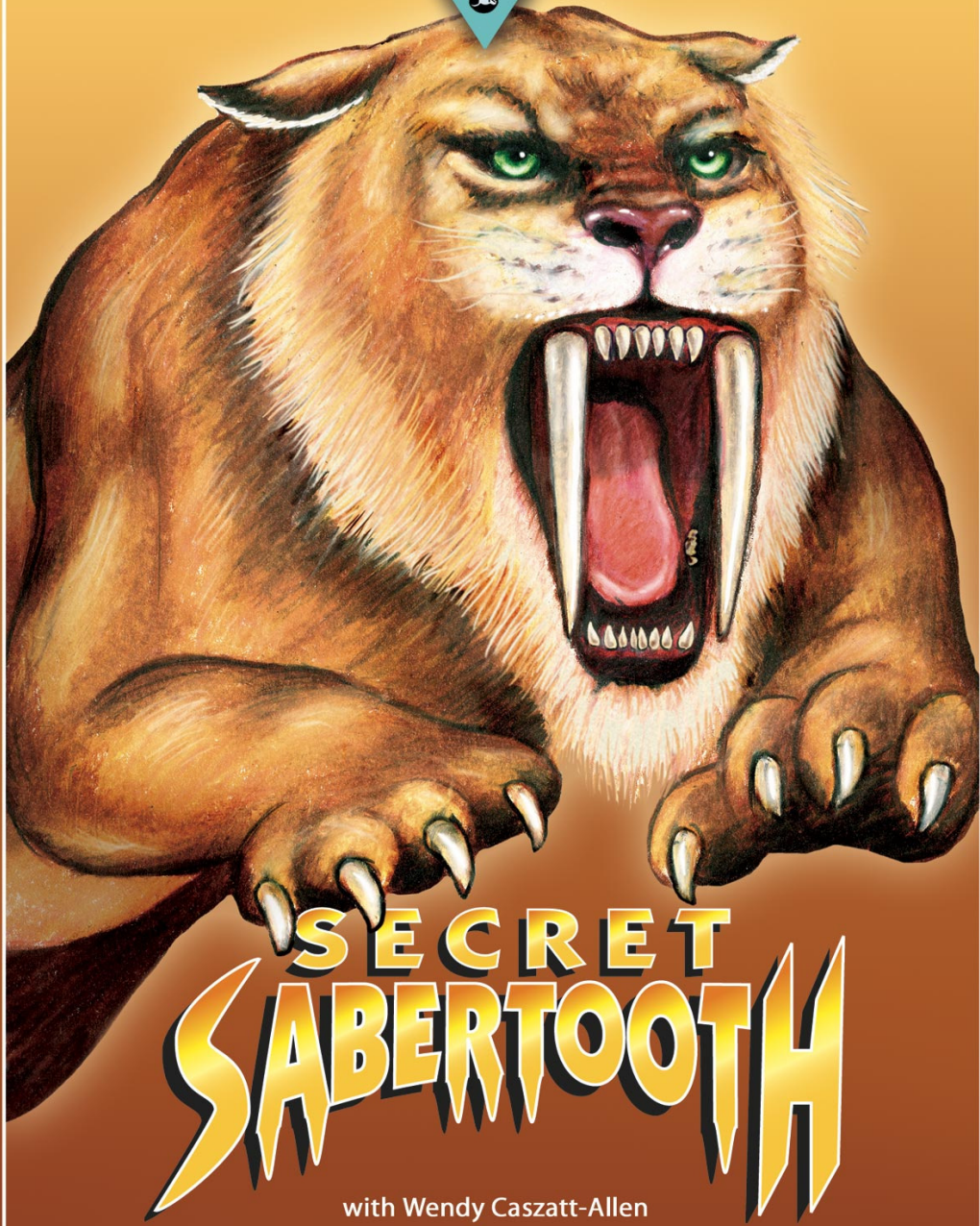


BOOK #3



## **Activity: Dinosaur Concrete Poem**

**Summary:** Students will learn about concrete poems by looking at examples, and they will create concrete poems about paleontology.

**Materials:** Examples of Concrete Poems from poetry books  
Dinosaur Reference Cards (attached)

### **Grades 1-2 Procedure:**

1. Students explore concrete poems from poetry books.
2. Ask, "What do all these poems have in common?"  
\*Words shaped like a picture
3. Students use knowledge about dinosaurs to create concrete poems about types of dinosaurs.  
\*Use Dinosaur Reference Cards for facts.
4. Share concrete poems.

### **Grades 3-6 Procedure:**

1. Students explore concrete poems from poetry books.
2. Ask, "What do all these poems have in common?"  
\*Words shaped like a picture
3. Students use knowledge about dinosaurs to create concrete poems about a type of dinosaur or something having to do with paleontology.  
\*Use Dinosaur Reference Cards for facts
4. Share concrete poems.

## Concrete Poem Examples:

### Grade 1-2 Dinosaur:

```
      T          T          T
    R  R      R  R      R  R
    I  I      I  I      I  I
    C  C      C  C      C  C
    E  E      E  E      E  E
    R  R      R  R      R  R
    A  A      A  A      A  A
  T      T    T      T    T      T
O        O    O        O    O        O
P        P    P        P    P        P
S        S    S        S    S        S
Eats vegetables. Uses three horns to protect himself from enemies.
```

### Grade 3-6 Dinosaur or Paleontology

```

E                                     R E
  X                                 A   F
    C                             C   U
      A V A T I O N. Brushing, Brushing, Brushing      L

                                     ? it is T      W
                                       A   H
```

## **Activity: Name Your Own Dinosaur (Latin/Greek Root Study)**

**Summary: Students will explore the names of dinosaurs and create new creatures using Latin / Greek roots.**

**Materials:** Dinosaur Reference Cards

Latin Root Pieces website (Grades 5-6 only)

Website: [www.enchantedlearning.com/subjects/dinosaurs/allabout/Nameroots.shtml](http://www.enchantedlearning.com/subjects/dinosaurs/allabout/Nameroots.shtml)

### **Grade 3-4 Procedure:**

1. Discuss 2-3 of the different dinosaur cards. Focus on why each dinosaur name makes sense.

Example: brontosaurus “thunder-lizard”  
pterodactyl “winged-fingers”

2. Ask “What would happen if we combined qualities of each of these dinosaurs into one animal?”
  - What would it look like?
  - What would you call it?(example: pterobrontodactyl)
3. Students draw a picture of and name “new” dinosaurs.
4. Students make reference cards for new dinosaurs.  
(See attached blank reference cards.)
5. Share.

### **Grade 5-6 Procedure:**

1. Discuss 2-3 of the different dinosaur cards. Focus on how each dinosaur name fits with the Latin / Greek roots.
  - Use website to construct “new” dinosaurs.
2. Students create new dinosaurs (combining 2-3 known dinosaurs or making “new” dinosaurs out of Latin / Greek roots).

Example of “new” dinosaur:

Penta “five” + Ops “eyes” + Saurus “lizard” = Pentaopsaurus  
(A large lizard-like dinosaur with 5 eyes)

## **Activity: Real vs. Not-Real Theme Unit**

**Summary:** Students will investigate the theme of “real vs. not real” things as it threads through *Secret Sabertooth*. Students will gather information while reading and periodically discuss findings with the whole class. Using gathered information, students will participate in guided discussions questions about the real vs. not-real theme.

**Materials:** Large Chart Paper

Black Notebooks (one for each student)

-Put together using attached pages.

-Surround each notebook with black construction paper

-Staple for each student.

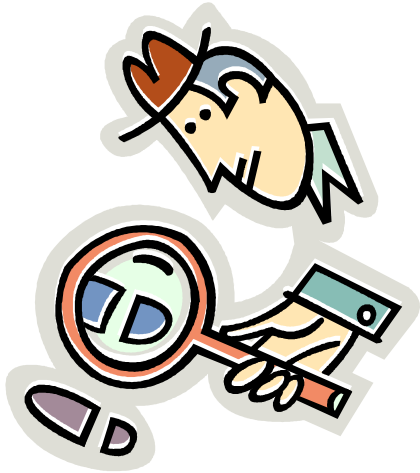
Guided Discussion Questions: Real vs. Not-Real theme

### **Procedure for Grades 1-2:**

- 1) Read Aloud *Secret Sabertooth* in stages (around 2 weeks).
- 2) While reading, students are detectives who find things that are real or not-real.
- 3) Teacher records findings on a class T-chart as students share.

### **Procedure for Grades 3-6:**

- 1) Students read *Secret Sabertooth* in stages, reading in novel groups or independently.
- 2) Students act as detectives who record things that are real or not-real in black notebooks as they read.
  - Periodically assemble the real and not-real things on a class chart.
- 3) Ask “Guided Discussion Questions” (attached) to discuss class chart.



\_\_\_\_\_ 's

**Black Notebook**

**Is It Real?**

**Or**

**Is It Not-Real?**

[illegible]

[illegible]



**Activity: Guided Discussion Questions: Real vs. Not-Real Theme Unit**

**Materials:** Real vs. Not Real Class Chart

**Recommended guided discussion questions:**

**Chapter 8-**

Why is it a serious crime to fake fossils?

Why is it dangerous to attempt to pass non-reality off as reality?

**Chapter 15-**

Shelly thinks that it is silly to think of the horn being a unicorn horn because it isn't. Is Shelly better off to "believe" in the unicorn horn by using her imagination or not?

**Chapter 19-**

Why do you think Dakota's essay was better than Shelly's?

Why is reality by itself not enough?

**Chapter 28-**

Why is imagination important?

Why is imagination important to science?

**Chapter 29-**

Can fake be good?

## **Activity: Risk-Taking Theme Unit**

**Summary:** Students will read PaleoJoe book(s) while finding and analyze risks that the characters take.

**Materials:** Any Combination of *PaleoJoe* Series Books  
Large Chart Paper  
My Life Risks worksheet(attached)  
Risk-Booklet for each student (attached)  
Rewrite the Risk worksheet (attached)

### **Procedure for Grades 3-4:**

#### **4) Day One:**

Discuss what it means to take a risk. Students share examples of times when they have taken a risk. Record examples on chart paper.

#### **5) Day Two (and following):**

Students read PaleoJoe book(s) and record risks that the characters are taking in their risk booklets.

#### **6) Culmination Activity** (when books / risk booklets finished):

\*Rewrite the Risk activity (attached)



Name \_\_\_\_\_

Date \_\_\_\_\_

### My Life Risks

Directions: List as many risky actions that you can find from your life (past or present).

Risky Action	Did you choose to do it?	
	YES	NO
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

# *PaleoJoe* Risks Booklet



Risks I found in the book:

---

Name\_\_\_\_\_

Book page # \_\_\_\_\_

Character(s): \_\_\_\_\_

Risky Action:

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Would you have taken this risk? (Circle one) YES NO

Why or why not?

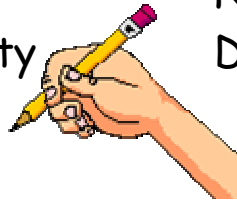
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Did the character take the risk? (circle one) Yes No

Culminating Activity  
Rewrite the Risk



Name \_\_\_\_\_

Date \_\_\_\_\_

Directions: Shelly and Dakota take many dangerous risks as young detectives. Luckily, their risks always seem to work out for them. Pick one of their dangerous risks, and think of a way they could have been good detectives while being safer. Rewrite that part of the story to include a less risky alternative.

Original Risk

Book Title \_\_\_\_\_

Character(s) \_\_\_\_\_

Risk \_\_\_\_\_

New Risk:

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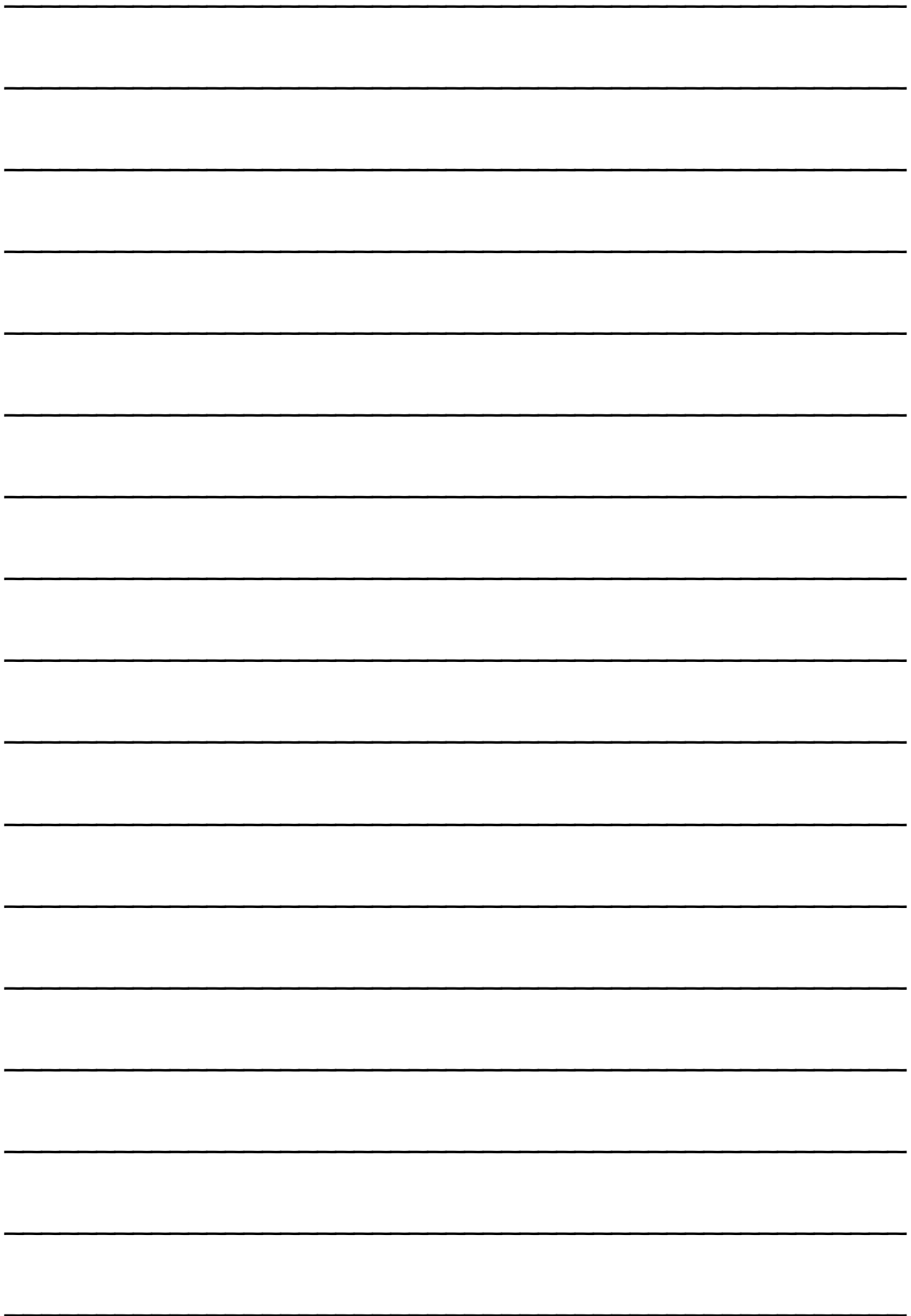
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## **Activity: Risk-Taking (Pros and Cons) Theme Unit**

**Summary:** Students will read PaleoJoe books(s) while finding and analyze risks that the characters take.

### **Materials:**

My Life Risks (attached)  
Risk-Booklet for each student (attached)  
Rewrite the Risk (attached)

### **Procedure for Grades 5-6:**

#### **1) Day One:**

-Discuss what it means to take a risk. Students share examples of times when they have taken a risk. Record examples on chart paper.

-Discuss reasons for or against taking a risk:

Ask, "What would be a "pro" argument for taking a risk?"

Ask, "What would be a "con" argument for taking a risk?"

-Students risks they have or have not taken

Students complete My Life Risks worksheet (attached).

#### **2) Day Two (and following):**

Students record risks that the characters take (or choose not to take) in their risk booklets while they read any of the *PaleoJoe* books.

#### **3) Culmination Activity** (when books / risk booklets finished):

\*Rewrite the Risk Activity (attached).





Name \_\_\_\_\_

Date \_\_\_\_\_

## My Life Risks

Directions: List as many risky actions that you can find from your life (past or present).

Risky Action	Did you choose to do it?	
	YES	NO
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

\*Pick one risky action to explain at least 2 pros and 2 cons that you might have been thinking when deciding whether to take the risk or not. (Write it on the back)

# *PaleoJoe* Risks Booklet



Risks I found in the book:

---

Name\_\_\_\_\_

Book page #\_\_\_\_\_

Character(s):\_\_\_\_\_

Risky Action:

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Pros for taking the risk:

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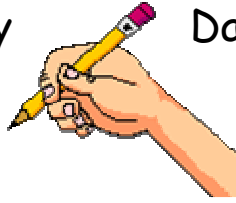
Cons for not taking the risk:

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Did the character take the risk? (circle one)      Yes      No

Culminating Activity  
Rewrite the Risk



Name \_\_\_\_\_

Date \_\_\_\_\_

Directions: Shelly and Dakota take many dangerous risks as young detectives. Luckily, their risks always seem to work out for them. Pick one of their dangerous risks, and think of a way they could have been good detectives while being safer. Rewrite that part of the story to include a less risky alternative.

Original Risk

Book Title \_\_\_\_\_

Character(s) \_\_\_\_\_

Risk \_\_\_\_\_

\_\_\_\_\_

New Risk:

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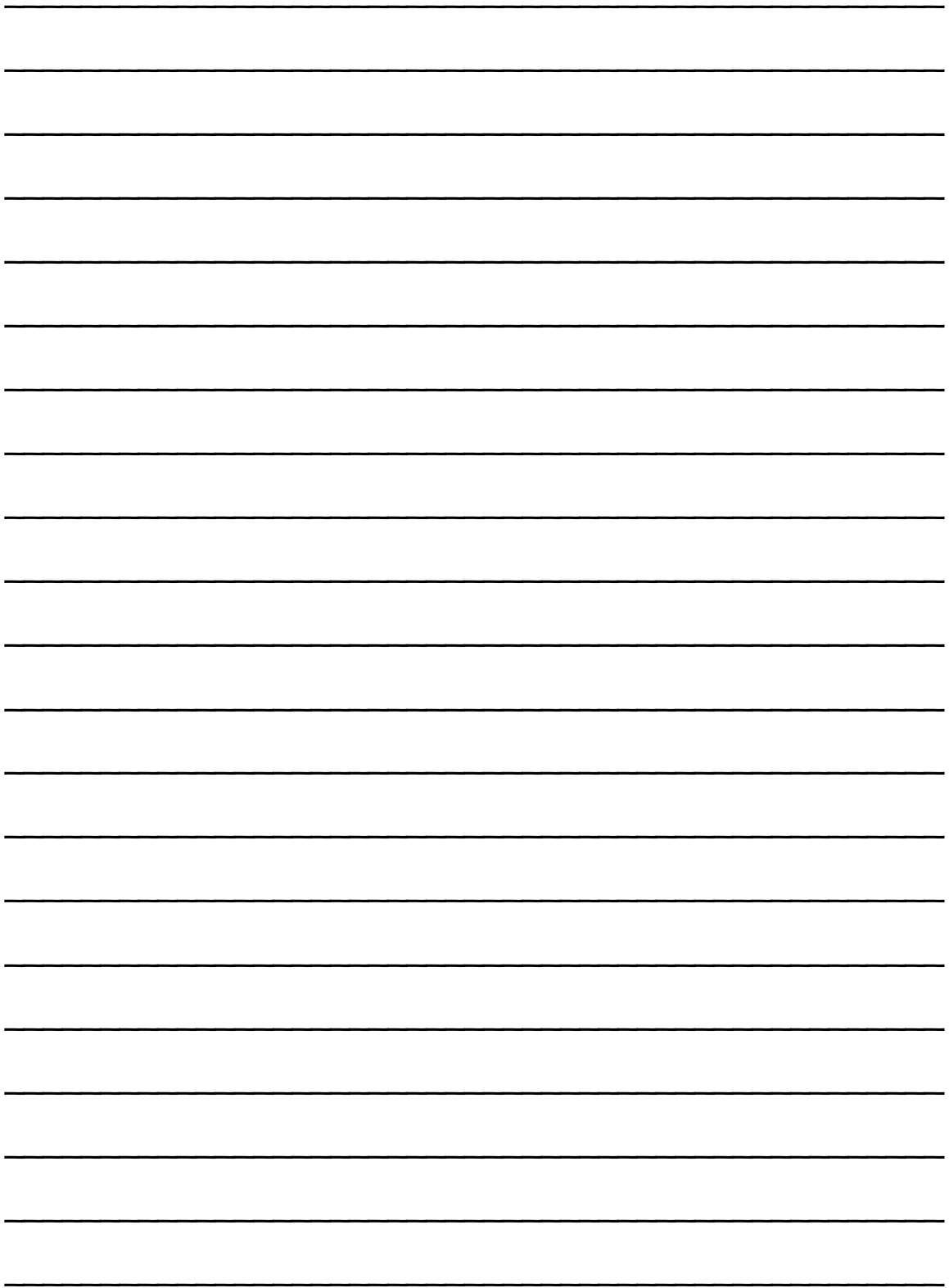
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## **Activity: *Secret Sabertooth* Character Comparison**

**Summary:** Students will use a Venn Diagram to compare and contrast characters in *Secret Sabertooth*.

**Materials for Grades 1-2:** 2-Way Venn Diagram on chart paper

**Materials for Grades 3-6:** 2-Way and 3-way Venn Diagram Templates  
Chart Paper

### **Procedure for Grades 1-2:**

- 1) Describe PaleoJoe and Shelly. Record on chart paper.
- 2) As a class, put the words on the chart paper 2-Way Venn Diagram.

### **Procedure for Grade 3-6:**

- 1) Choose 2 characters (either from PaleoJoe books or something else) to compare and contrast on a Venn Diagram as a class. Do it together on chart paper.
- 2) On chart paper, write a class list of characteristics to describe Dakota, Shelly, and PaleoJoe.
- 3) Students (in pairs or alone) pick two different characters to compare and contrast in a Venn Diagram.
- 4) Challenge option: Make a three way Venn Diagram and have students try to compare and contrast.



Name\_\_\_\_\_

## *Secret Sabertooth Venn Diagram*

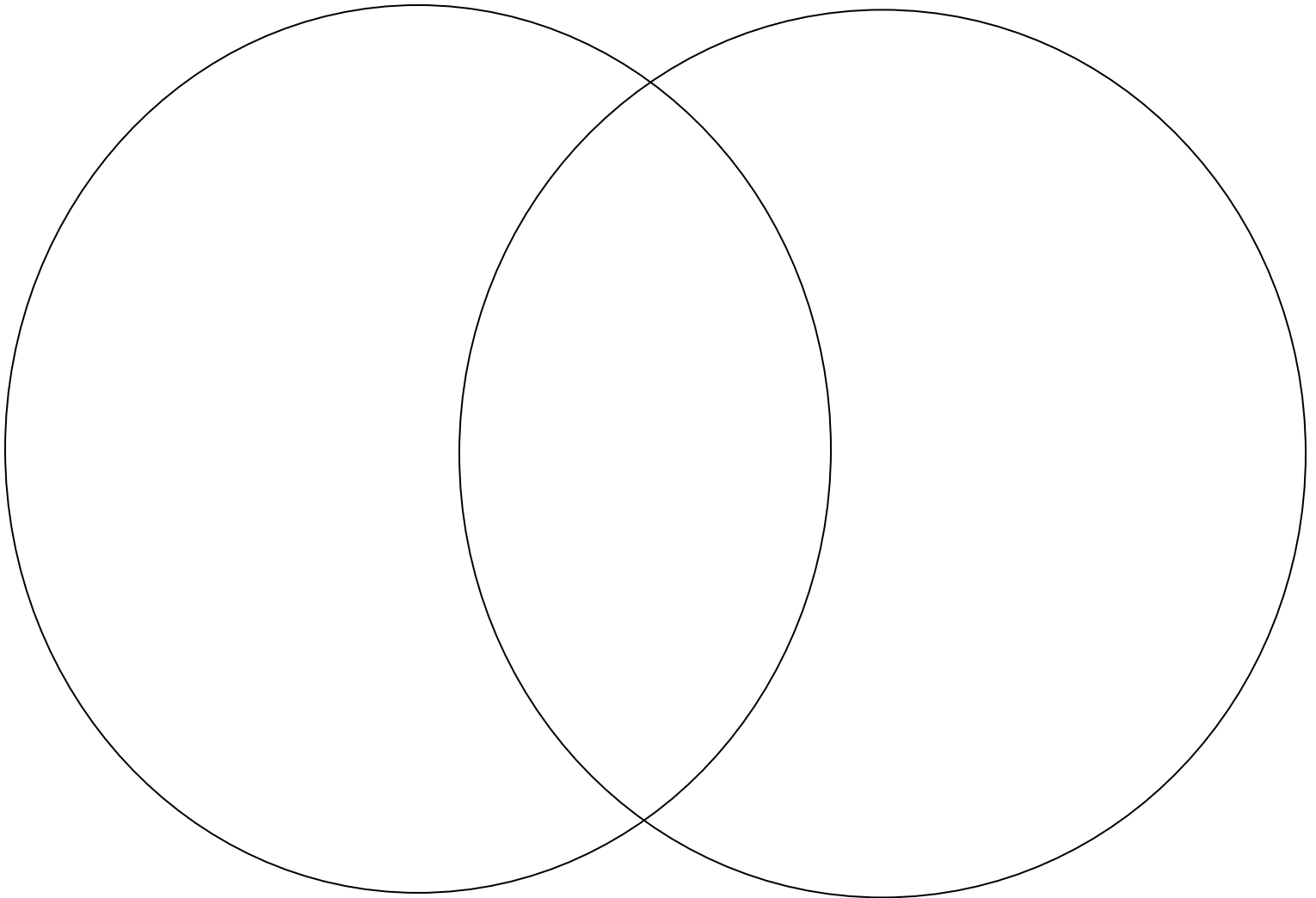
Character 1

\_\_\_\_\_

\_\_\_\_\_

Character 2

Both



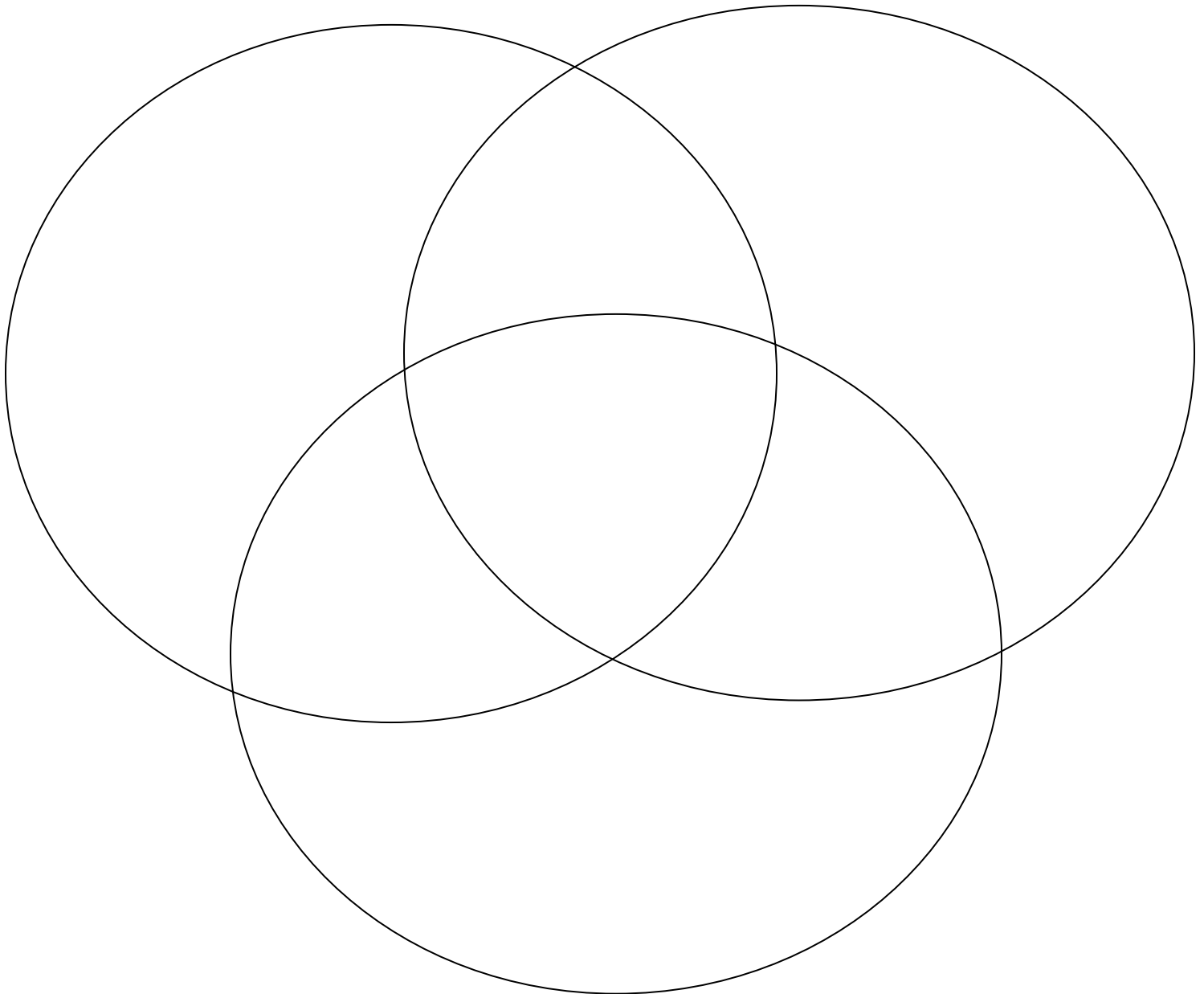


Name\_\_\_\_\_

*Secret Sabertooth Venn Diagram*

Shelly

Dakota



PaleoJoe



## **Activity: *Secret Sabertooth* Timeline Activity**

**Summary:** Students will sequence the plot into chronological order.

**Materials for Grades 3-4:** Timeline pieces

Chart paper with horizontal line

**Materials for Grades 5-6:** Timeline pieces

Large construction paper

### **Procedure for Grades 3-4:**

- 1) As students read *Secret Sabertooth*, write plot pieces on timeline squares as a class.
- 2) Affix pieces to the timeline (chart paper) with removable putty so they can be rearranged as the story progresses.

### **Procedure for Grades 5-6:**

- 1) As students read *Secret Sabertooth*, students meet in teams of 2-3 to write plot pieces on the timeline squares.
- 2) Students affix pieces (large construction paper) with removable putty so they can be rearranged as the story progresses.

NAME \_\_\_\_\_

### Crack the Code: Patterns

Shelly, Dakota, and PaleoJoe are great detectives because they sort out all of the details in order to solve the case. Use your detective skills to figure out the pattern in each line. Find the last answer in each pattern on the list. Fill in the letter of the answer above its problem number.

1      2      3      4      5      6      7      8      9      10

- 1) 1, 3, 5, 7, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 2) 2, 4, 8, 16, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 3) 25, 24, 22, 29, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 4) 1, 5, 9, 13, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 5) 5, 6, 8, 11, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 6) 1536, 384, 96, 64, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 7) 1, 1, 2, 3, 5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 8) 6, 9, 12, 15, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 9) A, Z, AA, ZZ, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- 10) AZ, AAZ, AAZZ, AAAZZ, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

#### Answer Box

- A. 128
- B. 26
- C. AAAA
- D. 13
- E. 25
- F. 24
- G. 4
- H. 21
- I. AAAAZZZZ
- J. 1

## **Activity: Wonder Boxes**

**Summary:** Students synthesize the real vs. the imaginary, their collections, and Mrs. Phoenix's collection in order to create a "wonder box."

**Materials:** \*Decorate Me Hinged Boxes, (or have the children bring a box with a lid from home i.e. shoebox, Kleenex box), fabric scraps, contact paper, yarn pieces, sequins, tissue paper, etc.

### **Procedure:**

- 1) In Secret Sabertooth, chapter fifteen is called "The Wonder Room." It was Miss Phoenix's special place for her collection of odd and wonderful things. What were some things that she had collected? Some were real, some were imaginary, and some were models of something real. Have you ever had a collection? What kinds of things do people collect?
- 2) Ask the students to make a "Wonder Box" of their own where they can keep their special things. Decorate both the exterior and interior of the box with the above materials.
- 3) Have the students bring in an item(s) for their Wonder Box and share with class. Is the item real? Is it a model? Does it have an imaginary story behind it?

\*Decorate Me Hinged Boxes can be found on page 306 in the 2007 Triarco Arts & Crafts Catalog. 1-800-328-3360

## Activity: Place Value Game

**Summary:** Students practice and compare place value from the hundreds place (gr. 1) to the billions place (gr. 6).

**Materials:** small cards with numbers 0-9 (several sets per partner group); place value mat with number of places to match your particular grade level; cards with  $<$  and  $>$  .

### Procedure:

- 1) Numbers are a major part of all of the PaleoJoe books. They represent the number of years, the amount of specimens, the amount of money, various sizes of prehistoric animals, and more.
- 2) Review place value up to the appropriate level of your students. Practice reading numbers, telling place values of numbers, comparing numbers, and writing numbers in expanded form.
- 3) Explain the Place Value Game by modeling the play of two students. Put a set of cards (multiple sets of 0-9) face down between two players. Players take turns picking a card and placing it on the place value mat. Once a card is laid, it is played and cannot be moved. When all place value spaces are filled in, students can read their numbers to each other, write their numbers in expanded form, record their numbers on a class chart, and/or use the  $<$   $>$  signs between them.
- 4) There are many variations of the Place Value Game: making the highest number, making the lowest number, making the number closest to 500,000, allowing one trade at the end, etc.

Example Place Value Mat for up to 100,000s place.

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## **Activity: Chasing Rainbows**

**Summary:** Students deduce the color of a particular dinosaur, draw it, and surround it with painted habitat.

**Materials:** crayons or pastels, watercolors, paper; reference books

### **Procedure:**

- 1) PaleoJoe and the Dinosaur Detectives know so much about dinosaurs even though they roamed the earth over 65 million years ago. What do paleontologists know about dinosaurs? No one has ever seen a dinosaur, so how do they know this information? What might they not know? What else would you like to know about the dinosaurs, if we could really see one?
- 2) Read Uneversaurus by Professor Potts to the class.
- 3) Discuss the different possibilities and the reasons that a dinosaur might have been a particular color.
- 4) Make a crayon or pastel drawing of a dinosaur in its habitat. Use your imagination and reasoning to create your picture. Embellish with watercolor. Bring your picture to life!
- 5) Share your picture with the class. Tell your dinosaur's name and why you chose the colors that you did.

## **Activity: Stuck! Tar Pit Activity**

**Summary:** Students simulate the properties of tar and entrapment within it. They examine food chain relationships in the Pleistocene Age.

**Materials:** Molasses; corn starch; sand; disposable pie plates—one for each group of 2-3 students; 5 oz. Dixie cups; plastic spoons for mixing- one for every student; small plastic animals—one for each group; trays; water; T-chart

### **Procedure:**

- 1) Put all materials out on the distribution table. Groups are in charge of gathering the following on a tray: ½ inch layer of molasses poured into pie plate; 2 Dixie cups—one with cornstarch and one with sand; one plastic animal; one spoon per person in the group.
- 2) Read the following passage to the students.

*The Imperial Mammoth was dry. He was large, even larger than the Woolly Mammoth—standing 14 feet high measured to the shoulder. Mmmm, “I’m so thirsty!” he thought. He looked out over the horizon and saw water sparkling in the distance. A Teratornis, a vulture, was flying overhead. It was huge with a wingspread of 12 feet. The mammoth decided to head in that direction to get that wonderful refreshing drink of water. As he got closer to the water, he smelled something. For a brief moment he thought he smelled something odd, but having a very simple thought processes, his thoughts turned back to water almost immediately. Finally the mammoth reached the water, bent his head, and lowered his trunk to sip up a drink. All of a sudden he felt something pulling on his feet and ankles. He tried to pick up his feet to keep moving along, but to no avail. It was not deep. He was not sinking in it but he could not get his feet out. He began to struggle. What was happening? Where was he? He could not pull free of the sticky substance... he was stuck in the tar pits. He heard the sound of grrrr growl... oh no a Smilodon! The catlike Sabertooth crept toward him ready to pounce on his prey. His sharp teeth and claws were very visible as the mammoth continued to try to escape the sticky tar. It was too late... After capturing his prey, the proud Sabertooth suddenly realized that he too was stuck in the tar. Overhead the vulture prepared to plunge down out of the sky to feast...*

- 3) What happened to the animals in the tar pit? What is the food chain we can observe?
- 4) With the ingredients given, ask the students to make a substance that would trap a prehistoric animal. (It will help to keep the mess under control if the students do all the mixing over a tray). After making the substance, pour part of it onto a paper plate and place the plastic animal's feet within it. How does it feel when you try to pull it out? Share results and recipes.
- 4) Partners or the class can make a list of properties of the class tar and the real tar in the pits. What did/would the tar feel like? What color is it? Is it a solid or a liquid? Will it pour? What properties does our tar have in common with the La Brea Tar Pits? What's different?
- 5) Clean-up procedure: plastic animals, pie plate, and spoons can be scraped off over the trash, washed out in the sink, and reused.

## **Activity: Character Descriptions**

**Summary:** Students will use information in *Secret Sabertooth* to draw (visualize) two characters, Shelly and PaleoJoe.

**Materials for Grades 1-2:** Shelly/PaleoJoe description passage (pg. 45-46)  
Chart paper  
Blank drawing paper

**Materials for Grades 3-4:** Shelly/PaleoJoe description passage (pg. 45-46)  
5-senses descriptor worksheet (attached)  
Chart paper (divided into 5 senses categories)  
Lined blank paper

### **Procedure for Grades 1-2:**

- 1) Students close eyes/listen to descriptions of Shelly and PaleoJoe at the side entrance to the museum on pages 45-46 (attached).
- 2) Make a list on chart paper of descriptions of Shelly in the text.
- 3) Draw a “class picture” that matches the descriptions.
- 4) Make a list on chart paper of all the descriptions of PaleoJoe.
- 5) Students create drawings that match the descriptions of PaleoJoe.



### **Procedure for Grade 3-4:**

- 1) Students (independently or together) read descriptions of Shelly and PaleoJoe at the side entrance to the museum (attached).
- 2) Record a class description of Shelly at the side entrance to the museum using true information from the text *and imagined information*. (Ex. She smelled like a combination of bubblegum chap stick and flowery shampoo.)
- 3) Draw a class picture of what she looked like (including imagined 5-senses information).
- 4) (Optional) Write 5-senses descriptors into a paragraph about what Shelly was like.
- 5) Students complete 5-senses descriptors worksheet to fill out for PaleoJoe (given and imagined information).
- 6) Students draw pictures to match descriptors.
- 7) (Optional) Students write descriptors into a paragraph about what PaleoJoe was like.



Name\_\_\_\_\_

Date\_\_\_\_\_

## 5 Senses Character Descriptions

Directions: Read this section of chapter 8 of The Disappearance of Dinosaur Sue. On the back, fill out the table with 5-senses descriptions (from the text and imagined).

It was raining very hard when they pulled up at the museum. The driver directed PaleoJoe to the side entrance. PaleoJoe got monstrously, soakingly, soppy wet as he dashed up the museum steps. PaleoJoe was no sprinter. The rain had plenty of time to do its job.

Inside the door he was calmly met by a small figure holding a pink umbrella in one hand and a large fuzzy towel in the other.

"Poor PaleoJoe," said the figure, sympathetically handing him the towel. "An umbrella really would have been a good idea."

With the rain dripping from his beard and running races down the brim of his floppy hat, PaleoJoe wondered why he was surprised.

He took the towel.

"Thank you, Shelly," he said.

"Always be prepared," Shelly lectured, twirling her pink umbrella. She was wearing pink rain boots to match. "And speaking of being prepared, I thought you would want this."

From her pink backpack Shelly produced PaleoJoe's canvas tool roll.

Wordlessly, PaleoJoe took it from her because, really, what was there to say?

"Whooohooo!" Shelly crowed. "Let's go kick some robber behind!"

And she danced ahead of him into the museum, a miniature force of nature dressed in pink.



## 5-Senses Table

Name \_\_\_\_\_

Date \_\_\_\_\_

What did PaleoJoe **LOOK** like?

What did PaleoJoe **SMELL** like?

What did PaleoJoe **SOUND** like?

What were PaleoJoe's **FEELINGS** like?

What were PaleoJoe's **THOUGHTS**?

## **Activity: “Nefarious” Find**

**Summary:** Students will understand the meaning of the word “nefarious,” and they will gather examples of characters that might be described as “nefarious.”

**Materials:** Large Chart Paper

### **Procedure for Grades 1-6:**

- 1) Students listen as *Secret Sabertooth* is read aloud, or students read independently.
- 2) Stop at page 83 to talk about the word “nefarious.”
  - List some characters that you think are nefarious from *Secret Sabertooth* or other stories.
- 3) Collect characters throughout book as you read on in this story and in book and others in the series.

## **Activity: Dinosaur Mix-up**

**Summary:** Students sort bone pieces (or animal) based on their characteristics and reassemble a skeleton (or animal).

**Materials:** rulers; markers; scissors; paper bags; pictures of three different animals or skeletons copied on card stock (depending on age group); There are also dinosaur skeleton puzzles available commercially if desired.

### **Procedure:**

- 1) Discuss the Old Bone Room in Book 3 or Bone Mine in Book 4. How do scientists sort the bones and figure out which bones go together? Do the bones they find always belong to the same animal?
- 2) Have the students use a ruler to draw a division pattern on the back of each of the animals on the card stock. (The younger the age group, the fewer the pieces.) Cut out the animal pieces and place them all together in a paper sack.
- 3) Exchange bags. Students examine each piece, determine the appropriate animal, and reassemble the cardstock pictures.

\*The complexity of the activity could be varied easily for younger or older students.

\* A website with drawings to use for your puzzle-

[www.mcps.k12.md.us/schools/knollses/dinosaurs/DINOGR/Allo.gif](http://www.mcps.k12.md.us/schools/knollses/dinosaurs/DINOGR/Allo.gif)

\*[www.dinosaurdiscovery.com/dinosaur-kits.html](http://www.dinosaurdiscovery.com/dinosaur-kits.html) This site has dinosaur skeleton puzzles of four different dinosaurs.

## **Activity: The High Price of Gas: How To Make Petroleum**

**Summary:** Students will describe the formation of petroleum and recognize the importance of fossil fuels as non-renewable resources.

**Materials-** Secret Sabertooth Chapter 19, recipe cards, pencils, example of a recipe.

### **Procedure:**

This part should be done before reading chapter 19.

- 1) What is Petroleum? How do you think we get petroleum? Read Dakota's initial ideas about petroleum on p. 128.
- 2) It really takes the right ingredients and conditions to make petroleum—almost like a recipe. Show a recipe for food so students see the format. On Side One of the recipe card, have students write down the ingredients, amounts, and conditions they feel the earth must provide in order to make petroleum. Share some ideas.
- 3) As a class read p. 129 (or read this passage aloud to the class).  
“You have to think of the creation of petroleum like a recipe,” said PaleoJoe. “The first ingredients are living plants and animals.” Continue reading and discussing the chapter.
- 4) Students now will write the correct recipe for petroleum on Side Two of the recipe card. Using the information and knowledge gained from the book and class discussion, students list ingredients, amounts, and conditions the earth must provide in order to make petroleum.
- 5) Are all of our recipes the same? What can be different? What must be the same?
- 6) It takes between 5 and 5,000,000 years for petroleum to be produced. What happens if we run out in 100 years? 10 years? Discuss the meaning of being a fossil fuel. Is petroleum a renewable or non-renewable resource? What is a renewable resource that we could use when petroleum runs out?

## **Activity: Tooth be Told**

**Summary:** Students observe features (mainly teeth) of dinosaurs, determine whether they are herbivores, carnivores, or omnivores, and create dinosaur food chains. Students research, classify the type of eater, make a tooth model, and eat like a dinosaur of their choice.

**Materials:** Model Magic (or Playdoh); meat snacks; vegetable snacks; paper plates; pictures of herbivores, omnivores, and carnivores; toothpicks; optional: pumpkin cutter knives;

### **Procedure:**

- 1) Imagine holding the tooth of the Saber-tooth cat from Secret Saber-tooth. Looking at an animal's teeth gives clues to the kind of food they eat and how they lived. Teeth are harder than bone and fossilize easier. What does this tooth alone tell about the Saber-tooth cat? Explore and look at pictures of different dinosaur's teeth. Discuss the shape of the teeth, how many teeth they had, and the purpose of different teeth. Did the dinosaur chew his food, crush it or just swallow it as fast as he could. How much further digestion was required after eating? What kind of food did the dinosaur eat based on the structure of his teeth?
- 2) Discuss the vocabulary: herbivores, carnivores, and omnivores. Which dinosaurs were which? What kinds of food did they eat? What do the carnivores have in common? How about herbivores? Omnivores? Show pictures throughout the discussion—what features besides teeth are clues to the types of eaters they are?
- 3) Ask the students to choose a favorite dinosaur to research. They need to find out the shape of its teeth, number of teeth, other digestive processes used, and of course, its diet. Was the dinosaur an herbivore, carnivore, or an omnivore?
- 4) Pass out a ball of Model Magic to each student. Give them each a 3-inch diameter ball. Ask the students to make a model out of Model Magic of the kind of teeth their chosen dinosaur had. Were they serrated, spoon-shaped, peg-like, or maybe no teeth at all?
- 5) Plan a time for sharing—either after research and model-making or while snacking.
- 6) Have a dinosaur snack time. Children can prepare the snack themselves by using pumpkin cutter knives and cutting pieces of snacks in small pieces or the foods could be cut up ahead of time by the teacher.

7) Students can simulate the eating habits of the dinosaur they researched as they take a plate and pick out the foods. Are you eating only the foods that your dinosaur ate? If not, remember the teeth your dinosaur has—chew the snack only with those. How do you like eating like a dinosaur?

8) While finishing up the snack, make food chains with dinosaur examples. What are the student food chains for this mini-meal?



## **Book 3 – Secret Sabertooth**

**PaleoJoe Home Page:** <http://www.paleojoe.com/>

**La Brea Tar Pits Museum:** <http://www.tarpits.org/>

- Return to the Ice Age – an exploration guide. Click through and learn about how these "tar pits" formed, what types of plants and animals became trapped, and how scientists have used these fossil deposits to open a window into the world of prehistoric Los Angeles.
- La Brea Geology.
- La Brea Flora and Fauna.
- Human Exploration and Excavations.
- Ice Age Adventure Story – Shasta's Sticky Situation.

**Wikipedia La Brea Tar Pits:**

[http://en.wikipedia.org/wiki/La\\_Brea\\_Tar\\_Pits](http://en.wikipedia.org/wiki/La_Brea_Tar_Pits)

**La Brea Tar Pits Photo Tour:** <http://rth.org/tarpits/>

- Photos outside the park and inside the museum.

**Pleistocene Era:**

<http://www.ucmp.berkeley.edu/quaternary/ple.html>

- Info on the Pleistocene Era with links to Saber-toothed Cat, plants, insects, mammals, mammoths, mastodons.

**Saber-toothed Cat:**

<http://www.enchantedlearning.com/subjects/mammals/smilodon/Smilodonprintout.shtml>

- Print out and information available on saber-toothed cat.

<http://www.nhm.org/cats/encyclo/smilodon/>

- Natural History Museum information and pictures.

[http://en.wikipedia.org/wiki/Saber-toothed\\_cat](http://en.wikipedia.org/wiki/Saber-toothed_cat)

- Wikipedia

### **Dire Wolf:**

[http://www.naturalworlds.org/wolf/history/Canis\\_dirus.htm](http://www.naturalworlds.org/wolf/history/Canis_dirus.htm)

- Information and pictures on the Dire wolf.

[http://en.wikipedia.org/wiki/Dire\\_Wolf](http://en.wikipedia.org/wiki/Dire_Wolf)

- Wikipedia.

### **Carbon Dating:**

<http://science.howstuffworks.com/carbon-14.htm>

- How Carbon-14 dating works.
- How Carbon-14 is made.
- Dating a fossil.

**Google Earth:** <http://earth.google.com/>

Free download BUT the Google Earth client requires certain system configurations in order to run smoothly:

#### **PC Minimum configuration:**

- \* Operating System: Windows 2000, Windows XP
- \* CPU: Pentium 3, 500Mhz - System Memory (RAM): 128MB RAM
- \* Hard Disk: 400MB free space
- \* Network Speed: 128 Kbits/sec
- \* Graphics Card: 3D-capable with 16MB of VRAM
- \* Screen: 1024x768, "16-bit High Color" screen

#### **PC Recommended configuration:**

- \* Operating System: Windows XP
- \* CPU: Pentium 4 2.4GHz+ or AMD 2400xp+
- \* System Memory (RAM): 512MB RAM
- \* Hard Disk: 2GB free space
- \* Network Speed: 768 Kbits/sec
- \* Graphics Card: 3D-capable with 32MB of VRAM
- \* Screen: 1280x1024, "32-bit True Color" screen

#### **Mac Minimum Configuration:**

- \* Operating System: Mac OS X 10.3.9
- \* CPU: G3 500Mhz
- \* System Memory (RAM): 256MB RAM
- \* Hard Disk: 400MB free space
- \* Network Speed: 128 Kbits/sec
- \* Graphics Card: 3D-capable with 16MB of VRAM

\* Screen: 1024x768, "16-bit High Color" screen

**Mac Recommended Configuration:**

\* Operating System: Mac OSX 10.4.8  
\* CPU: G4 1.2Ghz  
\* System Memory (RAM): 512MB RAM  
\* Hard Disk: 2GB free space  
\* Network Speed: 768 Kbits/sec  
\* Graphics Card: 3D-capable with 32MB of VRAM  
\* Screen: 1280x1024, "32-bit True Color" screen

**Journal With Links:**

<http://www.dinosauria.com/jdp/jdp.htm>

- Archaeopteryz, Ancient Birds, and Dinosaur-Bird Relationships.
- Dinosauria.
- Dromaeosaurids.
- Fossilization.
- Impact Theories and Extinction Events.
- Legal Issues.
- News and New Discoveries
- Miscellaneous

## **Activity: History of the Earth in Inches**

**Summary:** Students conceptualize and measure the age of the earth and major earth events by using a much smaller scale.

**Materials Gr. 1-2:** master sheet, string with timeline markings, cards with name of each earth event, markers

**Materials Gr. 3-6:** master sheet, 38 ft. string for each group, permanent marker, small cards for writing earth events, tape, measuring tape, yardstick, rulers

### **Procedure Gr. 1-2:**

- 1) How old are you? How old am I? How old is your grandparent? How old is the earth? Show what 4.5 billion looks like as a number. What does that mean? If the earth is that old, how long ago did the dinosaurs live? Show 200,000,000 years ago. It's hard to understand these numbers—let's look at the history of the earth in a different way.
- 2) Provide each student with a card labeled with an earth event and its corresponding measurement. Have them draw a picture that represents his/her event on the card.
- 3) Lay the string in a large space. Each student sits or stands by the appropriate marking on the string when done. Call out the first event and measurement; the first student stands and shows his/her picture and place on the string. Repeat for the subsequent events/students.
- 4) Discuss the results. Where would your birthday fit on the string?

### **Procedure: Gr. 3-6:**

- 1) How old are you? How old am I? How old is your grandparent? How old is the earth? Show what 4.5 billion looks like as a number. What does that mean? If that earth is that old, how long ago did the dinosaurs live? Show 200,000,000 years ago. It's hard to understand and compare the ages of things with these numbers—let's look at the history of the earth in a different.
- 2) Provide each group with the master sheet, 38 ft. string, permanent marker, cards, tape, and measuring equipment. They are to show a timeline of the history of the earth by measuring, marking, and taping a label on their string.
- 3) When groups are done, they lay their strings right next to each other and compare. Discuss the results. Do our histories match? What surprised you? Where would your birthday fit on the string?

<b>LENGTH OF STRING FROM START</b>	<b>YEARS AGO</b>	<b>EVENTS</b>
38 feet	4.5 billion	Earth begins
29 feet	3.5 billion	Life begins
25 feet	3 billion	First fossils form (algae, bacteria)
5 feet	600 million	Jellyfish, sponges and worms
4 feet	480 million	First primitive fish
40 inches	400 million	Earliest land plants
35 inches	350 million	Amphibians and early land animals
31 inches	310 million	First reptiles
27 inches	270 million	Reptiles rule
20 inches	200 million	Age of Dinosaurs begins
18 inches	180 million	Flowering plants
16 inches	160 million	Birds appear, dino- saurs abundant
7 inches	70 million	Modern birds develop
6.5 inches	65 million	Dinosaurs gone
5 inches	50 million	Birds and mammals
0.5 inches	5 million	First Humans
Thickness of a fingernail	10,000	Last Ice Age Over

## **Activity: Dinosaurs On the Move**

**Summary:** Students investigate dinosaur physical features and movements in order to create a flipbook.

**Materials:** Paper pieces cut to 4" x 3" pencils; markers; scissors; staplers

### **Procedure:**

- 1) Ask the students if they noticed a little secret on the pages of each Dinosaur Detective book. Each has its own flipbook showing the movement of a dinosaur involved in the story. Have students flip through to observe the movements.
- 2) Brainstorm the ways that dinosaurs moved. Have books available to research the physical features and movements of dinosaurs.
- 3) Cut white printer paper in 4 inches x 3 inches pieces for the pages of the book. Distribute twenty per student. What steps need to be taken to make a flipbook? Do you think numbering pages would be helpful on the back? What will give the best results?
- 4) Have the students choose a dinosaur and make a flipbook that demonstrates the dinosaur's movement. Make a cover with the name of the dinosaur and staple all of the pages.
- 5) Exchange books with other class members to see the different choices and how they move.

## **Activity: Mapping the Dinosaur Detectives**

**Summary:** Students will locate on a U.S. map and describe the geography of the places the Dinosaur Detectives visit in each book. They will use cardinal and intermediate directions, estimate distances using the map scale, and calculate actual distances in miles to map their journeys.

**Materials:** U.S. Wall Map, colored pushpins, colored yarn, reference book/atlas for mileage and geographical information

### **Procedures:**

- 1) Prior to reading the Dinosaur Detective Club Series, mount a U.S. map on the wall so that the students will be able to locate the starting points and various destinations traveled to by the characters. Color code the yarn and push pins so that each color represents a different book. Make a legend of the colors and which book they represent. For example: Book 1- red yarn, red pushpin, red card with mileage.
- 2) As each book is read, map the travels of the characters by pinpointing locations and connecting them with yarn. Discuss which direction they went using cardinal and intermediate directions. Estimate the distance using the map scale. Calculate the mileage between locations and tally for the various books.
- 3) Discuss the geography of the place they visit. What is the climate there? What is the topography? Is there a time change? How long did it take them to get there? How many students have been to these locations?

## **Activity: Majestic Models**

**Summary:** Students research historical information, physical characteristics, and habits of dinosaurs in order to make a dinosaur museum exhibit.

**Materials:** clay (art clay, that can be fired and glazed); glaze; clay tools; dinosaur books for reference; kiln; boxes; paint; items for habitats; exhibit cards

### **Procedure:**

- 1) What is a model? Show a globe, toy car, plastic bug, etc. How are these models the same as the items they represent? How are they different?
- 2) Have students think about the physical characteristics of dinosaurs. How would they feel? What textures would be on some dinosaurs and not others? What were some unique features they could have? What features need to be included on a model?
- 3) Have students peruse the dinosaur books. Each student chooses a different kind of dinosaur to make out of clay.
- 4) Distribute clay blocks to use for each student. Model different pinching techniques that could be used to make the plates, mouth, spikes, etc.
- 4) Fire. Glaze and fire again.
- 5) Upon completion, create a classroom museum with mini-dinosaur exhibits. Using a display box of your choosing, students create the habitat for their specific dinosaur. Exhibit cards including the name of the dinosaur, habitat, period it lived, diet and other interesting facts could be displayed on each box.
- 6) Invite other classes and parents to parade through to view the exhibit.



## **Activity: Edible Rock Layers**

**Summary:** Students describe how sedimentary rocks are used to understand the history of the earth. They act as scientists as they observe, sketch, and describe properties of edible rocks and match their sample to a scientist's description.

**Materials:** sedimentary rock samples; Three Musketeers, Milky Way, Kit Kat, and Twix candy bars—all cut in 1x1 inch squares; descriptions of rock samples; small paper plates; paper, pencil

### **Procedure:**

- 1) Cut up small squares of the candy samples and arrange at a distribution sight. Ask the students to pick out one small sample, place it on a paper plate, and take it back to their seats. Students should select different samples.
- 2) When reading the Dinosaur Detective Club Series books, discuss how the layers of rock and fossil locations tell a story. Explain that geologists look at rock samples very closely to determine their composition and age. The layers and features found in sedimentary rocks show the history of the earth—animals living at a particular time, changes in the ocean levels, catastrophic events. Show samples of sedimentary rock. Geologists and paleontologists use detailed sketches and descriptive language to describe rock samples because they truly tell the story of the earth.
- 3) Tell students that they have a slice of sedimentary rock taken from the earth. Students are to make a detailed sketch of their rock sample. They also need to write and describe in detail their rock sample so that another scientist would be able to pick the sample out of a group.
- 4) In groups of 4-6, students mix up their descriptions and rock samples. Rotate groups so that a new set up students now must match the other student descriptions with the samples. Switch back and determine the success.
- 5) Read the four given descriptions of the rock samples (page 2) out loud and distribute copies of them. Have the students select the description that they feel matches their rock sample.
- 6) Reveal the identities. Hand out the left over samples!

Teacher Notes:

- |                     |              |
|---------------------|--------------|
| 1. Three Musketeers | 2. Milky Way |
| 3. Kit Kat          | 4. Twix      |

### Sample 1

Sample has a similarly colored light brown interior with a few small tiny holes. The exterior looks like a fairly regular, dark brown blended crust with some patterning.

### Sample 2

**Outside:** Thin medium brown layer with wavy ripple marks on the bottom

**Inside: Bottom-** dense dark buff layer

**Top-** shiny, smooth, medium tan layer

### Sample 3

Four segments of layered material.

**Outside:** Thin medium brown

**Inside:** Alternating light and medium colored material

### Sample 4

**Outside:** Thin medium layer with wavy ripples on the bottom

**Inside: Bottom-** poorly consolidated light tan porous layer

**Top-** shiny smooth medium tan layer

## **Activity: Earth: This is Your Life**

**Summary:** Students describe the changes in the history of the earth throughout its 4.5 billion years by constructing an illustrated, informational timeline and role-playing an organism or feature from the past.

**Materials:** reference books or computer resources; paper; colored pencils; tape; microphone; clip from “This is Your Life” ([www.tv.com](http://www.tv.com))

### **Procedure:**

- 1) In talking about the lifetime of a person, how would you divide his/her life into parts? By the decade—their twenties, thirties? By major events in their life—graduations, marriage, children, travels, retirement? When dealing with the earth’s lifetime, it gets a little more complicated. How do scientists divide up such a massive amount of time—4.5 billion years?
- 2) Provide students with some background regarding the three eras, their division into periods, and how scientists determined this timeframe. What makes us move to a new era or period in the life of Earth?
- 3) Have partners select a period in the history of the earth (draw from a hat). Each group is responsible for researching and depicting the years, vegetation, climate, plant and animal life, position of continents, and evolutionary stages present during their period.
- 4) Students connect the periods in sequential order in a colorful timeline to be displayed in the room.
- 5) In order to share the information, present “Earth: This is Your Life.” Show a clip from a show to see the format. Each partner group acts as a living thing or feature present during their particular period. They come out and remind the earth about their qualities and what the earth was like during that period. Earth remembers each flash from the past!

## **Activity: Geometric Dinos**

**Summary:** Students identify geometric shapes and solids alone and within another shape (a dinosaur!). They then use their geometric properties to create their own dinosaur.

**Materials:** geometric shapes and solids for modeling; cut-outs of geometric shapes and solids; construction paper; gluestick; dinosaur books

### **Procedure:**

\*For students who haven't read *Raptor's Revenge*, proceed to reviewing geometric shapes and solids step.

- 1) In *Raptor's Revenge*, Shelly and Dakota saw petroglyphs on the walls of Calamity Canyon. These etchings (most likely done eight hundred years ago by the Fremont Indians) used geometric shapes (trapezoids, squares, circles) to depict human figures and actions.
- 2) Read the passage on p. 137. What is a trapezoid? What would it look like with a square on top? Possibly a head and body? Review geometric shapes with students including the following: rectangle, square, oval, circle, trapezoid, rhombus, triangle, pentagon, hexagon, and octagon. Expanding the lesson to geometric solids such as cone, pyramid, cylinder, sphere, cube, and rectangular prism would also be beneficial.
- 3) Show some pictures of dinosaurs. Do you see any geometric shapes (or solids) in their features? What part of the dinosaur is similar to a triangle? A rectangle? An oval? A cone? A cylinder?
- 4) Using various size cut-outs of geometric shapes and solids, students will design their geometric dinosaur. Provide students with dinosaur books to give them ideas, but tell them to be creative in their placement of shapes. Students should use a variety of shapes and solids; there is no limit on the number of each used.
- 5) Students can name and display their geometric creations. Sharing their geometric features is a good review for all.

### **Annotated Bibliography for Dinosaur Detective Series**

Fradin, Dennis B. With a little luck : surprising stories of amazing discoveries. Dutton Children's Books, c2006.

This easily accessible book for middle grades includes a chapter on Mary Anning, the princess of paleontology.

Harrison, David L. Cave detectives : unraveling the mystery of an Ice Age cave. Chronicle Books, c2007.

With plenty of color pictures and interesting text for middle grade readers, this book explores a cave and the bones found in it.

Larson, Peter L. Bones rock! : everything you need to know to be a paleontologist. Invisible Cities Press, c2004.

Young readers will learn how to dig for fossils, clean them, keep records, and develop and test theories. Also included are descriptions of projects from the authors' experience, including the excavation of Sue, the Tyrannosaurus Rex.

Marrin, Albert. Secrets from the rocks : dinosaur hunting with Roy Chapman Andrews. Dutton Children's Books, c2002.

Roy Chapman Andrews adventures in the Gobi Desert in Mongolia are talked about in Book 2 of PaleoJoe. This book adds more information that students want on this intriguing expedition.

Kelsey, Elin. Canadian dinosaurs. Maple Tree Press ;, c2003.

Using photos and illustrations along with a rich text, this book focuses on the dinosaurs found in Canada

Kerley, Barbara. The dinosaurs of Waterhouse Hawkins. Scholastic, 2000.

Victorian artist Benjamin Waterhouse Hawkins built life-sized models of dinosaurs as he tried to tell the world about these amazing animals. The lush illustrations and interesting and unique details will appeal to all ages.

Potts, Professor. Uneversaurus. David Fickling Books, c2006.

With humor and enthusiasm, this book offers the reader the chance to speculate on one thing we will never know about dinosaurs—what color they were.

Arnold, Caroline. Dinosaurs with feathers : the ancestors of modern birds. Clarion Books, c2001.

While we think of most dinosaurs as reptilian, this book, with colorful illustrations, offers a discussion of why scientists now believe that there were dinosaurs with feathers.

Aliki. Wild and woolly mammoths. HarperCollins, c1996.

As in all books by Aliki, a simple text and many illustrations are offered to describe the woolly mammoth.

Mash, Robert, 1939-. How to keep dinosaurs. Weidenfeld & Nicolson, 2003.  
For a little humor, especially for older readers, take a look at his guide to the care and feeding of the dinosaur that you might decide to keep for a pet.

Fleischman, Paul. Time train. HarperCollinsPublishers, c1991.  
This is something of a classic, in no small part because of its intriguing and enticing illustrations, as it tells the story of a class that travels back to the time of the dinosaurs.

Rohmann, Eric. Time flies. Crown, c1994. Without a single written word, this story uses vibrant illustrations to follow a bird into the museum of natural history where the dinosaurs seem to come alive.

Yolen, Jane. How do dinosaurs say good night? Blue Sky Press, c2000.  
There are now several in this series of anthropomorphized dinosaurs setting a good example for picture book readers.

Alphin, Elaine Marie. Dinosaur hunter. HarperCollins, c2003.  
This easy reader is set in Wyoming in the 1880s where a young boy finds a dinosaur skeleton on his father's ranch.

Hoff, Syd, Danny and the dinosaur. Harper & Row, c1958.  
This is the classic early reader about dinosaurs—a tale of friendship that continues to delight youngsters after all these years.

McLeod, Kate, Outback adventure. DK Pub., 2004.  
James and his family find dinosaur footprints as they explore Australia..

Butterworth, Oliver. The enormous egg. Boston : Little Brown, 1956.  
This story of a boy and an egg that hatches a dinosaur has become a classic.

Conrad, Pam. My Daniel. Harper & Row, c1989.  
A grandmother tells stories of her brother's historical quest for dinosaur bones on their Nebraska farm.

Dickinson, Peter, A bone from a dry sea. Delacorte Press, 1993.  
Upper elementary and middle school students love these two parallel stories. A woman of a prehistoric group works to advance her people, and the daughter of a paleontologist is there when important fossil remains are discovered on a dig in Africa.

Richler, Mordecai, Jacob Two-Two and the dinosaur. Knopf :, c1987.  
Jacob runs away with him to British Columbia when the lizard, now identified as a Diplodocus, frightens the adults around him. Jacob Two-Two is an appealing and humorous young boy who appeals to early to mid-grade readers.

# **General Websites for Paleontology and Dinosaurs**

Emerson School

2006-2007

**The Paleontology Portal:** <http://www.paleoportal.org/>

**Strange Science:** <http://www.strangescience.net/>

**American Museum of Natural History: Division of Paleontology:** <http://paleo.amnh.org/>

**National Geographic News:**  
<http://news.nationalgeographic.com/news/archaeology.html>

**University of California Museum of Paleontology:**  
<http://www.ucmp.berkeley.edu/>

**Great Websites for Kids - Dinosaurs:**  
<http://www.ala.org./gwstemplate.cfm?section=greatwebsites&template=/cfapps/gws/displaysection.cfm&sec=2>

**Children's Museum - Dinosphere:**  
<http://www.childrensmuseum.org/dinosphere/index.html>

**Classroom Clipart - Dinosaurs:**  
<http://classroomclipart.com/cgi-bin/kids/imageFolio.cgi?direct=Dinosaurs>

**Understanding Evolution for Teachers:**  
<http://evolution.berkeley.edu/evosite/evohome.html>