, plug the solution back in to either equation to solve for the other.
  - Your final answer will be two numbers in coordinate pair format (x,y).
- Word Problems: when attempting to set up a system of equations from a word problem, follow these steps:
  - *First*, identify the two totals. Put them at the end of the equation, after the equal signs.
  - *Second*, identify the variables you need to find and decide how they interact (+, - , x, /) to get your totals.
  - *Third*, identify if the variables will have any coefficients in either equation.
  - *Finally*, solve using either elimination or substitution, whichever would be more appropriate.

## PRACTICE PROBLEMS

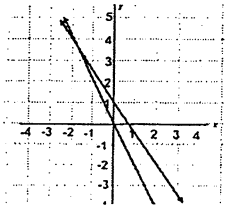
❶ What is the solution to the system of equations graphed below?

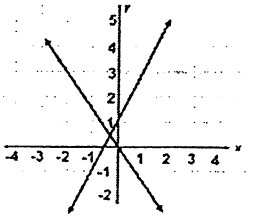
Ⓐ (3, -1) Ⓑ (-1, 3)

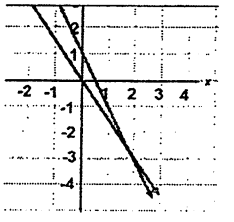
Ⓒ (4.5, 2.5) Ⓓ (-3, 2.5)

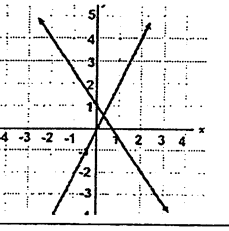


❷ Which graph shows the solution to the system of equations? $y = -2x + 1$ and $y = -\frac{3}{2}x$

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

❸ What is the solution to the system of equations?

$$y = -2x + 1 \quad \text{and} \quad 2x + 3y = 19$$

Ⓐ (-4, 9) Ⓑ (4, -7) Ⓒ (4, 9) Ⓓ (9, -4)

❾ Which step could be completed in order to prepare the system of equations below for the elimination method?

1st Equation: $5x - 3y = 10$
2nd Equation: $8x + 6y = 15$

Ⓐ Multiply the 1st equation by -2.
Ⓑ Multiply the 2nd equation by 2.
Ⓒ Multiply the 1st equation by 2
Ⓓ Multiply the 2nd equation by -2

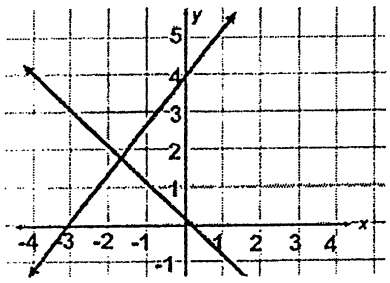
❺ What is the solution to the system of equations?

$$y = -2x + 1 \quad \text{and} \quad y = -\frac{4}{7}x + 1$$

Ⓐ (0, 1) Ⓑ (1, 0) Ⓒ (-2, 1) Ⓓ $(-2, -\frac{4}{7})$

❻ What is the best estimate of the solution to the system of equations graphed below?

Ⓐ (-2.3, 1.8)
Ⓑ (-1.8, 1)
Ⓒ (-1.8, 1.8)
Ⓓ (-2.8, 1.8)



❼ In a barn there are 17 animals. Some are cows and some are ducks. There are 54 legs in all. Which system of equations below could be used to find how many cows and how many ducks are in the barn?

Ⓐ $c + d = 17$
$4c + 2d = 54$

Ⓑ $c + d = 54$
$4c + 2d = 17$

Ⓒ $c + d = 17$
$2c + 4d = 54$

Ⓓ $c + d = 17$
$4c + 2d = 6cd$

❽ The sum of two numbers is 3. Their difference is 13. What are the two numbers?

Ⓐ (8, 5) Ⓑ (8, -5) Ⓒ (1, 2) Ⓓ (20, 7)

❾ Which statement is true of the system of equations shown below?

$$3x + 7y = 14$$
$$3x + 7y = 10$$

Ⓐ The system of equations has one solution: (0, 4)
Ⓑ The system of equations has one solution: (4, 0)
Ⓒ The system of equations has infinite solutions
Ⓓ The system of equations has no solutions

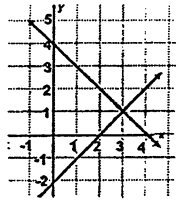
❿ What is the solution to the system of equations shown below?

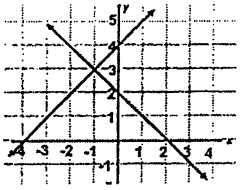
$$2x + y = 10$$
$$4x + 3y = 15$$

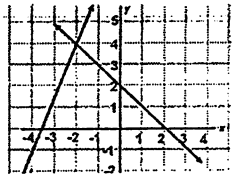
Ⓐ (2.5, -5) Ⓑ (7.5, -5) Ⓒ (-5, 20) Ⓓ (-5, 0)

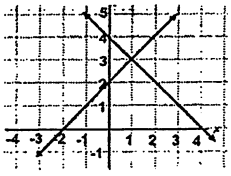
⓫ Which graph shows the solution to the system of equations?

$$x + y = 4$$
$$x - y = -2$$

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

⓬ Which system of equations would have infinite solutions?

Ⓐ $y = 2x + 6$
$2y = 4x + 12$

Ⓑ $y = 2x + 6$
$y = 2x + 3$

Ⓒ $y = 2x + 6$
$y = -2x + 6$

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

# ANSWER KEY

## Transformations: Congruence & Similarity (pages 2-5)

| # | Answer |
|---|---|
| 1 | B |
| 2 | D |
| 3 | C |
| 4 | C |
| 5 | A |
| 6 | B |
| 7 | A |
| 8 | D |
| 9 | C |
| 10 | C |
| 11 | C |
| 12 | D |
| 13 | A |
| 14 | B |
| 15 | C |
| 16 | A |
| 17 | C |
| 18 | C |
| 19 | D |
| 20 | B |
| 21 | D |
| 22 | A |
| 23 | D |
| 24 | A |

## Exterior Angles, Similar Triangles, & Parallel Lines (pages 6-7)

| # | Answer |
|---|---|
| 1 | D |
| 2 | A |
| 3 | C |
| 4 | B |
| 5 | B |
| 6 | D |
| 7 | C |
| 8 | A |
| 9 | B |
| 10 | C |
| 11 | B |

## Exponents, Radicals, Scientific Notation, & Rational/Irrational (pages 8-10)

| # | Answer |
|---|---|
| 1 | B |
| 2 | C |
| 3 | D |
| 4 | A |
| 5 | B |
| 6 | A |
| 7 | C |
| 8 | A |
| 9 | D |
| 10 | A |
| 11 | C |
| 12 | B |
| 13 | D |
| 14 | A |
| 15 | C |
| 16 | B |
| 17 | C |
| 18 | A |
| 19 | C |
| 20 | B |
| 21 | D |
| 22 | C |
| 23 | A |
| 24 | C |
| 25 | A |

## Solving Multi-Step Equations
[pages 11]

| # | Answer |
|---|---|
| 1 | B |
| 2 | C |
| 3 | A |
| 4 | D |
| 5 | A |
| 6 | D |
| 7 | A |
| 8 | C |

## Pythagorean Theorem
[pages 12]

| # | Answer |
|---|---|
| 1 | B |
| 2 | C |
| 3 | D |
| 4 | B |
| 5 | A |
| 6 | C |

## Volume
[pages 13]

| # | Answer |
|---|---|
| 1 | D |
| 2 | B |
| 3 | A |
| 4 | C |
| 5 | D |
| 6 | D |

## Functions
[pages 15-20]

| # | Answer |
|---|---|
| 1 | C |
| 2 | C |
| 3 | D |
| 4 | D |
| 5 | A |
| 6 | A |
| 7 | B |
| 8 | B |
| 9 | C |
| 10 | B |
| 11 | D |
| 12 | A |
| 13 | B |
| 14 | D |
| 15 | C |
| 16 | B |
| 17 | D |
| 18 | B |
| 19 | B |
| 20 | B |
| 21 | A |
| 22 | C |
| 23 | B |
| 24 | C |
| 25 | D |

| # | Answer |
|---|---|
| 26 | A |
| 27 | B |
| 28 | A |
| 29 | B |
| 30 | B |
| 31 | C |
| 32 | C |
| 33 | A |
| 34 | C |
| 35 | A |

## Systems of Equations
[pages 21-22]

| # | Answer |
|---|---|
| 1 | B |
| 2 | C |
| 3 | A |
| 4 | C |
| 5 | A |
| 6 | C |
| 7 | A |
| 8 | B |
| 9 | D |
| 10 | B |
| 11 | D |
| 12 | A |

## Scatter Plots
[pages 23-24]

| # | Answer |
|---|---|
| 1 | C |
| 2 | A |
| 3 | B |
| 4 | C |
| 5 | C |
| 6 | C |

## Two-Way Tables
[pages 25]

| # | Answer |
|---|---|
| 1 | D |
| 2 | C |
| 3 | A |
| 4 | B |

# Drought and the Great Depression

Review

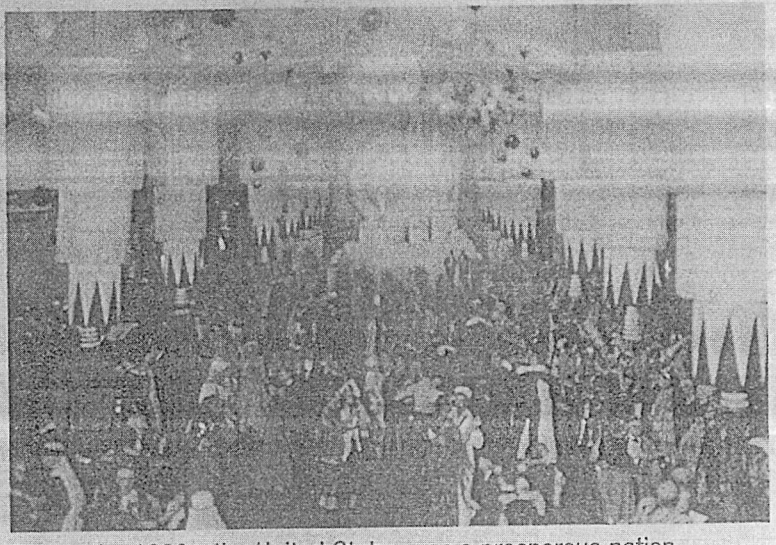
*Summary* Beginning in 1929 and lasting until around 1939, the world suffered through a huge economic slump called the **Great Depression**. An economic depression is a period of low economic activity and high unemployment. Millions of people in many countries, including the United States, found themselves out of work. Factories closed. Businesses failed. People could not pay the mortgages on their farms and houses. Many became homeless.

## Aftermath of World War I

***Chain of Events*** The Great Depression was caused by a chain of events that began after World War I (1914–1918). The countries involved faced many hardships after the war. In Great Britain, for instance, workers did not make enough money to pay their bills and buy food. Germany, which lost the war, had trouble paying the enormous debt that it owed to the victorious nations for the damage the war had caused. Germany's money was practically worthless.

***Economic Powerhouse*** The United States, on the other hand, came out of the war an economic powerhouse. During the 1920s, often called the "Roaring Twenties," the economy prospered. People bought the goods they wanted. Many did not pay for these purchases with cash. Instead, they bought things on **credit**, that is, with a promise to pay later.

As businesses made large profits, average consumers plunged deeper into debt, but remained confident in national businesses. Many people invested in these companies by buying their stock. This consumer support helped the economy to grow quickly.



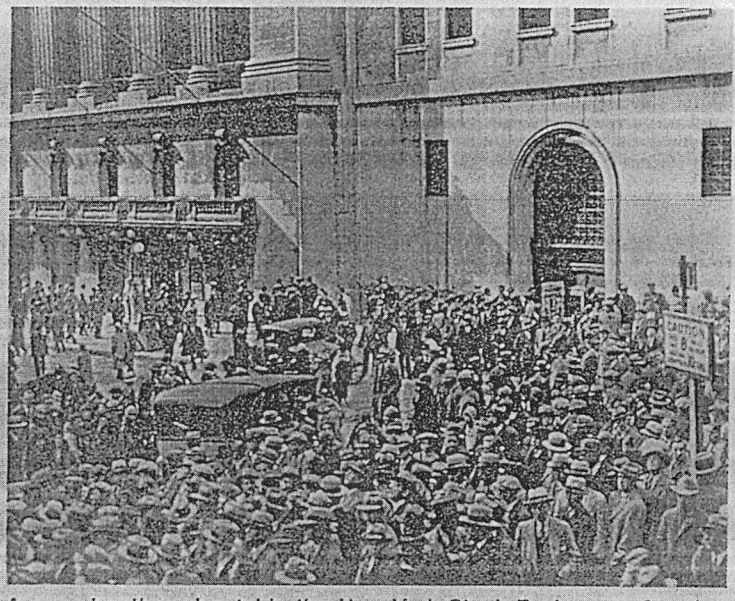
During the 1920s, the United States was a prosperous nation.

## The Stock Market Crash

As the Roaring Twenties drew to a close, many Americans thought they could make a profit when the value of a company's stock increased. However, many of these investors borrowed money to buy stocks. On October 29, 1929, which historians call Black Tuesday, the value of stocks dropped considerably.

***Panic*** Investors panicked that day. As the prices of stocks fell, people tried to sell their shares as fast as they could. They didn't believe their investments would increase in value and wanted to minimize their losses. People lost millions in minutes. As a result, banks could not collect on loans because the people who owed money had no money to repay the banks. The banks ran out of money, and many people lost their savings. This meant that many people could no longer make payments on the possessions they had earlier bought on credit.

***Unemployment Increases*** Many Americans had to sell all their possessions to pay for necessities like food, clothing, and heat. They often had to sell their homes and farms for the best offer. Soon, some businesses suffered because people could no longer afford luxury goods. These businesses closed. Unemployment increased. The businesses that did survive had to cut their production because there were so few consumers left who could afford to buy anything but the essentials.



A crowd gathered outside the New York Stock Exchange after the stock market crashed on Black Tuesday, October 29, 1929.

# Matter Unit Study Guide [2]

Name _____ Date _____ Period ___

1. Samantha cools 100g of gaseous Nitrogen ($N_2$) until it becomes liquid and then cools it even more until it becomes a solid. Explain what happens to the energy of the molecules as the temperature is lowered. (S8P1c)

2. Why does matter expand when it is heated? (S8P1c)

---

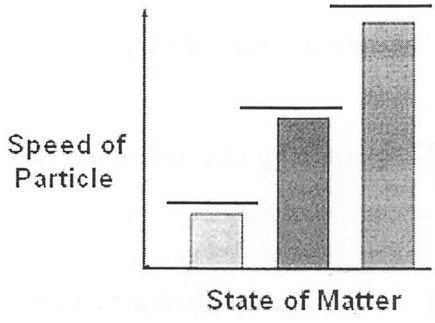
3. Draw a diagram to the right that shows the molecular change of ice to water. (S8P1c)

---

4. Use the states of matter Solid, Liquid, and Gas to answer the questions below.

a. Write the states of matter in sequence based on loss of energy (example: state of matter with the most energy, then the state of matter with less energy than the first and so on) (S8P1c)

b. Finish the bar graph to the right illustrating the speed of particles in the states of matter. (S8P1c)




---

5. Use the following information to answer the questions below: 1 kg of silver melts at 960.8°C (S8P1d)

a. 500g of silver melts at _____.

b. Freezing point of silver _____.

6. Describe the molecular arrangement of a solid. (S8P1c)

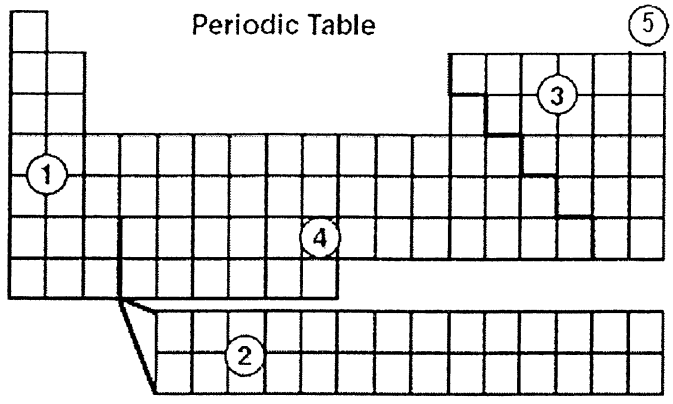
7. Fill in the table below with the Physical and Chemical Properties of Matter (S8P1d)

| Type of Property | Property | Description |
|---|---|---|
| | Density | |
| | Melting point | |
| | Boiling point | |
| | Reactivity | |
| | Combustibility | |

# Matter Unit Study Guide [1]

Name _____ Date ____ Period __

Use the Periodic Table to the right to answer the following questions.




17. In which region of the table would nonmetals be found? S8P1f

18. In which region would the most reactive elements be found? S8P1f

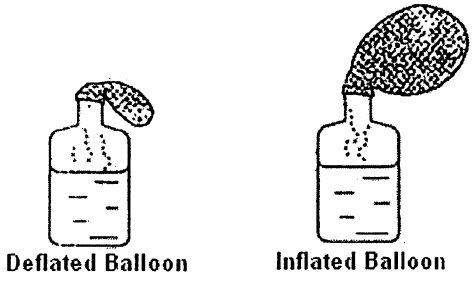
19. In which region would the least reactive elements be found? S8P1f

20. What is true about metals which is not true about nonmetals? S8P1f

21. Define Mass. S8P1g

22. Define the Law of Conservation of Matter. S8P1g

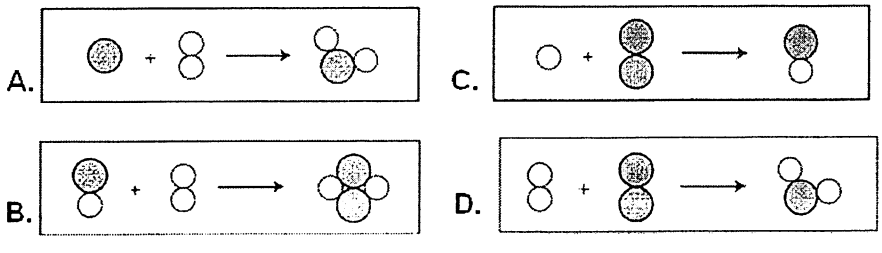
23. The diagram illustrates an experiment where baking soda was added to a container of vinegar. After five minutes, the balloon on the top of the bottle started expanding. Explain what happened and how this experiment demonstrates the Law of Conservation of Matter. S8P1g.




24. The diagram to the right illustrates _____. Explain your answer. S8P1g

| Mass of Reactants | Mass of Products |
|---|---|
| Methane + Oxygen | Carbon Dioxide + Water |
| 50.0 g + 200.0 g | → 137.5 g + 112.5 g |

25. Which model demonstrates the Law of Conservation of Matter? Explain your answer. S8P1g




26. An iron bar had a beginning mass of 150 grams. As the bar rusted, its mass increased. Explain why the mass of the iron bar increased. S8P1g.

# Matter Unit Study Guide [1]

Name _____ Date ____ Period __

## The Periodic Table

| | Group 1a | Group 2a | | | | | | | | | | | Group 3a | Group 4a | Group 5a | Group 6a | Group 7a | Group 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period 1 | 1 H Hydrogen 1.00794 | | | | | | | | | | | | | | | | | 2 He Helium 4.0026 |
| Period 2 | 3 Li Lithium 6.941 | 4 Be Beryllium 9.0122 | | | | | | | | | | | 5 B Boron 10.811 | 6 C Carbon 12.011 | 7 N Nitrogen 14.0067 | 8 O Oxygen 15.9994 | 9 F Fluorine 18.9984 | 10 Ne Neon 20.183 |
| Period 3 | 11 Na Sodium 22.9896 | 12 Mg Magnesium 24.305 | Group 3b | Group 4b | Group 5b | Group 6b | Group 7b | Group 8 | Group 8 | Group 8 | Group 1b | Group 2b | 13 Al Aluminum 26.9815 | 14 Si Silicon 28.086 | 15 P Phosphorus 30.9738 | 16 S Sulfur 32.066 | 17 Cl Chlorine 35.453 | 18 Ar Argon 39.948 |
| Period 4 | 19 K Potassium 39.098 | 20 Ca Calcium 40.08 | 21 Sc Scandium 44.956 | 22 Ti Titanium 47.87 | 23 V Vanadium 50.942 | 24 Cr Chromium 51.996 | 25 Mn Manganese 54.9380 | 26 Fe Iron 55.845 | 27 Co Cobalt 58.9332 | 28 Ni Nickel 58.69 | 29 Cu Copper 63.546 | 30 Zn Zinc 65.39 | 31 Ga Gallium 69.72 | 32 Ge Germanium 72.61 | 33 As Arsenic 74.9216 | 34 Se Selenium 78.96 | 35 Br Bromine 79.904 | 36 Kr Krypton 83.80 |
| Period 5 | 37 Rb Rubidium 85.47 | 38 Sr Strontium 87.62 | 39 Y Yttrium 88.906 | 40 Zr Zirconium 91.22 | 41 Nb Niobium 92.906 | 42 Mo Molybdenum 95.94 | 43 Tc Technetium (98) | 44 Ru Ruthenium 101.07 | 45 Rh Rhodium 102.905 | 46 Pd Palladium 106.4 | 47 Ag Silver 107.868 | 48 Cd Cadmium 112.41 | 49 In Indium 114.82 | 50 Sn Tin 118.71 | 51 Sb Antimony 121.76 | 52 Te Tellurium 127.60 | 53 I Iodine 126.9045 | 54 Xe Xenon 131.29 |
| Period 6 | 55 Cs Cesium 132.905 | 56 Ba Barium 137.33 | 57-71 * Lanthanides | 72 Hf Hafnium 178.49 | 73 Ta Tantalum 180.948 | 74 W Tungsten 183.84 | 75 Re Rhenium 186.2 | 76 Os Osmium 190.2 | 77 Ir Iridium 192.2 | 78 Pt Platinum 195.08 | 79 Au Gold 196.967 | 80 Hg Mercury 200.59 | 81 Tl Thallium 204.38 | 82 Pb Lead 207.2 | 83 Bi Bismuth 208.98 | 84 Po Polonium (210) | 85 At Astatine (210) | 86 Rn Radon (222) |
| Period 7 | 87 Fr Francium (223) | 88 Ra Radium (226) | 89-103 ** Actinides | 104 Rf Rutherfordium (261) | 105 Db Dubnium (262) | 106 Sg Seaborgium (266) | 107 Bh Bohrium (264) | 108 Hs Hassium (265) | 109 Mt Meitnerium (268) | 110 Ds Darmstadtium (281) | 111 Rg Roentgenium (280) | 112 Uub Element 112 (285) | 113 Uut Element 113 (284) | 114 Uuq Element 114 (289) | 115 Uup Element 115 (287) | 116 Uuh Element 116 (293) | | 118 Uuo Element 118 (294) |

10. What are the substances on the Periodic Table and why are they classified together in a table? S8P1b

11. On the periodic table, sodium is represented by Na. Na is a _____. S8P1f

12. Each element in the periodic table is assigned an atomic number. What does the atomic number tell us about the element? S8P1f

13. On the Periodic Table, what does the number above each of the elements represent? S8P1f

14. In the chemical formula for Magnesium chloride, $MgCl_2$, what does the subscript 2 represent? S8P1f

15. What are metalloids? Identify all the metalloids from the Periodic Table. S8P1f.

16. Read the statements below about the Periodic Table. Identify which statements are true/false. If the statement is false, explain why it is false. S8P1f

a. Each horizontal row of the table is called group.

b. Each family represents the number of energy levels present in an atom of the element.

c. The properties of an element can be predicted from its location on the table.

d. The elements are arranged from left to right, up to down by decreasing atomic number.

# Matter Unit Study Guide [1]

Name _____ Date ____ Period __

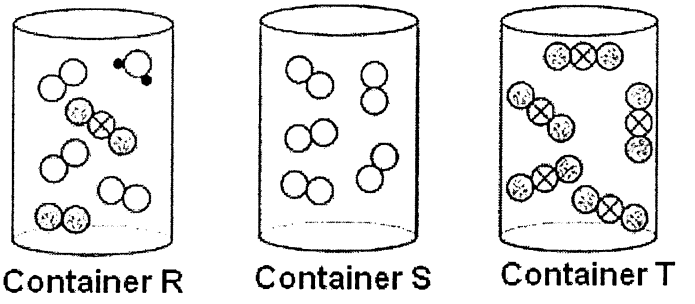
1. Oxygen and Hydrogen combine to form water. In the space to the right, draw an illustration of a water molecule. Additionally, identify water as any of the following that apply: an atom, an element, a molecule, and/or a compound. Explain your answer. S8P1a

2. What is the smallest particle of the element iron (Fe) that can still be classified as iron? S8P1a

3. Paper, glass, and iron are all made up of _____. S8P1a.

4. A molecule is to a compound as an atom is to a(n) _____. S8P1a.

5. The diagram shows three containers of gas. Use the diagram to answer the questions below. S8P1a-b




a. Which container(s) has atoms?

b. Which container(s) has an element?

c. Which container(s) has a pure substance?

d. Which container(s) has molecules?

e. Which container(s) has a mixture?

f. Which container(s) has compounds?

6. Which of the following do and do not represent a compound: $O_2$, $N_2O$, $CO_2$, $H_2$, NaCl Explain your answer. S8P1b

7. A solution of saltwater sits in the sun for 6 days. After 6 days, only salt remains in the cup. Explain why this is an example of a mixture. S8P1b

8. Mud Water is which of the following: element, compound, mixture. Explain your answer. S8P1b

9. Which of the following does not belong: Air, Salt, Water, or Oxygen Explain. S8P1b

# Social Studies Answer Keys

## Session 1

1. D
2. A, C
3. C
4. C
5. D
6. A
7. Students must identify the cause and consequence of a global issue by completing a table. Overconsumption of natural resources is caused by increased consumer demand fueled by global trade. The consequences of this demand is the destruction of natural habitats and ecosystems.

## Lesson 17 – Drought and the Great Depression

### Coached Example

1. C
2. D
3. B, E

### Lesson Practice

1. A
2. B
3. D

5. Look at the list of sources a student gathered for a project on Thomas Jefferson.

**Research Materials for Student Project on Thomas Jefferson**

1. *Notes on the State of Virginia*, 1782, Thomas Jefferson, author. Written by Jefferson and presents his views on natural science and education.

2. *Thomas Jefferson: Founding Father*, a documentary, 2010. Presents basic biographical information about Jefferson and the times he lived in.

3. "Oh, Grab Me!" political cartoon, 1809. Makes fun of Jefferson's embargo on trade to avoid war with France and England.

4. Letters to James Madison, 1784–1789, Thomas Jefferson, author. Jefferson's letters written to his close friend while he served as the Ambassador to France. Suggested ideas and changes to Madison as he worked on the Constitution.

Which source would be <u>most</u> relevant for a student to use for a project about Jefferson's views on how a republican government should be structured and its power limited?

A. 1

B. 2

C. 3

D. 4

6. While on television, a popular singer tells viewers where to buy her favorite shirt. Alexandra sees this and asks her friends to come to the mall with her to buy the shirt. Alexandra buying a shirt because a popular singer likes it is an example of

A. media affecting consumer choices.

B. performers helping the less fortunate.

C. singers being better dressers than students.

D. television creating new ways for friends to interact.

7. Use the list to complete the table. Choose <u>one</u> cause and <u>one</u> consequence for the global issue and write each of them in the table.

| Cause | Global Issue | Consequence |
|---|---|---|
| | overconsumption of natural resources | |

reduced dependence on new technology

planned communities in urban areas

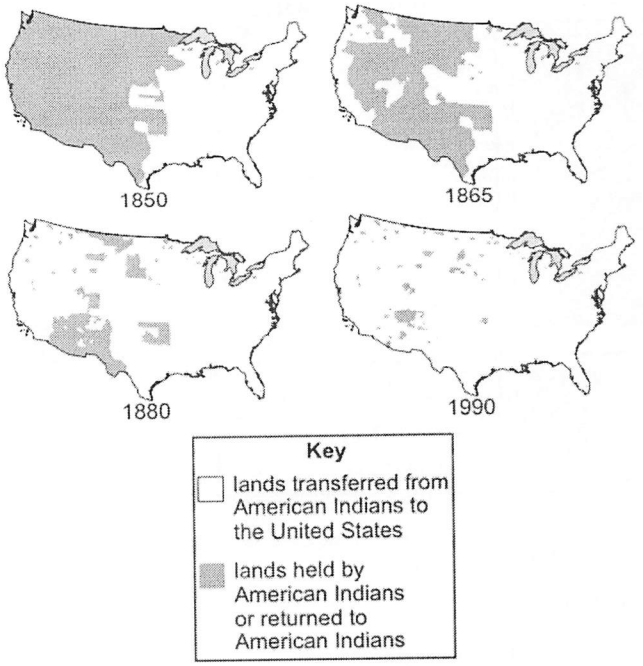
decreasing population in developed countries

destruction of natural habitats and ecosystems

increased consumer demand fueled by global trade

Look at the maps. Then answer items 3 and 4.

**American Indian Land, 1850–1990**




**3.** What was one way American Indians were most likely affected by the changes shown on the maps?

A. They were forced to move to urban areas to find factory jobs.

B. They were resettled in other countries by the U.S. government.

C. They were no longer able to follow their traditional ways of life.

D. They were required to perform agricultural work in the Southeast.

**4.** Despite the changes shown on the maps, which cultural contribution of American Indians has had the most lasting impact on the United States?

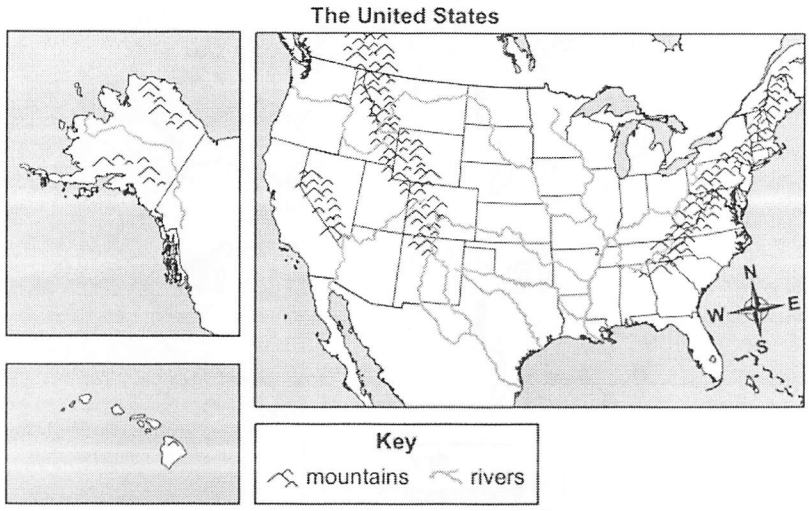
A. taking clan or family names from the mother's side

B. claiming private ownership of land to use it for profit

C. living in harmony with the natural world and conserving resources

D. developing different social classes based on physical features and skills

1. Look at the map.




This map could best be used for which purpose?

A. to see the regions that states belong to

B. to check the time zones that cross the continent

C. to determine the types of government of different states

D. to determine relative locations of physical features on the continent

2. What are the most likely effects of a drought on the environment? Select two answers.

A. an increase in wildfires

B. an increase in landslides

C. a reduction in soil quality

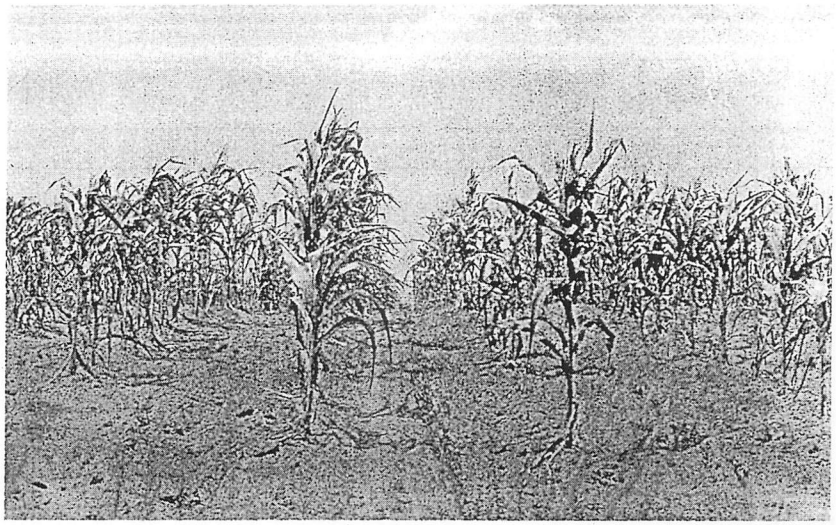
D. an increase in earthquakes

E. an increase in landform creation

F. a reduction in volcanic eruptions

## Document-Based Question

**Look at the photograph and then respond to the prompt.**



This 1936 photograph shows a farm in central Georgia. What does the photograph show about farms and agriculture in the 1930s? Based on the photograph, what might you conclude about Georgia's economy during the 1930s? Give at least two details from the photograph that support your conclusion.

## Lesson Practice

**Answer the following questions.**

1. Which country came out of World War I as an economic powerhouse?

   **A.** United States

   **B.** Great Britain

   **C.** Germany

   **D.** France

2. Look at the map.

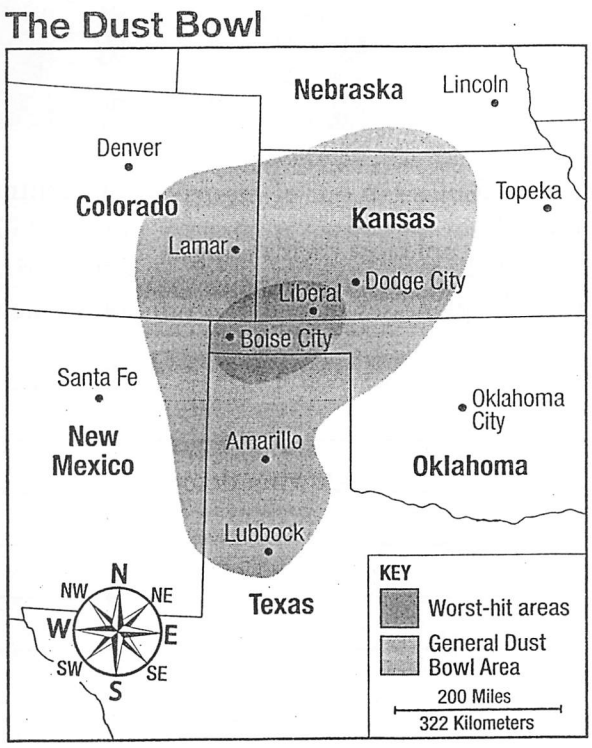
   Which of the following cities was hit the hardest by drought conditons during the Dust Bowl years of the Great Depression?

   **A.** Liberal, Kansas

   **B.** Lamar, Colorado

   **C.** Lincoln, Nebraska

   **D.** Lubbock, Texas




3. Look at the map.

   Approximately how many miles from north to south did the Dust Bowl cover?

   **A.** 120 miles

   **B.** 330 miles

   **C.** 400 miles

   **D.** 500 miles

## Coached Example

**Answer the following questions.**

1. Which term refers to an extreme low point in the economy?

   A. panic

   B. credit

   C. depression

   D. inflation

Hint Economies go through cycles of high activity and low activity.

2. Which of the following was **not** a result of the stock market crash in 1929?

   A. People were forced to sell their homes.

   B. Banks ran out of money.

   C. People lost their savings.

   D. Businesses increased production.

Hint The stock market crash of 1929 led to a widespread economic downturn.

3. Which of the following describes the farming trends in Georgia during World War I? Choose **two**.

   A. Farmers kept land fertile by alternating which fields they planted each year.

   B. Farmers overworked the land to keep up with demand.

   C. Farmers used a lot of pesticides to rid their crops of insects.

   D. Farmers introduced machinery to replace workers.

   E. Farmers increased the size of their fields.

Hint These practices eventually led to a decrease in production of crops.

## The Great Depression in Georgia

The Great Depression did not spare Georgia. Georgia was an agricultural state. Cotton was one of its main cash crops. The production and sale of cotton allowed Georgia's economy to thrive in the nineteenth and early twentieth centuries. However, when World War I ended, cotton prices fell sharply, causing economic hardship for the state.

***The Boll Weevil*** The cotton industry suffered further in 1921. Nearly half of the cotton crop was destroyed by the **boll weevil**, a small beetle, which most likely came from Mexico. The insect spread through the southern United States and devastated cotton crops. Adult boll weevils puncture cotton buds and lay eggs inside. The wormlike **larvae** hatch inside the buds and feed on the cotton bolls. Because the larvae stay inside the buds, insecticides could not kill boll weevils.

***Overused Land*** Nature impacted the Great Depression in another way. During World War I, farmers were encouraged to expand their farms to produce as much as possible. Hoping to keep up with demand, farmers planted even more crops. In states such as Oklahoma and Texas, this overworking of the soil, combined with strong winds and low rainfall, led to the creation of the **Dust Bowl**.

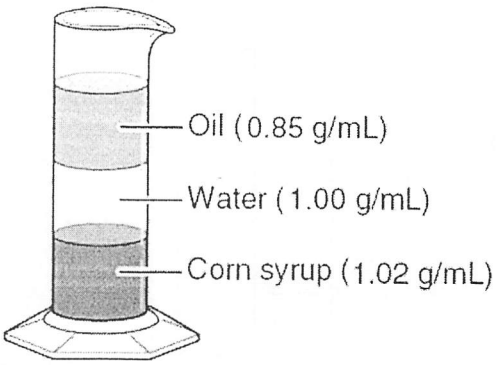
The overuse of farmland created drought conditions and dust storms in many states during the Great Depression.

**Drought**, or a long period of no rain, also troubled Georgia's farmers in the late 1920s and early 1930s. Additionally, the desire to produce as much cotton as possible had resulted in the overuse of farmland in the state. Eventually, the soil was exhausted of its nutrients and would not support additional crops. This, along with the destruction of cotton by the boll weevil, forced many people to leave their farms. Some of the poorer farmers even left the state.

# Matter Unit Study Guide [2]

Name _____ Date _____ Period ___

8. Silver is a white metal that is an excellent conductor of heat and electricity. Silver tarnishes when exposed to air and light. The density of silver is 10.49 g/cm$^3$. The melting point is 962°C and the boiling point is 2000°C. Identify the physical properties of Silver based on the information above. (S8P1d)




9. Based on the diagram, which type and property of matter could be used to classify oil, water, and corn syrup? (S8P1d)

| Densities of Some Unknowns | |
|---|---|
| Liquids | Density (g/mL) |
| Sample A | 1.02 |
| Sample B | 0.96 |
| Sample C | 1.15 |
| Sample D | 0.82 |

10. Four additional samples were measured and recorded as shown in the table below. Which of the samples will probably float on top of the oil? Explain your answer. (S8P1d)

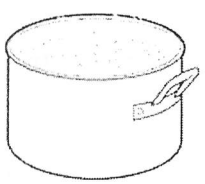
11. A student divides several cubes into two groups, based on whether or not each cube can float in water. What property is the student using to classify the cubes? (S8P1d)

12. A popsicle melting is an example of what type of change? Explain your answer. (S8P1e)

13. Compare and contrast the changes of state in chopping wood and burning wood. (S8P1e)

A match is lit, creating a yellow-orange flame.

A small piece of ice melts, changing from a solid to a liquid.



A pot of water is heated to boiling, and evaporation occurs.

A ball of clay sinks in water, and floats when reshaped.

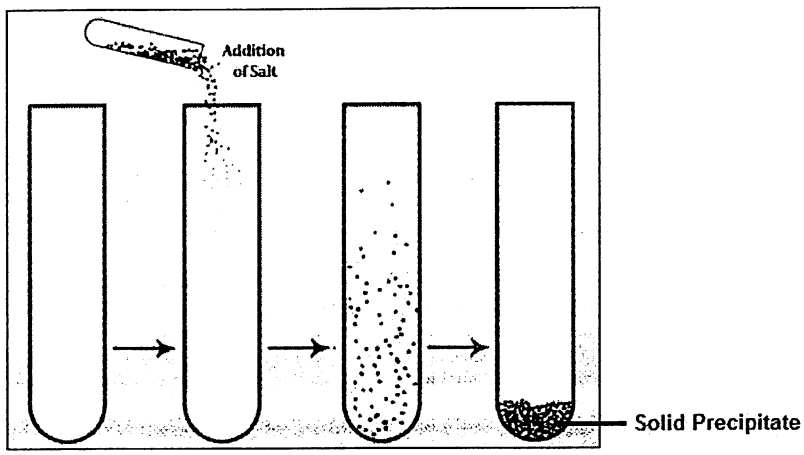
14. Look at the diagram above. Identify which examples are physical changes and which are chemical changes. Explain why. (S8P1e)

# Matter Unit Study Guide [2]

Name _____ Date _____ Period ___

15. Describe evidence that suggests a chemical change has occurred instead of a physical change. (S9P1e)

16. The diagram to the right illustrates a chemical change. Explain why this is a chemical change. (S8P1e)




17. Tabitha tried to open a jar of pickles, but the top of the jar was stuck. The pickle jar was glass with a metal lid. Tabitha ran hot water over the metal lid. After a few minutes, Tabitha was able to open the jar. Explain what happened. Describe the relationship between the temperature of the metal lid and the speed of the molecules. (S8P1c)

## Matter [1] Review

18. What is the smallest particle of the element iron (Fe) that can still be classified as iron? (S8P1a)

19. One oxygen and two hydrogen atoms combine to form _____. (S8P1a)

20. The chemical formula for ethanol is $CH_3CH_2OH$. How many different elements make up one molecule of ethanol? (S8P1a)

21. A pure substance that can be separated into two or more simpler substances by chemical means is _____. (S8P1a)

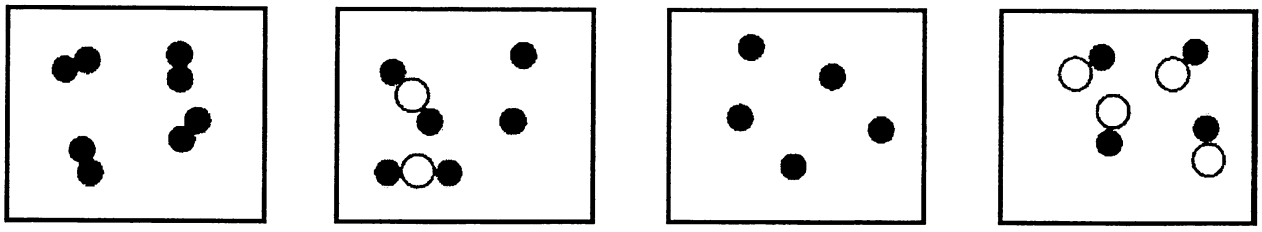
22. Which of the following do and do not represent a compound: $O_2$, $H_2O$, $CO_2$, $H_2$, Na Explain your answer. (S8P1b)

23. Why are substances classified together on the periodic table? (S8P1b)

# Matter Unit Study Guide [2]

Name _____ Date _____ Period ___

Use the diagram below to answer questions 23-25



A B C D

24. What does each circle and dot represent in the diagrams above? (S8P1a)

25. Which diagram(s) above represents a pure substance? (S8P1b)

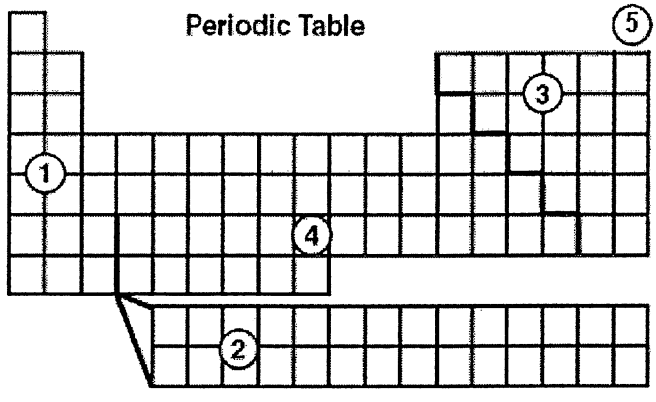
26. Which diagram(s) above represents a mixture? (S8P1b)

---

27. In which region of the table would nonmetals be found? (S8P1f)

28. In which region would the most reactive elements be found? (S8P1f)

29. What does the zigzag line on the Periodic Table to the right indicate? (S8P1f)

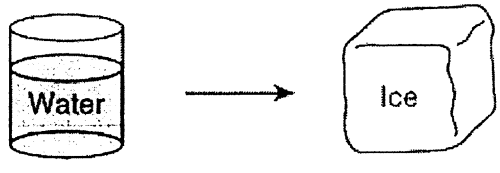



---

30. Which sample equation best illustrates the law of conservation of mass? (S8P1g)

A. 4 grams reactant U + 3 grams reactant V→7 grams product W
B. 12 grams reactant X +10 grams reactant Y→2 grams product Z
C. 5 grams reactant E + 5 grams reactant F→20 grams product G + 5 grams product H
D. 10 grams reactant Q + 9 grams reactant R→90 grams product S + 90 grams product T

31. What concept does the diagram to the right illustrate? (S8P1g)




32. What is the missing mass of the ice cube in the diagram to the right? (S8P1g)

100 g _____

(Not drawn to scale)

# Learn a Little Elemental Latin

O is the symbol for oxygen, and Ne is the symbol for neon. Why does the symbol for iron (Fe) contain no letters that are found in the word iron? Some chemical symbols are based on the old Latin name for the element. A well-known Latin name for iron was *ferrum* and the symbol we use for it today was derived from this name.

Spell out the Latin names for the elements below. Use the coordinate set to locate the correct letters on the coordinate grid.

The first number in each set represents the horizontal coordinate and the second represents the vertical.

E.g, the coordinate set 8,9 codes for the letter **Q**.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 9 | U | I | L | A | P | Y | M | Q | B |
| 8 | U | T | O | U | T | R | J | U | M |
| 7 | C | A | U | H | U | A | G | Z | K |
| 6 | I | G | A | Y | S | M | U | U | N |
| 5 | A | R | T | U | R | U | R | E | P |
| 4 | E | S | M | M | L | G | D | M | U |
| 3 | T | N | R | A | U | N | M | N | F |
| 2 | R | U | O | I | F | M | R | I | R |
| 1 | M | R | M | B | M | A | M | W | L |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Iron | **Fe** | *F* 5,2 | *E* 8,5 | *R* 7,5 | *R* 2,1 | *U* 5,3 | *M* 9,8 | | | | |
| Gold | **Au** | 6,7 | 4,5 | 7,2 | 1,9 | 1,1 | | | | | |
| Lead | **Pb** | 5,9 | 3,9 | 9,4 | 4,4 | 9,9 | 1,8 | 3,4 | | | |
| Copper | **Cu** | 1,7 | 7,6 | 9,5 | 5,5 | 2,2 | 6,2 | | | | |
| Tungsten | **W** | 8,1 | 3,8 | 5,4 | 9,3 | 1,2 | 3,6 | 7,9 | | | |
| Tin | **Sn** | 2,4 | 5,8 | 1,5 | 9,6 | 2,3 | 8,8 | 5,1 | | | |
| Sodium | **Na** | 6,3 | 4,9 | 2,8 | 9,2 | 8,2 | 3,7 | 6,6 | | | |
| Silver | **Ag** | 4,3 | 6,8 | 2,6 | 1,4 | 8,3 | 3,5 | 5,7 | 3,1 | | |
| Potassium | **K** | 9,7 | 6,1 | 9,1 | 1,6 | 8,6 | 7,1 | | | | |
| Mercury | **Hg** | 4,7 | 4,6 | 7,4 | 2,5 | 2,7 | 7,7 | 6,9 | 3,3 | 4,8 | 7,3 |
| Antimony | **Sb** | 5,6 | 1,3 | 4,2 | 4,1 | 2,9 | 6,5 | 8,4 | | | |

# Learn a Little Elemental Latin

Answer key

O is the symbol for oxygen, and Ne is the symbol for neon. Why does the symbol for iron (Fe) contain no letters that are found in the word iron? Some chemical symbols are based on the old Latin name for the element. A well-known Latin name for iron was *ferrum* and the symbol we use for it today was derived from this name.

Spell out the Latin names for the elements below. Use the coordinate set to locate the correct letters on the coordinate grid.

The first number in each set represents the horizontal coordinate and the second represents the vertical.

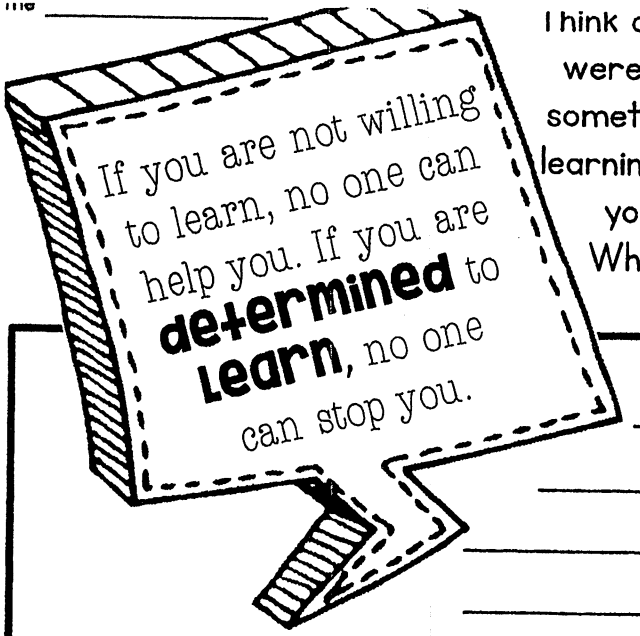
E.g, the coordinate set 8,9 codes for the letter **Q**.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 9 | U | I | L | A | P | Y | M | Q | B |
| 8 | U | T | O | U | T | R | J | U | M |
| 7 | C | A | U | H | U | A | G | Z | K |
| 6 | I | G | A | Y | S | M | U | U | N |
| 5 | A | R | T | U | R | U | R | E | P |
| 4 | E | S | M | M | L | G | D | M | U |
| 3 | T | N | R | A | U | N | M | N | F |
| 2 | R | U | O | I | F | M | R | I | R |
| 1 | M | R | M | B | M | A | M | W | L |

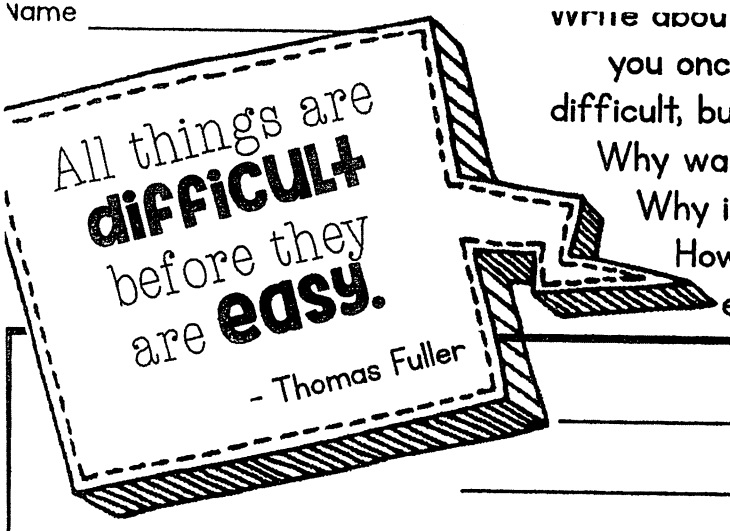
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Iron | **Fe** | *F* 5,2 | *E* 8,5 | *R* 7,5 | *R* 2,1 | *U* 5,3 | *M* 9,8 | | | |
| Gold | **Au** | A 6,7 | U 4,5 | R 7,2 | U 1,9 | M 1,1 | | | | |
| Lead | **Pb** | P 5,9 | L 3,9 | U 9,4 | M 4,4 | B 9,9 | U 1,8 | M 3,4 | | |
| Copper | **Cu** | C 1,7 | U 7,6 | P 9,5 | R 5,5 | U 2,2 | M 6,2 | | | |
| Tungsten | **W** | W 8,1 | O 3,8 | L 5,4 | F 9,3 | R 1,2 | A 3,6 | M 7,9 | | |
| Tin | **Sn** | S 2,4 | T 5,8 | A 1,5 | N 9,6 | N 2,3 | U 8,8 | M 5,1 | | |
| Sodium | **Na** | N 6,3 | A 4,9 | T 2,8 | R 9,2 | I 8,2 | U 3,7 | M 6,6 | | |
| Silver | **Ag** | A 4,3 | R 6,8 | G 2,6 | E 1,4 | N 8,3 | T 3,5 | U 5,7 | M 3,1 | |
| Potassium | **K** | K 9,7 | A 6,1 | L 9,1 | I 1,6 | U 8,6 | M 7,1 | | | |
| Mercury | **Hg** | H 4,7 | Y 4,6 | D 7,4 | R 2,5 | A 2,7 | G 7,7 | Y 6,9 | R 3,3 | U 4,8 | M 7,3 |
| Antimony | **Sb** | S 5,6 | T 1,3 | I 4,2 | B 4,1 | I 2,9 | U 6,5 | M 8,4 | | |

Write about a challenge that you have faced in your life. How did you overcome the challenge? In what ways did it change you?


Think about a time when you were determined to learn something. What were you learning? How did you show your determination? What was the result?

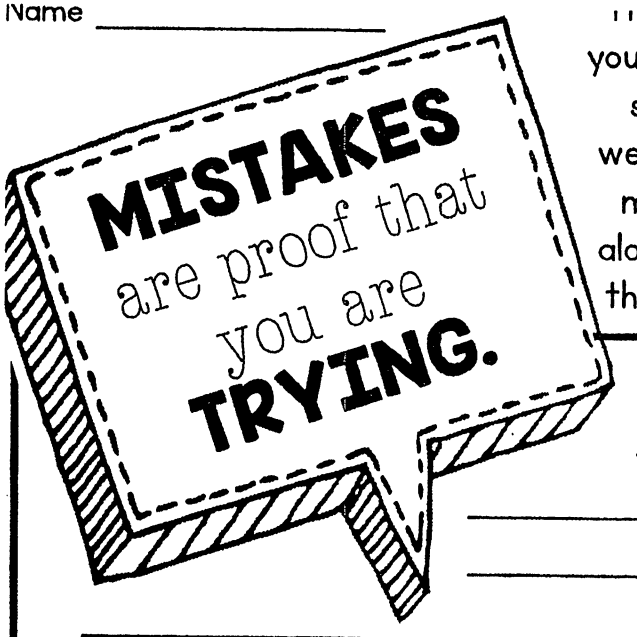


Name _____




Write about something that you once considered difficult, but now find easy. Why was it difficult? Why is it easy now? How did it become easy?

Name _____

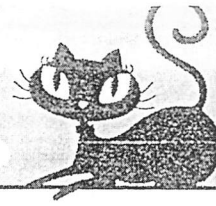



Think about a time when you were attempting to do something new. What were you learning? What mistakes did you make along the way? What did the mistakes teach you?

## Activity 2- *Art Bingo*

Select an activity from each column. Have fun, and don't be afraid to try something new!!


| | | | | |
|---|---|---|---|---|
| Make a drawing of someone you love. | Paint on something that isn't paper. | Create a piece of art in less than 5 minutes. | Finger paint. | Take yourself on a date to a local art store. |
| Draw with two markers at once. | Spend 15 minutes researching art classes in your local community. | Draw or paint something. Then, cut it apart and make a collage out of it. | Use a new medium you've always wanted to try. | Draw the same object 10 times on the same piece of paper. |
| Use your camera or Smartphone to capture different viewpoints of the same subject. | Make art outside. | Devote 15 minutes to reading your favorite art ed blog, website, or book. | Make art with someone else. | Make a sculpture out of aluminum foil. |
| Create something with your eyes closed. | Create art for 15 minutes. Switch to a new medium every 5 minutes. | Make a piece of art and leave it somewhere out in your community. | Create something without using your hands. | Watch a documentary about an artist or art form. |
| Open a favorite book to a random page and illustrate the text. | Create art somewhere you've never created before. | Create a piece of art with your non-dominate hand. | Make your own paint from something in nature and try it out. | Mix as many colors as you can in fifteen minutes. |



## Coordinate Graphing Mystery Picture Worksheet

Practice plotting ordered pairs with this fun Back to School Owl coordinate graphing mystery picture! This activity is easy to differentiate by choosing either the first quadrant (positive whole numbers) or the four quadrant (positive and negative whole numbers) worksheet. All points are represented by whole numbers, there are no fractions or decimals. This activity is perfect for math centers, early finishers or homework. For a fun bulletin board display, instruct students to be creative and color the picture however they like and then hang the completed pictures on your board or wall.

Graphing paper, coordinates worksheets and answer keys are included.

**Instructions:**
Students plot the ordered pairs and draw connecting straight lines as they plot. When the word "STOP" is reached, the student should NOT connect the last point with the first in the group.

## Table of Contents





Teachers Pay Teachers: http://www.teacherspayteachers.com/Store/Pink-Cat-Studio
Pinterest: http://www.pinterest.com/PinkCatStudio/
Facebook: http://www.facebook.com/pages/Pink-Cat-Studio/159722300784853
Pink Cat Studio Website: http://www.pinkcatstudio.com/

# Coordinate Graphing Mystery Picture - Four Quadrants

Plot the ordered pairs and connect them with a straight line as you plot.

START
(13,5)
(15,6)
(13,10)
(11,6)
(13,5)
STOP

START
(-4,3)
(-2,3)
(-1,4)
(-1,6)
(-2,7)
(-4,7)
(-5,6)
(-5,4)
(-4,3)
STOP

START
(-8,-11)
(-8,-5)
(-6,-3)
(6,-3)
(8,-5)
(8,-11)
STOP

START
(-12,2)
(-13,3)
(-14,3)
(-16,1)
(-16,0)
(-15,-1)
(-16,-2)
(-16,-4)
(-14,-5)
(-13,-5)
(-12,-4)
STOP

START
(0,4)
(2,2)
(7,2)
(9,4)
(9,9)
(7,11)
(2,11)
(0,9)
(0,4)
STOP

START
(11,-7)
(11,-9)
(12,-10)
(14,-10)
(15,-9)
(15,-7)
(11,-7)
STOP

START
(-6,-11)
(-6,-13)
(-8,-14)
(-8,-15)
(-6,-14)
(-6,-16)
(-5,-16)
(-5,-14)
(-3,-15)
(-3,-14)
(-5,-13)
(-5,-11)
STOP

START
(10,-2)
(11,0)
(15,2)
(17,0)
(17,-2)
(15,-4)
(14,-3)
(13,-4)
(12,-4)
(10,-2)
STOP

START
(0,9)
(-2,11)
(-7,11)
(-9,9)
(-9,4)
(-7,2)
(-2,2)
(0,4)
STOP

START
(11,6)
(11,0)
STOP

START
(2,2)
(0,-2)
(-2,2)
STOP

START
(15,-7)
(15,-4)
STOP

START
(5,-11)
(5,-13)
(3,-14)
(3,-15)
(5,-14)
(5,-16)
(6,-16)
(6,-14)
(8,-15)
(8,-14)
(6,-13)
(6,-11)
STOP

START
(11,-7)
(11,-3)
STOP

START
(2,7)
(4,7)
(5,6)
(5,4)
(4,3)
(2,3)
(1,4)
(1,6)
(2,7)
STOP

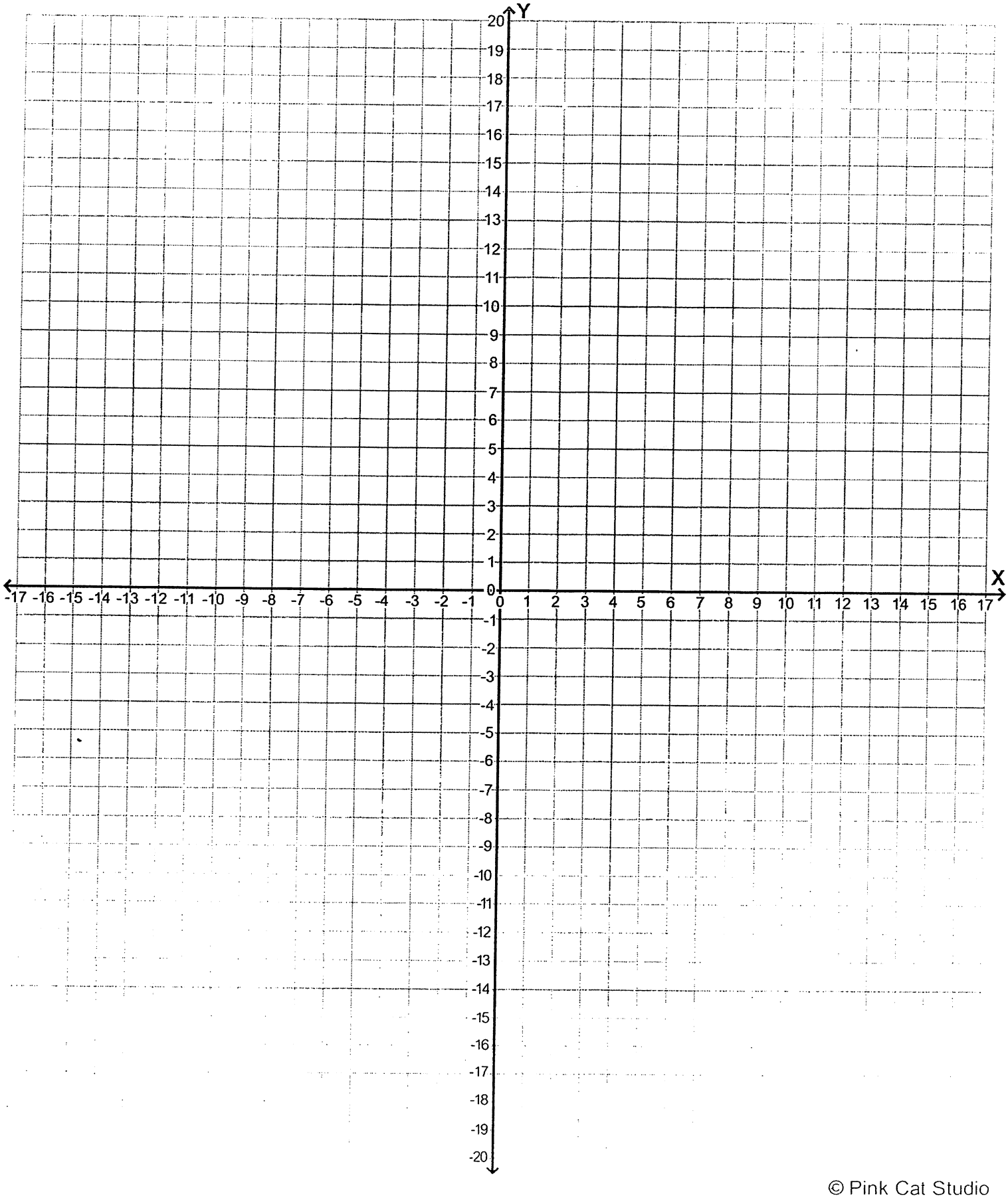
START
(11,-5)
(15,-5)
STOP

START
(12,8)
(14,8)
STOP

START
(12,-10)
(12,-11)
(-12,-11)
(-12,16)
(-8,13)
(8,13)
(12,16)
(12,8)
STOP

# Coordinate Graphing Mystery Picture - Four Quadrants

Name:_____



# PE Assignments

**Monday**: 5 rounds of 10 push ups, 15 squats, 10 lunges, and jog for 10 minutes.

**Tuesday**: 5 rounds of shoulder taps for 30 seconds, 20 sit ups, 30 second plank, and 25 jumping jacks.

**Wednesday**: 5 rounds of 10 push ups, 10 jump squats, 5 burpees, and jog for 10 minutes.

**Thursday**: 5 rounds of 10 lunges, 30 seconds of high knees, 30 seconds of butt kickers, 30 seconds of jumping jacks, and arm and leg stretches to finish the workout.

**Friday**: 5 rounds of 10 push ups, 10 squats, 20 sits up, 30 second plank, and jog for 10 minutes.

# Get healthy!

NAME:_____ #8

*"Learning Target: "I will learn what food groups are required, and then analyze my eating for one day to see if I get the correct amounts from all the food groups."*

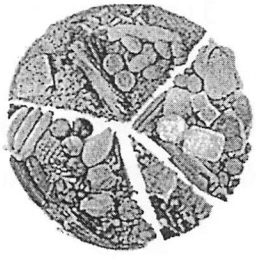
*Did you meet the Learning Target?* *Yes*_____ *No* _____ *Undecided*_____

Parent/Guardian *Signature:* _____ *Date:*_____

This Week's Tasks:

1. Hopefully you want to eat balanced and healthy. Read on to see how to make sure each day you are eating the right foods for your best health!

2. There are several food guide pyramids that can help you tally your eating to see if you are getting all the right food groups in a day of meals.



Look at he Mayo Clinic Food Guide Pyramid[4] on the bottom of this task card. It suggests the number of servings you should have of each food group every day.

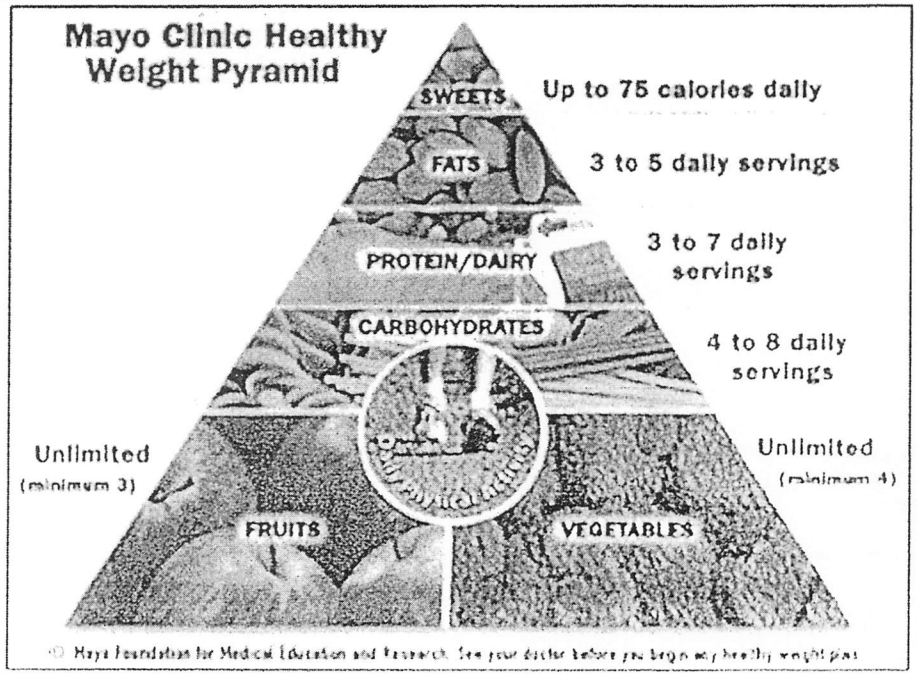
There is a range on the some of the groups, so if you want to lose weight, choose the low end, to maintain your weight stay in the middle, and if you are doing sports or want to gain weight shoot for the top end of your range.

3. You can have unlimited amounts of fruits and vegetables, but be sure to get a minimum of **3 fruits** and **4 vegetable** servings per day.

4. **For your task this week**, you will write down everything you eat and drink (except water) for 1 day on a piece of notebook paper. *(Please turn this in too!)*

5. Then fill in the questions on the back of this sheet to see how well you followed the food guide pyramid for your one day.

The "Food Group List" on the bottom half of the tally page will help you know which food group to put your tally mark on.



Task #8 Backside: Using your food log, and the "Food Group List" list below, put an "x" the foods from your 1 day:

| | Minimum: | Maximum: |
|---|---|---|
| Protein / Dairy (3-7) | ___ ___ ___ - ___ | ___ ___ *(maximum 7)* |
| Carbohydrates (4-8) | ___ ___ ___ ___ - ___ | ___ ___ ___ *(maximum 8)* |
| Fruits (3-unlimited) | ___ ___ ___ +++ | *(unlimited)* |
| Vegetables (4-unlimited) | ___ ___ ___ ___ +++ | *(unlimited)* |

Did you have the minimum 3 Protein and Dairy? yes or no

Did you have the minimum 4 Carbohydrates? yes or no

Did you have the minimum 3 Fruits? yes or no

Did you have the minimum 4 Veggies? yes or no

What foods did you eat too little of?

What foods did you eat too much of?

## "Food Group List"

| Fruits: | Vegetables: | Carbs: | Dairy/Protein: |
|---|---|---|---|
| Avocados | Asparagus | crackers | milk |
| Bananas | Corn | chips | choc. milk |
| Apples | Carrots | tortillas | yogurt |
| Canned Apricots | Green Beans | bread | Ice-cream |
| Canned Fruit | Green Peas | rolls | frozen yogurt |
| Grapefruit | beets | pancakes | almonds |
| Mandarin Oranges | Sweet Corn | waffles | cheese |
| Mangoes | Tomatoes | French toast | fruit smoothie |
| Peaches | onions | bagels | fish, sushi, shrimp |
| pomegranate | Mushrooms | pasta | eggs |
| Pears | Cucumbers | oatmeal | fish-salmon, |
| cherries | Olives | | Halibut, cod |
| Pineapple | Broccoli | cream of wheat | chicken |
| Plums | Spinach | cereals | hamburger |
| Rasp+ blk. berries | Cauliflower | graham crack. | steak |
| Strawberries | Corn on cob | English muff | chili beans |
| Tropical Fruit Salad | lettuce | rice | refried beans |
| Dehydrated Fruits | Brussels Sprouts | | peanuts |
| grapes | celery | pita bread | peanut butter |
| Dried Fruits | artichokes | granola bars | walnuts |
| Guavas | potatoes | | turkey |
| Limes. Kiwi | cabbage | | ham |
| Lemons | bean sprouts | | soy |
| Papaya | bamboo shoots | | tofu |
| Blueberries | peppers | | sunflower seeds |
| Raisins | pickles | | pork |
| Watermelon | zucchini | | any beans - lima, black eyed |
| Honeydew | | | peas, hummus (chick peas) |
| Cantaloupe | | | |

"EXTRA, EXTRA" Get Even Healthier:

Challenge a family member to keep a food log and then you tally it for them to see how they did!