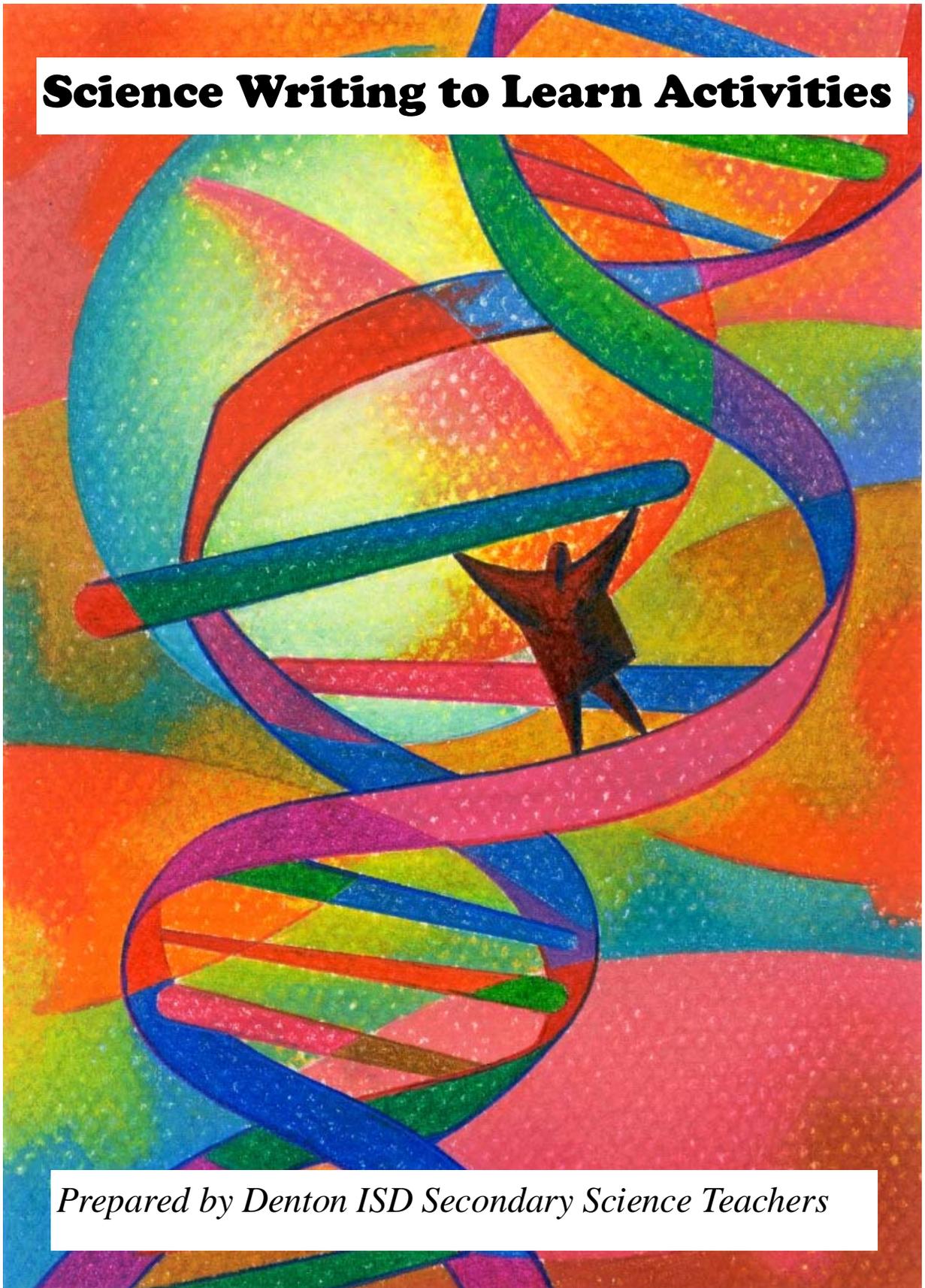


Science Writing to Learn Activities



Prepared by Denton ISD Secondary Science Teachers



Anatomy

Getting to Know Femur

You have been injected into a femur. Beginning at the femoral head and traveling through the bone to the distal end, describe your travels and what you see along the way. Explain the difference between the boney structure and cell types from the head to the shaft. What is happening at the epiphyseal plates? Are there other cells besides osteocytes? How are these cells being made and destroyed? Describe the bone marrow. Describe canals you may travel down, blood vessels you may encounter, etc.



Aquatic Science

Clustering

1. Selection of nucleus word (arthropods)
 2. Brainstorm Related Words
 3. Write a brief paragraph on an aspect of the resulting cluster of words. (10 minutes)
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Biology

Taxonomy Mnemonic R.A.F.T.S.

Role: Student

Audience: Your best friend in danger of failing

Format: Mnemonic

Topic: Taxonomy

Strong Verb: Memorize

R.A.F.T.S prompt in paragraph form:

You are a biology student who is helping your friend study for an upcoming test. Your help is extremely important, because without it your friend is in danger of failing the

semester. Create a mnemonic for Kingdom, Phylum, Class, Order, Family, Genus, and Species that will help your friend memorize the information. It must be catchy and something that will make your friends laugh.

Ecosystems R.A.F.T.S.

The R.A.F.T.S. follows an outdoor exploration of the human influence in the ecosystem.

Role: Ecological Activist

Audience: Possible Volunteers

Format: A short paragraph

Topic: The human influence in ecosystems

Strong Verb: Recruit

R.A.F.T.S. prompt in paragraph form:

You are an ecological activist and have the mission of recruiting town people for your movement. Write a short paragraph explaining the positive and negative aspects of human activities in a local ecosystem.

Virus R.A.F.T.S.

Role: A virus

Audience: A team of biologists

Format: Application

Topic: Evidence to support virus as a living organism

Strong Verb: Persuade

R.A.F.T.S. prompt in paragraph form:

You are a virus and must defend your life to a team of biologists. You must persuade them through an application giving evidence to support virus as a living organism.

Follow up: Students may write an acceptance or rejection of the application from the perspective of the biology panel. The panel must use evidence to support decision.

****I'm a little unsure of the Format category for this R.A.F.T.S. If this was your R.A.F.T.S., please email me and let me know what sort of application you mean. Thanks, Karla Rainey. krainey@dentonisd.org****

Stem Cell Debate

The topic of debate is the controversy surrounding stem cells. Divide students into two groups (pro vs. con). Students will write a persuasive argument for their stance with specific scientific and moral evidence.

T4 Bacteriophage

Look at the T4 Bacteriophage on p.479. Is it a living thing? How does it infect a bacterial cell?

Finding Not Only Nemo Video Prompt

Students will view *Finding Nemo* and complete the following tasks:

- Name all the animals you see.
 - Divide animals into vertebrates and invertebrates.
 - What are roles of these organisms in the ocean?
 - What characteristics did you use to classify these animals?
-

Red Blood Cell R.A.F.T.S.

Role: Red Blood Cell (old)

Audience: Red Blood Cell (Young, New)

Format: Map

Topic: The route a red blood cell travels through the circulatory system

Strong Verb: Illustrate, Explain, Describe

R.A.F.T.S prompt in paragraph form:

You are an experienced red blood cell who has been chosen to illustrate and map the flow through the circulatory system for novice red blood cells. In addition, you must write a description of what happened along the way.

Choking Picture Prompt

Show a picture of a person choking or show the universal picture for choking and have the students answer the following questions:

1. Why is this person reacting this way?
 2. What is the body being deprived of?
 3. What is the body's response?
 4. What action can be taken to help this person?
-

Science Fiction Story

Have students write a fictional story using ten words selected by the teacher that are related to the current subject material.

Teachers can provide students a prompt to begin. For example, "The Island of Doctor Mo-Ron" prompt give students the following information:

- An eccentric scientist has bought an island to be used as an area to perform DNA related scientific experiments.
 - His objective is to clone species that have been extinct for millions of years.
-

Virus R.A.F.T.S.

Role: Doctor

Audience: Family/patient

Format: List of systems

Topic: Virus of your choice on p. 489 in Prentice Hall textbook

Strong Verb: Analyze, diagnose, warn

R.A.F.T.S prompt in paragraph form:

You are a doctor who has carefully analyzed your patient in order to correctly diagnose his condition. You must present a list of systems warning the patient and the patient's family about the virus (of your choice from p.489) that the patient has contracted.

Obituaries for Extinct Animals

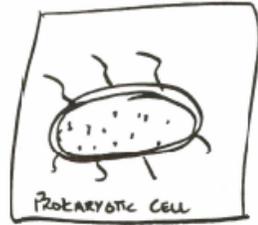
Write obituaries for the animal(s) provided with the following information included:

- Cause of death
 - Closest living relatives (evolutionary relationship)
 - Where they lived prior to death
 - Time of death
-



Describe what you think this is? What role does it play?

① PICTURE PROMPT



QUESTION #1: USING THE PHOTOS, WHAT DIFFERENCES CAN YOU IDENTIFY BETWEEN THESE TWO ORGANISMS.

QUESTION #2: USING PRIOR KNOWLEDGE, WHAT OTHER DIFFERENCES DISTINGUISH THESE TWO ORGANISMS



Chemistry

Write about Moles

I am a mole. How many particles am I? Am I a lot or a little? Write a paragraph describing me. Use the terms mole, Avogadro constant, molecular mass, and formula mass. Use at least six properly written sentences.

Periodic Table Prompt

16	?	18
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Describe the missing element in terms of number of electrons, protons, neutrons, atomic radius, metal, nonmetal, metalloid, density, valence electrons, oxidation number, melting and boiling point.

Law of Conservation of Mass (Log)

Before burning, the log had a mass of 500g. After burning, its mass is 100g. Explain what happened to the missing 400g.

Law of Conservation of Mass (Banana)

You are a banana peeling. Please describe what happens to you over the next 30 years with respect to the Law of Conservation of Mass.

An Atom's Philosophy

You are an atom of F. Please describe your philosophy of life.

You are an atom of Cs. Please describe your philosophy of life.

The Gas Problem

You decide to cook a pot of beans on a fun-filled ski trip in Colorado. The beans cook in the crock pot all day. How will the beans taste? Why? Why will your "gas" problem be worse?

Plight of the Popcorn Under Pressure R.A.F.T.S.

Role: Popcorn

Audience: Popcorn Popper

Format: Commentary

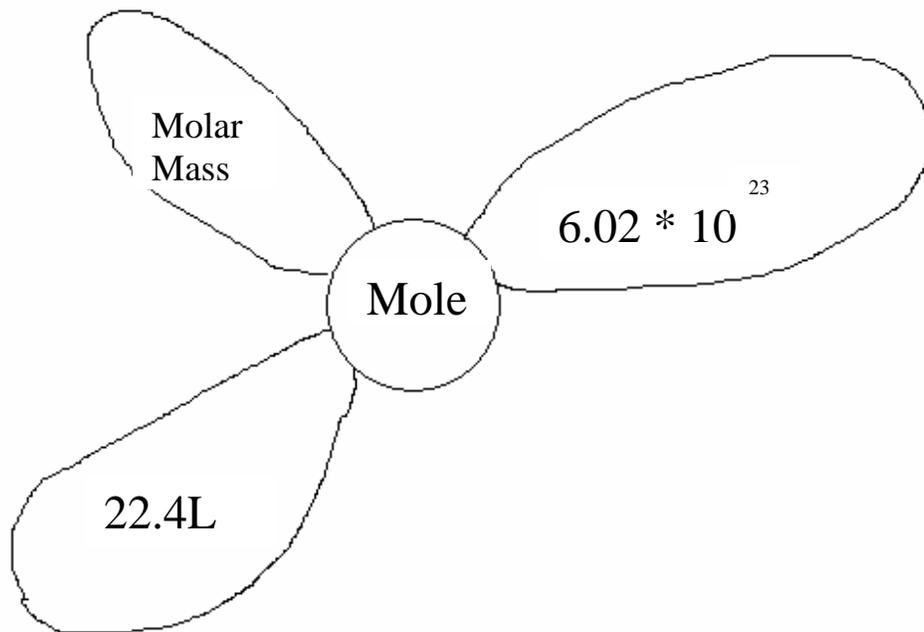
Topic: What happens when you're heated?

Strong Verb: Communicate

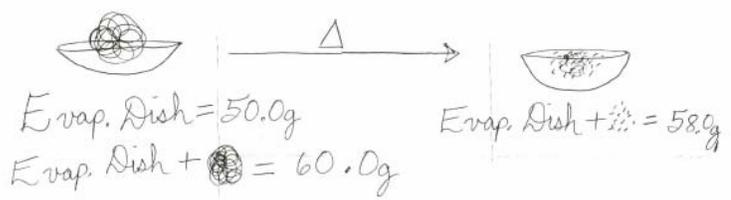
As a kernel of popcorn threatened by machinery and an insatiable human appetite for buttery snacks, write a commentary like those of professional new commentators. Your commentary must communicate your concerns of role you believe popcorn poppers are playing in the horrible injustice against kernels across the world. Explain in detail to the poppers the pain and suffering that occurs once a kernel is heated by explaining exactly what happens to a kernel once it is heated.

**Play *Under Pressure* by Billy Joel.

Converting using moles as central conversion.

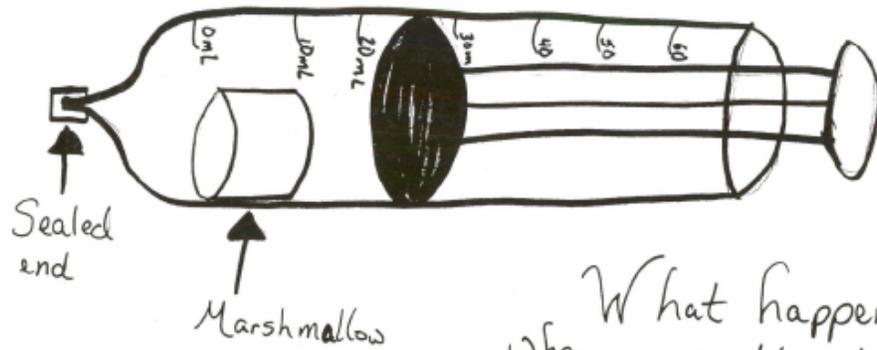


Using the four terms above, write a short paragraph how each is related to the other.



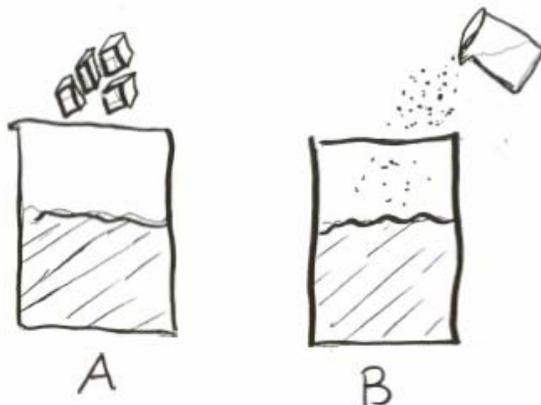
Is the Law of Cons. of Mass true, in this case? Please explain.

Picture Prompt



What happens when you pull out the plunger? Use the words pressure and volume.

Look at the sugar being added to water, assuming equal amts of sugar added, describe what happens in each.





Environmental Science

Ecology Children's Book

Choose a biome or nutrient cycle to write a children's book about. You must include a title page and bibliography. You may earn extra points for going above and beyond (touch and feel, pop-up, etc.).

Biome

- Accurately describe your biome's climate and environment including temperature, humidity, etc.
- Include at least one decomposer, three producers, four consumers (primary, secondary, tertiary)
- Pictures!

Nutrient Cycle

- Be sure to describe all vocabulary words from your textbook/notes
 - Pictures!
-

The Lorax

Students read the Dr. Seuss book, *The Lorax*. After reading the book, the student is to take the role of the Lorax and describe the environmental, biological, physical, chemical, and atmospheric processes that are going on. They can also incorporate financial concepts and population studies into their description. The Lorax can also describe how his body reacted to the distinct environmental changes that are happening (health issues). Topics that could be noted: extinction, evolution, layers of lithosphere/atmosphere, pollution, genetics, population studies, aquatic science, biosphere, botany, deforestation, biomes, oceanography, erosion, mutations, kingdoms/classification, health issues (smoking/emphysema).



Physics

Coke Bottle Picture Prompt

Display a picture of a person blowing on a coke bottle. Ask students to use the terms particle movement, frequency, and resonance to explain why the bottle whistles.

Far Side Cartoon Picture Prompt

Use *Far Side* cartoons based on science ideas to prompt research and explanation of the concept(s) involved.

Demonstration Prompts

Demonstrate any of the following and ask students to explain how/why the demonstration works.

- Yo-yo
 - Bubbles
 - Cooling air
-

Vocabulary Story

Using your vocabulary words, write a story that explains the words without writing the definitions. The story must be at least one page.

Contact Video Clip

Using the movie *Contact*, show the beginning where the camera pans out into space and the sounds are constantly changing. Use the grid provided to explain why you are hearing different and changing sounds.

Video Clip

What factors affect where the parachutist will hit the ground. (*The name of the movie wasn't listed. If this was your prompt, please email me with the name of the movie.*

–Karla Rainey, krainey@dentonisd.org)

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