



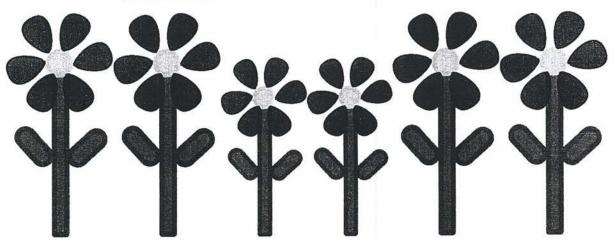


Silver Bluff Elementary SPRING BREAK PACKET 2024



4th Grade

Name: _____



Dear Parents,

Research has shown that students can experience learning loss during extended breaks from school, such as over spring break. Providing learning materials and activities can help prevent this loss by keeping students engaged and mentally active during the break. Please use this home learning packet as an opportunity to reinforce what your child has learned and solidify their understanding of key concepts. Parents can support their child's learning by supervising activities, providing assistance when needed, and engaging in discussions about the material.

Reading Activity #1

Students are to read the texts and use text evidence to answer the questions.

Reading Activity #2

Students are to complete i-Ready Reading Student Pathway Lessons: 45 minutes in total for the week and read a book on myON (see Spring Break challenge flyer attached).

Math Activity #1

Students are to complete the unit assessments attached.

Math Activity #2

Students are to complete i-Ready Math Student Pathway Lessons: 45 minutes in total for the week and earn 5 green lights on Reflex Math (see Spring Break challenge flyer attached).

Completed packets are due to your child's teacher when we return on Monday, April 1, 2024. We wish you all a safe and enjoyable spring break recess.

Science Activity #1

Students are to read and answer the questions.

Spring Break Packets due to homeroom teachers on Monday, April 1st.

FAST READING

Reporting Category: Reading Prose and Poetry

Literary Elements: Explain How Literary Elements Contribute to Plot

Every literary text is made up of a series of related actions, or events. These events form the **plot** of the story, which is its overall narrative, or storyline.

The events at the beginning of a text usually introduce a conflict, or problem. The events at the end show how the problem is resolved. By comparing those events, you can understand how each event advances the plot. Along with the events, the setting and character development in a story contribute, or add, to the plot.

The **setting** lets the reader know when and where a story takes place. Details of the setting, such as the time of year or the location of the action, contribute to the plot. Sometimes a text has more than one setting, which adds to the reader's understanding of the plot. For example, a story may begin with a girl studying alone in her room before going to soccer practice. You might learn that the girl prefers being alone in her room. Or you might see that the girl learns the value of teamwork.

A character is a person, animal, or object in a story. The main character sets the story's events in motion and is at the center of the conflict.

Other characters may work with or against the main character. An author will show what a character is like through character development, which includes:

- a description of the character
- what the character says and does
- · what the character thinks and feels
- how the character interacts with others

Readers can trace a character's development by paying attention to details in the text about a character's thoughts, words, or actions. For example, if a character doesn't practice playing an instrument until hearing about an upcoming talent show at school, the reader can guess that the talent show is important to that character.

Sometimes, a character will change in a story. A character who is nervous at the start of a story can become brave by the end. When there are two or more characters in a story, they will have some similarities and some differences. By comparing and contrasting the characters and how they change throughout the story, the reader can better understand what is happening.

Use the passage "The First Step on the Moon" to answer Numbers 1 through 4.

The First Step on the Moon

- It was July 20, 1969, and way past Elizabeth's bedtime. However, Elizabeth's mom said, "I will let you stay up late today to see history being made." So she gathered around the television set in the living room with her family, hoping to see the first people land on the moon!
- 2 The United States had been waiting for this moment since President John F. Kennedy had issued the challenge to put a human on the moon in ten years or less. Less than ten years later, Elizabeth watched as Apollo 11 took off from Kennedy Space Center in Florida. There were three astronauts on board: Neil Armstrong, Buzz Aldrin, and Michael Collins. Collins stayed in orbit around the moon. Armstrong and Aldrin piloted the lunar module that landed on the moon a few days later.
- Suddenly, Elizabeth's mother gasped as the hatch of the module opened, and Neil Armstrong appeared! Everyone held their breath as he took that first step off the ladder and onto the moon. It was incredible! A man was standing on a piece of land that was up in space! Then, she heard those famous words crackle through the TV speakers: "That's one small step for a man, one giant leap for mankind."
- When Aldrin came out of the module, the two astronauts planted an American flag where they stood. Elizabeth's father smiled at her and said, "I have never been prouder to be an American than I am right now."
- 5 Elizabeth began to wonder if she could see the men from Earth. She ran to the window and looked up at the moon. It was full and bright and looked closer to her than it ever had before.

FAST READING



Reporting Category: Reading Prose and Poetry

Theme: Explain How a Stated or Implied Theme Develops

The theme of a literary text is a message the author wants to share with the reader. The theme is often a life lesson that the main character learns or an idea repeated in a text. The theme goes beyond the story, drama, or poem because it is a lesson the reader can use in real life. Some common themes in literature are about friendship, courage, telling the truth, and being generous.

Authors develop themes using details about the characters and events in the story. To identify a theme, think about the way characters respond to the challenges they face. For example, if a character fails at a task because he expects others to do everything for him, he may learn that he must work hard to complete his tasks himself. The theme of this story could be. "Hard work leads to success."

Themes are usually implied rather than stated directly. Many times, a reader can infer multiple themes in a text. An inference is an educated guess that can be supported by details and evidence. To make an inference, find clues that the author has included in characters' dialogue, a narrator's descriptions, stage directions in a drama, or the speaker's words in a poem. Next, put those clues together. Finally, relate those clues to something you already know or something you have read before.

For example, if an author describes a character as selfish, and then the character learns to share with friends and neighbors, you can infer that the theme is, "It is important to be generous with others."

The Ants and the Grasshopper

- One summer's day, a grasshopper was enjoying himself chirping in the sunshine. A family of ants paraded past, struggling with large pieces of grain. "Why are you laboring so hard in the blazing sun?" the grasshopper asked the ants.
- The ants answered, "We are carrying this food to our ant hill so that we have enough food this winter."
- 3 "Take a break with me," the grasshopper said. "The winter is so far away." However, the ants never paused in their work.
- 4 Eventually the snow came, covering all the food, and the grasshopper was unable to eat. He went to the ants, begging them for something to eat. "What happened to the food that you collected all summer?" the ants asked.
- 5 "I didn't have time to gather any food," replied the grasshopper.
 "I was busy singing in the sun, and before I knew it, summer was over."
- "We did not work hard to give up our food to someone so idle," the shocked ants told the grasshopper. They returned to their food, and the lazy grasshopper hopped sadly away.

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}		

- 2. Use details from the passage to describe the lesson that a character learns.

 3. What is the theme of the passage?
- 4. Select two details from the passage that support the theme.
 - "One summer's day, a grasshopper was enjoying himself chirping in the sunshine." (paragraph 1)
 - (B) "The ants answered, "'We are carrying this food to our ant hill so that we have enough food this winter.'" (paragraph 2)
 - () "However, the ants never paused in their work." (paragraph 3)
 - (E) "'What happened to the food that you collected all summer?" the ants asked." (paragraph 4)
 - (F) "They returned to their food, and the lazy grasshopper hopped sadly away." (paragraph 6)

FAST READING

Reporting Category: Reading Prose and Poetry

Perspective and Point of View: Identify Narrator's Point of View and

Distinguish It from Character Perspective

An author tells a story through the eyes of one or more characters or through an outside narrator using a certain **point of view**.

To determine the point of view in a story, focus on which pronouns the author uses in the text. If the narrator is a character in the story, the text will use the pronouns *I*, *me*, or *my*. This point of view is called **first person**.

Here is an example of first-person point of view with first-person pronouns:

I wanted to go to the corn maze with my friends, but my mother didn't think it was a good use of my time. There was a school project due on Monday, and I hadn't started it yet.

If the narrator is not part of the story, the point of view is **third person**. Pronouns used for third person include *he, she,* or *they*.

Here is an example of third-person point of view:

Timmy didn't want to go to school. The students were going on a field trip to the aquarium. The class was studying ocean mammals. José, Timmy's best friend, couldn't understand why Timmy didn't want to go, even though Timmy tried to explain it to him a thousand times.

Authors also use the narrator to develop a character's **perspective**. Perspective is the attitude, thoughts, or feelings characters have. Readers must consider the details the narrator provides to determine how characters think, feel, or respond to the experiences.

Remember, the narrator's point of view is different than a character's perspective. Point of view is related to who is telling the story, and perspective is related to a character's attitude about the world.

The wind was picking up, and the clouds were rolling in, making it harder to see the path. There was a noise to my left, and I stopped in my tracks. I felt as if I was not alone when I should have been the only one out there at that time of night.

What is the na	rrator's point of view? How do you know?	•
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	A in Talled tribe state in the second	

2. Which paragraph is told in the third-person point of view? Circle the correct response.

I sneaked around the corner and tried to hide from my brother. I knew he was trying to do the same. It was April Fool's Day, after all.

Rosie came in from outside and shook off her coat, saying to herself that she would not go back out in that weather.

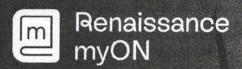
It was sunny. It hadn't been sunny in days. I just couldn't wait to get to the beach and feel the sand between my toes.

Use the passage "End of the Tetherball Line" to answer Numbers 3 through 5.

End of the Tetherball Line

- The cheering began as the first player made a soft serve, and the *slap* of the player's flat hand on the yellow ball mixed with the students' voices.
- 2 "High tethers are allowed," yelled Benjamin, who was jumping up and down in line while waiting for his turn.
- 3 "Hey, Benjamin, you're correct about that rule, but don't forget that a player must exit after three wins," Camilla reminded him.
- 4 Benjamin rolled his eyes, "Everyone knows that, Camilla, and don't worry, I promise to play by the rules."
- Soon, Benjamin had triumphed twice, and he and Jack were face-to-face. In the end, Jack couldn't match Benjamin's furious speed. "Great game," Jack stated, walking to the back of the line, but Benjamin didn't follow. Camilla was quick to call Benjamin out.
- 6 "After three wins, you return to the end of the line; don't you remember your promise?" Camilla asked.
- 7 "That's not fair!" cried Benjamin.
- Meanwhile, the teacher, Mrs. Black, had just approached the group. "Benjamin, you can't play tetherball if you don't follow the rules," Mrs. Black said matter-of-factly. "Find another game for this recess, and then you can try tetherball again next recess."
- 9 Benjamin's mouth dropped open, and as he studied all the eyes staring back at him, his face turned a shade of pink. "I'll just watch, then," he said sheepishly, and he quickly scooted to the sideline.

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What is Benjar	min's perspective about the events in the story?
	a Control of the Cont
How is Benjam	in's perspective different from Camilla's perspective
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Renaissance

Spring Into Reading ✓ 2024 Spring myON Challenge

March 22 - March 31, 2024

Instructional Technology and the English Language Arts/Reading Department, in collaboration with Renaissance myON, are encouraging all students in grades K through 8 to participate in the 2024 myON Spring Reading Challenge to promote the continued development of critical reading skills and a love for reading.

No Registration is Required

myON by Renaissance is accessible to students year-round via Schoology or Clever!

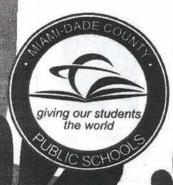
The Challenge:

The **top reader** from each grade level (K through 8) will be recognized who excels in <u>all four</u> of the following categories:

- Most Time Spent Reading
- Most Lexile Level Growth
- Completed 80% of books read
- > Score 80% or higher on Book Quizzes

The Prize:

\$25 gift card



Supporting At-Home Reading with Families

☆ ☆

Parental involvement in a child's literacy practices is a more powerful force than other family background

variables, such as social class, family size, and level of parental education.

Here five things families should know about their child's reading practice:

"Children are made readers on the laps of their parents." Emily Buchwald (Author)

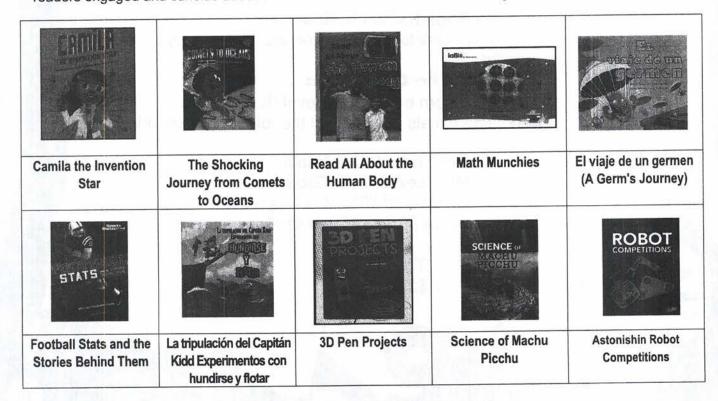
- Read Every Day: Time spent reading directly impacts student achievement.
- Let Kids Choose Books: Kids read more when they get to pick out their own books.
- Read Together: Reading TO and WITH your child is a powerful motivator.
- Listen To Read-Alouds: Using audio texts can improve comprehension, build vocabulary, and much more.
- Talk About Reading Growth: Ask your child how their reading level is improving.



Want to learn more? <u>Download</u> our Family Tip handout in Arabic, Bangla, Chinese, English, French, Haitian Creole, Korean, Russian, Spanish, and Urdu.

STEAM Books on myON

Reading books with Science, Technology, Engineering, Arts, and Math (STEAM) is a great way to keep readers engaged and curioius about the world around them. Here are some great STEAM books on myON:



Ready® Mathematics

Unit 3 Unit Assessment

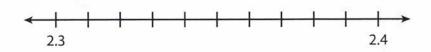
Form A

Solve the problems.

1 Consider the decimals 2.35, 2.4, and 2.37.

Part A

Plot the decimals 2.35, 2.4, and 2.37 on the number line.



Part B

Which comparison is true?

- \triangle 2.35 > 2.4
- ® 2.4 < 2.37
- © 2.4 > 2.35
- © 2.37 < 2.35
- 2 Find 5.56 2.13.

Show your work.

Form A

3 Write the following decimals in order from greatest to least.

3.1, 3.09, 3.99

4 What is the sum of $\frac{9}{8}$ and $\frac{5}{8}$?

5 Determine how each number compares to 2.1.

	One Tenth More	One Tenth Less	One Hundredth More	One Hundredth Less
2	(A)	B	©	0
2.09	E	(F)	©	Θ
2.11	(I)	3	(K)	©.
2.2	M	N	0	P

Form A

- 6 What is 3.4 written as a fraction?
 - $\triangle \frac{340}{10}$
 - (B) $\frac{34}{10}$
 - © $\frac{3}{4}$
 - \bigcirc $\frac{34}{100}$
- Select all the comparisons that are true.
 - $\triangle \frac{3}{16} > \frac{5}{8}$

 - © $\frac{4}{5} > \frac{3}{4}$
 - ① $\frac{5}{12} > \frac{9}{10}$
- 8 What is $4 \times \frac{9}{10}$?
 - (A) $\frac{9}{40}$

 - © $\frac{36}{10}$
 - ① $\frac{49}{10}$

Form A

9 Cai says that 1.98 - 0.1 is 1.97. Is Cai correct? Explain.

10 Enrico buys a hat for \$9.39 and gloves for \$11.20. What is the total cost of the two items?

Show your work.

Adsila is making a flag with 12 equal parts. She makes $\frac{3}{12}$ of the flag on Monday and $\frac{4}{12}$ of the flag on Tuesday. What fraction of the flag does Adsila make on Monday and Tuesday?

Show your work.

Form A

Complete the sentences to describe how the numerator and denominator of $\frac{3}{12}$ are affected when $\frac{3}{12}$ is written as the equivalent fraction $\frac{1}{4}$. For each box, fill in the bubble before the word or number that is correct.

The numerator of $\frac{3}{12}$ is

The denominator of $\frac{3}{12}$ is

- A multiplied

- 13 Write $1\frac{9}{100}$ as a decimal.
- 14 Tell whether each equation is true or false.

	True	False
$\frac{8}{10} + \frac{8}{100} = \frac{88}{100}$	(A)	®
$\frac{5}{10} + \frac{140}{100} = \frac{145}{100}$	©	0
$\frac{2}{100} + \frac{9}{10} = \frac{92}{100}$	E	Ē
$\frac{60}{100} + \frac{11}{10} = \frac{170}{100}$	©	Θ

Form A

- 15 Which expressions are a way to decompose $1\frac{2}{3}$?
 - (A) $\frac{3}{3} + \frac{2}{3}$
 - (B) $\frac{2}{3} + \frac{2}{3}$
 - © $\frac{2}{5} + \frac{1}{5}$
 - ① $\frac{2}{3} + \frac{2}{3} + \frac{1}{3}$
- The area of a deck is 6 square yards. Mei stains $\frac{5}{16}$ of the deck. How many square yards of the deck are stained?

Ready® Mathematics

Unit 3 Unit Assessment

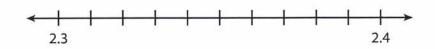
Form A

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Which comparison is true?

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- © 2.37 < 2.35
- 2 Find 5.56 2.13.

Show your work.

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Form A

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3.1, 3.09, 3.99

4 What is the sum of $\frac{9}{8}$ and $\frac{5}{8}$?

(4) (5) (6) (7) (8) (8)	(A)	(1)		

5 Determine how each number compares to 2.1.

	One Tenth More	One Tenth Less	One Hundredth More	One Hundredth Less
2	(A)	B	©	0
2.09	(E)	Ē	©	Θ
2.11	(I)	3	(K)	©.
2.2	M	(N)	0	®

Form A

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 - (A) $\frac{9}{40}$
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 - © $\frac{36}{10}$
 - $\bigcirc \frac{49}{10}$

Form A

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Show your work.

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Show your work.

Form A

12 Complete the sentences to describe how the numerator and denominator of $\frac{3}{12}$ are affected when $\frac{3}{12}$ is written as the equivalent fraction $\frac{1}{4}$. For each box, fill in the bubble before the word or number that is correct.

The numerator of $\frac{3}{12}$ is

- by 3.

The denominator of $\frac{3}{12}$ is

- A multiplied

- 13 Write $1\frac{9}{100}$ as a decimal.
- 14 Tell whether each equation is true or false.

	True	False
$\frac{8}{10} + \frac{8}{100} = \frac{88}{100}$	(A)	®
$\frac{5}{10} + \frac{140}{100} = \frac{145}{100}$	©	0
$\frac{2}{100} + \frac{9}{10} = \frac{92}{100}$	E	Ē
$\frac{60}{100} + \frac{11}{10} = \frac{170}{100}$	©	Θ

Form A

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- The area of a deck is 6 square yards. Mei stains $\frac{5}{16}$ of the deck. How many square yards of the deck are stained?

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Ready® Mathematics

Unit 4 Unit Assessment

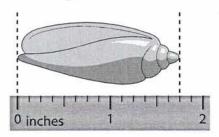
Form A

Solve the problems.

1 Ummi is measuring the lengths of the shells she collects at the beach.

Part A

She has one more shell to measure. What is the length of the shell to the nearest $\frac{1}{8}$ inch?

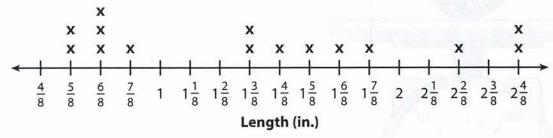


The shell is ______ inches long.

Part B

Ummi makes a line plot of her data. Add the last measurement to the line plot.

Lengths of Shells



Part C

How many shells are $1\frac{4}{8}$ inches or shorter?

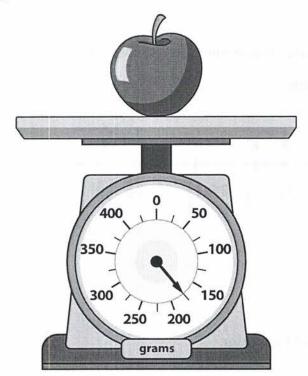
There are _____ shells that are $1\frac{4}{8}$ inches or shorter.

Form A

2 A truck driver is driving 360 miles. He stops to rest after driving a distance of 120 miles. He drives $\frac{1}{4}$ of the remaining distance in the next hour. What distance, in miles, does the truck driver drive the next hour?

(S) (G) (B) (B) (B) (B) (B) (B) (B) (B) (B) (B
3 4 5 6 7 8
000000000000000000000000000000000000000
000000
(A)
(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c

3 What is the mass of the apple?



The mass of the apple is _____ grams.

Form A

4 The stem-and-leaf plot shows the quiz scores of students.

Quiz Scores		
Stem	Leaves	
6	4789	
7	00023477	
8	0166	
9	368	

Part A

Select the mode, median, and range for the quiz scores.

	34	70	74
Mode	(A)	B	©
Median	(D)	(E)	Ē
Range	©	Θ	(Ī)

Part B

How many quiz scores are less than 80?

- A 4
- B 7
- © 12
- ① 16

Form A

Michael starts his chores at 11:45 a.m. He dusts for 18 minutes and then sweeps the floors for 24 minutes. At what time does Michael finish doing his chores?

Show your work.

Michael finishes doing his chores at _____

- Tamera buys a scarf that costs \$11.75 and a candle that costs \$6.50, including tax. Tamera gives the clerk a \$20.00 bill. Which of the following ways could Tamera receive her change?
 - A 5 quarters
 - 8 1 one-dollar bill and 1 quarter
 - © 1 one-dollar bill and 3 quarters
 - 1 one-dollar bill, 5 dimes, and 5 nickels
 - © 1 one-dollar bill, 7 dimes, and 1 nickel
- 7 There are 3 feet in 1 yard.

Complete the conversion. For each box, fill in the bubble before the phrase that is correct.

17 feet is the same as

A	1		لہ۔	_
(A)	4	ya	ru	5

® 5 yards and

© 6 yards

B 1 foot

© 2 feet

Form A

8 Veda's coach wants her to convert the time it takes her to swim a lap from seconds to minutes. It takes Veda 180 seconds to swim one lap. (1 minute = 60 seconds)

How many minutes does it take Veda to swim one lap? Explain how Veda could do the conversion.

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- A trend in great and a story through the office and the control of the paleon.

Jason exercises each day. The amount of time, in minutes, he exercises each day is shown below. Make a stem-and-leaf plot to represent the data.

30, 30, 15, 20, 25, 40, 30, 30, 45, 12, 20, 40

Form A

- 10 How many cups are in $2\frac{1}{2}$ gallons? (1 gallon = 16 cups)
 - 16 cups
 - ® 32 cups
 - © 40 cups
 - 48 cups
- 11 The table shows lengths of pieces of wood, in feet. What fraction of the pieces of wood have a length greater than the mode of the data?

Pieces of Wood		
Length (feet)	Number of Pieces	
6.5	and a soft little of	
7.25	and a surprise poli	
8.5	III	
9.0	III	
10.5		

Show your work.

Kick Off Spring Break with a Reflex Math @ 承L

Join the **Reflex** Spring Break Math Challenge Open to all M-DCPS Students in Grades 1-8.

No Special Registration is Required.

Starts:

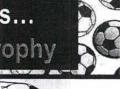
March 22, 2024



Ends:

March 31, 2024

4 District-Wide Math Superstars will each receive a 2024 Spring Break Goal Prize Package that includes...
An Amazon Fire Tablet - A Reflex Goal Swag Bag – Trophy



2 Ways to Score Prizes



2 Math Superstars will be selected based on all 3 categories below:

- Greatest Green Light Days
- Greatest Facts Gained
- Greatest Facts Solved

WAY #2

Any student with 8 or more

Green Light Days

will be placed in a raffle & 2 Math Superstars will be selected at random.

Questions? Email Maira Maguire mmaguire@explorelearning.com

Follow Us: @@inst_technology @@MDCPSMath @@ELMaguireReflex

Reflex

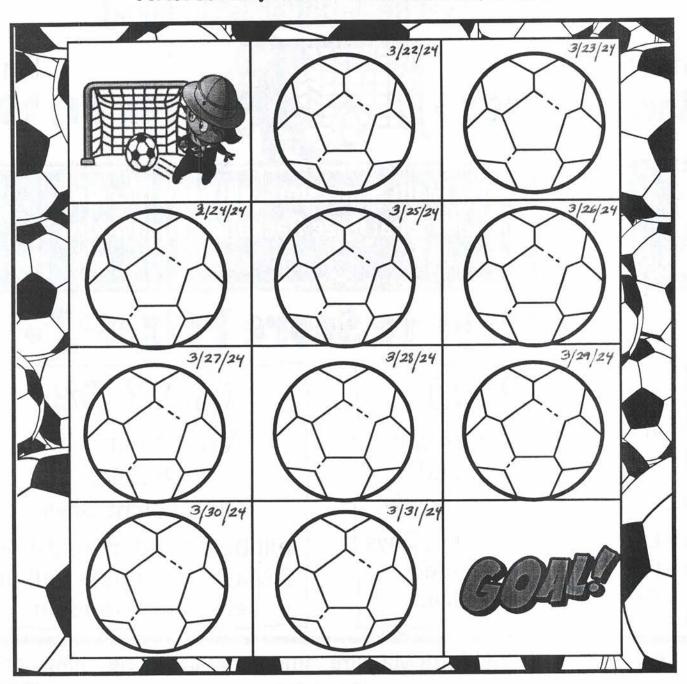
Math fact fluency- problem solved!

Name		



Student Directions: Using the green light goal tracker below, color in a soccer ball for each green light you receive while completing the challenge.

KICK OFF SPRING BREAK WITH A REFLEX GOAL MATH CHALLENGE MARCH 22, 2024 - MARCH 31, 2024



Calling all M-DCPS Fraxionauts!

Announcing the M-DCPS Frax Spring Sector Challenge

Open to all M-DCPS students in grades 3-6. (Elementary & K-8 Schools Only)

No Special Registration is required to participate.

The Mission Deadline-March 31, 2024!

Mission- Complete Sector 1 (27 missions) or Sector 2 (30 missions)
Mission Details- Any student who has completed Sector 1 or Sector 2 by the deadline (3-31-24) will be entered into a raffle to win prizes.

*Student data will be collected automatically from the start of the school year, 8.17.23, until the deadline, 3.31.24.

The Federated Ship Sable Prizes

•3 Region Fraxionauts - (1 North, 1 Central, and 1 South) will be randomly selected through a raffle to receive:

The Big Dipper Prize Package: An Amazon Fire Tablet and a Frax Swag Bag

• 3 Runner-up Fraxionauts - will be randomly selected through a raffle to receive: The Little Dipper Prize Package: A Frax Swag Bag



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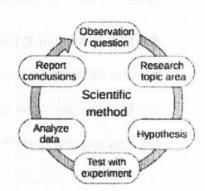
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Scientific Investigations

Essential Question: How do scientists investigate scientifically?

Scientists define problems to better understand the world around them. They often word these problems as **questions**, then they try to find answers to these questions.

Scientists usually begin their **investigations** with **research**. Research can include reading appropriate books and scientific journals. It can also include talking with other scientists who have worked on similar problems. Once research is done, scientists plan and carry out one or more investigations.



Planning and carrying out a scientific investigation include many steps. Scientists make and record **observations** which are made by using the senses. Scientists also identify **variables**, which are things that can change during the test. Variables should be tested one at a time. For instance, in an investigation about how light affects plant growth, two of the variables would be the type of plant used and the strength of the light. All scientific investigations involve making predictions. Predictions are reasonable guesses about what might happen in an investigation. Scientists also make **inferences**. Inferences are made when scientists think about what they already know and put it together with what they are observing during an investigation to draw **conclusions**.

Another important part of any scientific investigation is collecting **data**. Data are information from which a conclusion can be drawn, or a prediction can be made. Data are organized in different ways. Some data are plotted on graphs. Data can also be recorded in charts and tables.

After data are collected and recorded, they are **analyzed** and interpreted. Once this is done, scientists draw conclusions, which must be supported by data. In other words, their conclusions must be defended with appropriate scientific evidence.



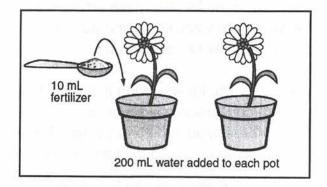
Scientists record or write down their observations during an investigation.

Essential Question Response:					
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Scientific Investigations

- What might be a variable in an investigation about how much water to feed a houseplant?
 - A) The color of the plant
 - B) The temperature outside
 - C) The temperature of the water
 - D) The regularity of the feeding

2 A student will measure and record the growth of two flowering plants every other day for ten days.



According to the diagram, which question is being tested?

- A) Do flowering plants grow better when being watered with salt water?
- B) How much fertilizer do flowering plants need?
- C) Does fertilizer added to the soil lead to taller flowering plants?
- D) How tall do flowering plants grow?

Methods in Scientific Investigations

Essential Question: Explain why scientists do not always use the same steps (as in the scientific method) when they are doing investigations.

All scientific investigations use the same steps and processes. These steps and processes, however, may be performed separately or in a different order. For example, if two different groups of scientists are studying the same problem or are trying to answer a question, one group of scientists might use a different set of steps and processes than the other group of scientists. Both groups might also perform the same steps and processes, but in a different order. In other words, there is no single "scientific method."

Suppose two biologists observe that there are more light brown crabs than dark brown crabs on a beach. Both biologists will ask questions about the differences in color. One scientist might hypothesize that color is related to size. The other scientist might hypothesize that crab color is related to the distance a crab lives from the water.

Both scientists will use metric rulers or meter sticks to try and answer their questions. One scientist might study the crabs during the day. The other might study the animals at dusk. As they both investigate, the biologists may develop more questions about crab color.

Both scientists will record their data. One might record the measurements in a table. The other might graph the data collected. Both scientists will eventually draw conclusions. These conclusions may or may not support the biologists' original hypotheses. This could lead one or both of the biologists to form a new hypothesis. New hypotheses might lead to new investigations about the crabs' colors.

Essential Question Response:		

- 1 Which is true of scientific investigation?
 - A) All scientists use the same tools to solve problems.
 - B) All scientists use different methods to study hypotheses.
 - C) All scientists always use the same steps in the same order to solve problems.
 - D) All scientists use different methods to answer questions and solve problems.

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Methods in Scientific Investigations

Frogs play an important role in the environment, because they eat many insects and are also eaten by many animals. Populations of frogs have been in decline for the past decade. A scientist wants to study what is causing the decline of frogs at the town's pond and makes the following chart. Which statement **best** explains if this is a scientific investigation?

	Day 1	Day 5	Day 10	Day 15
Number of frogs	5	7	11	9
Rainy or Sunny	sunny	rainy	rainy	sunny
Temperature (°C)	22	20	18	19

- A. Yes, because many scientific investigations cannot follow the scientific method due to the subjects being studied.
- **B.** No, because only scientific investigations that follow the scientific method precisely can be considered authentic.
- C. No, because scientific investigations are never authentic, only scientific experiments are.
- D. Yes, because all scientific investigations and experiments are always considered authentic.

Importance of Repeated Experimental Results

Essential Question: Why is it important for other scientists to be able to replicate previous scientific investigations?

Once scientists perform at least three **trials** of an experiment or **investigation** to confirm their results and **evidence** are consistent in each trial, they are ready for a very important step which is sharing their **results** and evidence. Evidence is any observation that either supports or does not support an idea. By sharing results and evidence, scientists can agree with or disagree with the results of an investigation.

Sharing information about investigations also allows scientists to repeat the tests or studies. Repeating tests and getting similar results ensures that the **conclusions** of an investigation are valid. Suppose a scientist does an investigation to determine the ages

of layers of ice in Antarctica. The scientist must describe exactly what he did in the investigation and how he did it. He must describe the methods and tools he used to collect the data. He must also make his data available for others to see. He must show that his conclusions are supported by evidence. Sharing all of this information then allows others to repeat the investigation to see if they get the same results and are able to draw the same conclusions. If the results from different scientists do not agree, then the original investigation was not valid.



Scientists share their procedures, data collected and results from their investigations with others.

- Suppose different teams of scientists did three tests to determine the age of one layer of the Antarctic ice sheet. Which set of data are likely not valid?
 - A) Set 1: 700,000 years, 710,000 years, 715,000 years
 - B) Set 2: 712,000 years, 713,000 years, 715,000 years
 - C) Set 3: 630,000 years, 600,000 years, 700,000 years
 - D) Set 4: 699,000 years, 700,000 years, 701,000 years

- 2 Devon is conducting an experiment to see if honey or brown sugar will attract the most ants. Which statement best describes why Devon should write down his experimental procedure?
 - A) So that the exact experiment can be repeated by others and the results compared
 - B) So that the experiment can be changed by others to get different results.
 - C) The data will be used to determine which one to buy.
 - D) The data will show which anto and

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