

## Mastodon Curriculum Grade 4 Mathematics

### UGH! There's a Mastodon in my Classroom.

- **Standard 4.3.2:** Use and interpret formulas to answer questions about quantities and their relationships.
- **Standard 4.5.4** Know and use formulas for finding the areas of rectangles and squares.
- **Standard 4.5.7** Find areas of shapes by dividing them into basic shapes such as rectangles and triangles.

**Lesson:** Using the formula to determine area of a rectangle (Use  $A$  for area,  $l$  for length, and  $w$  for width), determine the following:

- The number of mastodons that can fit in your classroom. (Note: Assume that mastodons were about 8 feet high at the shoulder and about 12 feet tall altogether. Assume they were about 5 feet thick (wide) at their biggest point and had ears 1 to 2 feet long. From tip of tail to end of proboscis, assume they were about 9 feet long. Measure your classroom for length and width. Measure in feet and yards. Which unit is easier to use for this problem? Explain in words (orally to the class) the process you used to solve this problem. (A good problem for small group work)
- How many mastodons would fit in your kitchen/living room/bedroom at home? Choose the unit of measure you feel is most appropriate to the problem. (How quickly did students realize that most houses don't have 12 ft. ceilings; thus zero mastodons would fit? If ceilings are high enough, however, students might need to find area of kitchen or other room by dividing the space into various shapes (**Standard 4.5.7**), measure those and then add to determine the total area.
- How big would a cage or confined space have to be in area for four mastodons to stand in? To turn around in? Explain your reasoning. (Discussion may go to: Should mastodons be caged or confined?)

#### **For Evaluating, Thinking/Interpreting, and Concluding:**

**Problem:** Estimate how big a park would have to be for a herd of 6 mastodons to walk around in. Explain how you went about determining your answer. What did you need to assume? Which unit of measurement worked best and why? (Good for small group or as individual challenge)

### Anyone Care to Rhombus?

- **Standard 4.4.6** Geometry/Construct cubes and prisms and describe their attributes

**Lesson:** Using the mastodon shape in Appendix. Fill in the shape using only combinations of the following geometric shapes: parallelogram, prism, rhombus, trapezoid, and/or quadrilateral. Use a geoboard where appropriate. See how much detail you can achieve with the basic geometric shapes? Can you adjust shapes to be closer to the mastodon outline? Make a bar graph of the numbers and types of shapes you used.

### For Evaluating, Thinking/Interpreting, and Concluding

**Problem: The Geometric ‘Don:** This problem addresses a number of the markers in **Standard 7 on Problem Solving.** Create a dimensional model of a mastodon (with clay or folded paper or other appropriate medium), using cubes, prisms, spheres, cones, cylinders, and any other geometric shapes you have studied. Write a paragraph that lists the problems you had with this experience. Include an explanation of how you dealt with the problem of measurement. In another paragraph, explain how you solved the problem of keeping all the appendages (head, trunk, legs, ears, and tail) stuck to the body. State what you would change about your approach to this problem if you were to do it over.

**(Note:** Teachers will want to find a place to exhibit any *Geometric ‘Dons* the students complete. This experience is a difficult one; try to allow plenty of time between the assignment and due date. Goal is for students to discover that the skeleton (or an *armature* to the ‘sculptor artist’) is an inner frame that holds the parts together. Students should look carefully after the assignment at the skeletal “frame” included in Appendix.

### Language Arts

#### A Proboscis by Any Other Name Is a Nose

- **Standard 1:** Reading/Word Recognition and Vocabulary Development

**Vocabularyasaurus Lesson:** Learn as many of the words from the Mastodon Vocabulary List as you can fit into your studies. Use the Vocabulary Map in Appendix for your study.

#### Mastodon Vocabulary List

**Carnivore**

**Catastrophe**

Dinosaur

**Extinct**

Fossil

**Geology**

**Habitat**

**Herbivore**

Ice age

Insectivore

Land bridge

Life span

Mammoth

**Mastodon**

**Migration**

Omnivore

Proboscis

Quadruped

Reptile

Sediment

Tusks

Vertebrae

**Extinction Lesson (Oh Where, Oh Where Has My Mastodon Gone?)**

For the concept of extinction, use the music/lyrics in the book *Crocodile Smile* by Sarah Weeks and Lois Ehlert (track 6 on the CD included with book). In fact, many of the tracks on this CD relate to balance, habitat preservation, and concern for other species as necessary conditions to support life.

Understanding extinction is a key outcome of the mastodon study. Check the Internet, ACPL holdings, and other locations for enriching materials on the concept of extinction. Ask students to list names of creatures they believe to be extinct and those they believe to be endangered. Discuss with students what they can do to make a difference.

One of the goals of the mastodon project is for student to understand their role as valuable members of their community with responsibilities to help where and how they can. If appropriate, class or individuals might wish to work to contribute to Saving the Rainforest or contacting environmentalists to ask what they can do, or contributing to local projects that improve our habitat.

**Is it a Bird or a Plane? Nope, it's SuperStories**

- **Standard 3:** Reading/Literary Response Analysis /Structural Features of literature, Narrative Analysis with figurative language

**Lesson:** List details (actions, qualities, or traits) that a writer could use in writing about mastodons for each of the following types of imaginative literature: a fantasy, fable, myth, legend, and/or fairy tale.

Also, determine which type/s of imaginative literature the following details might best fit into:

- The mastodon has amazing power to fly when there is a full moon.
- The mastodon has a hump in its back because it helped pull a dinosaur out of a pit.
- The mastodon is thought to have magical powers to transform toads into trees, pigs into pinecones, and dinosaurs into colorful leaves and twigs.
- The big, strong mastodon and the small red ant became friends.
- Once upon a time the mastodon saved the state of Indiana.
- When there is a blue moon, you know the mastodon is once again prowling in the night skies.

**Lesson:** Write a paragraph (up to a page) about the mastodon, using facts you have found/learned. In the paragraph, include two examples of figurative language from the following: simile, metaphor, hyperbole, personification. Share paragraphs by exchanging with others in class (or by reading aloud). Listeners should identify the figures of speech they hear/see.

**The End is in the Beginning**

- **Standard 4:** Writing/Writing Process (Organization and Focus and Research and Technology)

**Lesson:** Write an informational article for the school parent newsletter, school newspaper, school website, or local newspaper about the mastodon. Length should be between 400-600 words. Include an introduction, body, and conclusion. Each paragraph should have a central idea and be supported with facts, details, or explanations. Cite one (or more) references used (may use information in Teacher Packet; if you do, cite Dr. Jack Sunderman as the author; may also use websites, encyclopedias, or other books). Allen County Public Library has a listing of books on mastodons. Check ACPL website to locate and put a hold on books.

Articles could be on: Why Mastodons went Extinct, All about the Mastodon Tooth, The Mastodon Diet, Similarities between Students and Mastodons...or anything else that gives students a chance to use what they have learned.

**The Play's the Thing**

- **Standard 5:** Writing/Applications (Write narratives, informational report/Write for different purposes)

**Lesson:** Write any of the following:

- An informational report that explains how/why mastodons went extinct. Length should be between 600-1300 words. Use varied word choices to make writing interesting. Include facts and details and use two or more sources of information. The information in *Teacher Packet* in this material could be one source. Cite Dr. Jack Sunderman as the author if you use *Teacher Packet* material.
- Write a narrative that explains how the mastodon originated in Africa and migrated eventually to South America. Give dates (where known) of migrations. Use a map, if available, to trace the route. Explain the land bridge between Russia and Alaska that existed in the Ice Age.
- Write a narrative that explains the habitat in Indiana during the Ice Age. Include details about climate, presence of life (both creatures and plants/trees). Include how the fingers of ice advanced and receded throughout the period. Do not copy sentences from an article in a reference book/website. Use the details but put them in your own words.
- Write a persuasive report that encourages us to protect endangered species (or a particular plant or animal). Define what you mean by the word *protect*.

**Eats, Shoots, Leaves**

- **Standard 6:** Writing/Written English Language Conventions

Students should use punctuation, sentence structure, capitalization, spelling, handwriting standards for their grade level for all writing assignments.