Data Analysis

ADVERTISEMENT DATA

OBJECTIVE:

Students will interpret data contained in newspaper ads and they will create and solve word problems by using that data.

ASSESSMENT:

Based on the problems the students create and on the solutions they find with a focus on the student's ability to interpret real-world data.

MATERIALS:

1. Newspapers
2. Construction paper

TEACHER DIRECTED:

1. Show the students an overhead copy of a newspaper ad. Ask the kids for ideas about new things that they now know that they didn't know before. Repeat.
2. Point out that a newspaper ad is a means of communication. The makers of the product are trying to communicate information to the readers so as to encourage them to buy.
3. Say, "I am interested in the numerical information being communicated. Can anyone give me one piece of information that is being communicated." Share some ideas.
4. Discuss the various methods the creators of the ad are using to communicate data.
5. Ask if any of the kids can think of a word problem that could be solved using only the information contained in the ad.
6. Go over a few examples.

CHALLENGE ACTIVITY:

1. Distribute a newspaper to every pair of students.
2. Tell them that each student should select and cut out an advertisement from the paper.
3. Each student should then write 1 or 2 word problems based on the information contained in the ads.
4. Refer to **NCTM - Number Sense and Operations**, pp. 53-54 for additional ideas.

CLOSURE:

1. Call on students to read problems and discuss the process they used to solve them.

BAR GRAPHS AND STRONG TOWELS

OBJECTIVE:

Students will collect, organize, communicate, and interpret data as they perform an experiment, create a bar graph, and analyze the data they've collected.

MATERIALS:

1. Paper towels, sand, "Kool-Aid scoops"
2. "Strong Towel Competition" charts (Math-Draw)

TEACHER DIRECTED:

1. Show a transparency of an example bar graph that is incomplete. Work with the kids to fix it. Mention all the points mentioned on the "Bar Graph" overhead (next page).
2. Discuss pictographs as well.
3. As a class, go through the problems in the text, pp. 10&11.

- This activity is from **NCTM - Making Sense of Data**, pp. 30-31
  1. Explain to the kids that today they will conduct some experiments and graph the data they gather as a result of the experiments.
  2. Show the students how to create a ***bar graph*** using the *prices* of various brands of paper towels.
  3. Talk about advertisements that claim this or that paper towel is very strong. Tell the students that today we will scientifically verify or dispute those claims.
  4. Explain that in groups of four they will take one brand of paper towel and saturate it with water. Demonstrate.
  5. As two group members hold the towel, another group member will slowly put scoops of sand on the towel. Demonstrate.
  6. This will continue until the towel breaks. At that point a fourth group member should record the greatest number of scoops that particular brand was able to hold.
  7. Students should repeat the experiment for all of the brands of paper towels they have available.

ACTIVITY:

1. Distribute paper towels, sand, scoops, and the "Strong Towel Competition" chart.
2. Instruct students to record their data on the "Strong Towel Competition" activity sheet.
3. Remind the students to graph the data (on construction paper) once they've collected it.

CLOSURE:

1. Display on the overhead the prices of the various paper towels.
2. Tell each group to choose one brand that they think is the best buy. It can be based on price, strength, attractiveness or on anything else they think is important.
3. Have them create an advertisement for that product which highlights the information.
4. Select a group to share their selection with the rest of the class and to then explain and defend their choice.

Bar Graphs

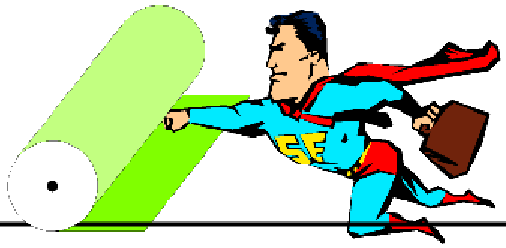
- should include a clear and descriptive heading

Horizontal axis (on the bottom)

- shows the names of the things being compared

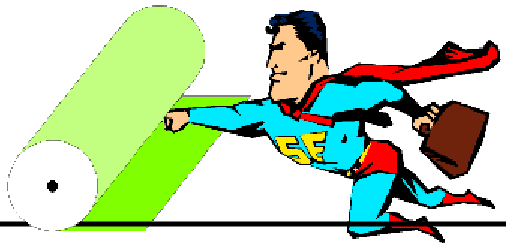
Vertical axis (along the side)

- shows amounts
- the numbers are evenly spaced and listed in equal increments
- a label should indicate what the amounts show
  i.e.; “Height (in feet)”, “Number of Trophies Received”



THE STRONG TOWEL COMPETITION

Brand of Paper Towel	Maximum "Scoop" Capacity when Wet



THE STRONG TOWEL COMPETITION

Brand of Paper Towel	Maximum "Scoop" Capacity when Wet

HUMAN CIRCLE GRAPH

OBJECTIVE:

Students will create a circle graph using data collected in a class opinion poll.

ASSESSMENT:

Based on the circle graph the students create with an emphasis on their understanding and ability to interpret and communicate data.

MATERIALS:

1. String or yarn
2. Meter strips
3. Colored markers

TEACHER DIRECTED:

1. Say, "I want to collect some data and then create a ***graph*** to communicate the data. We will take an opinion poll and use that data to create a graph."
2. Brainstorm with the class about questions that might be asked.

CHALLENGE ACTIVITY:

1. Refer to NCTM - Making Sense of Data, pp. 42-43
2 Go outside to construct the human circle graph.
3. Have the students put a circle graph in their journals.

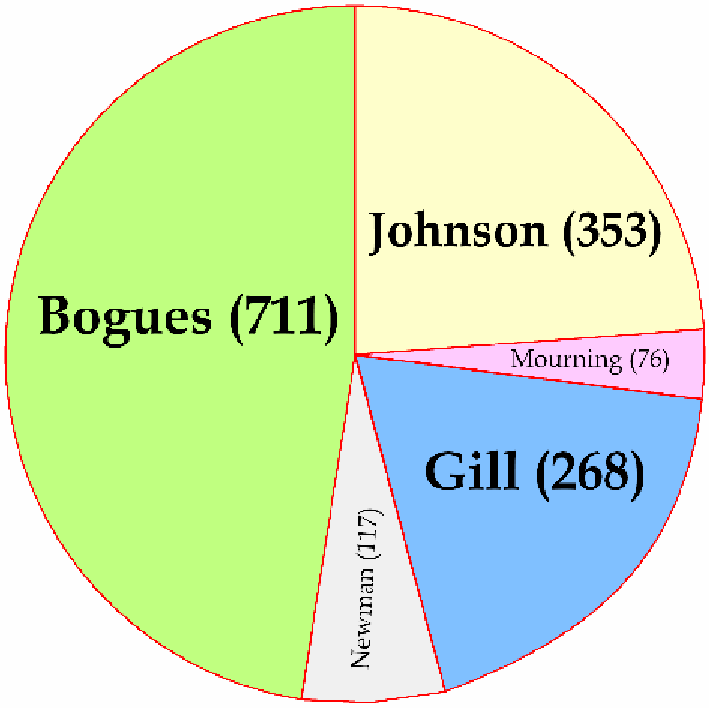
CLOSURE:

1. Discuss when a circle graph is appropriate and when it isn't.
2. Take suggestions as to when we might use a circle graph to communicate information.
3. As a class, create a circle graph using "World Population" data (from NCTM - Making Sense of Data, p.44).

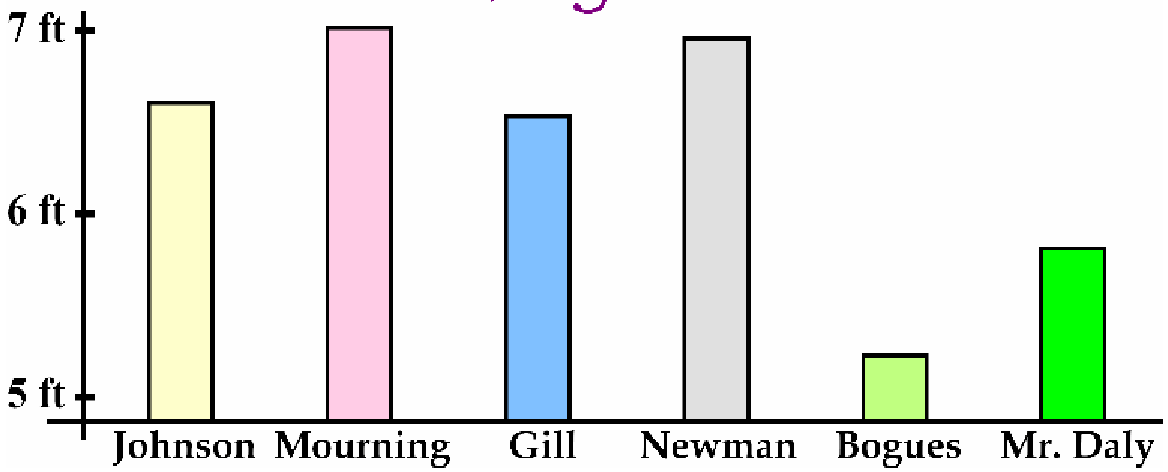
Charlotte Hornets

1992-93

Assists



Height



Name_____

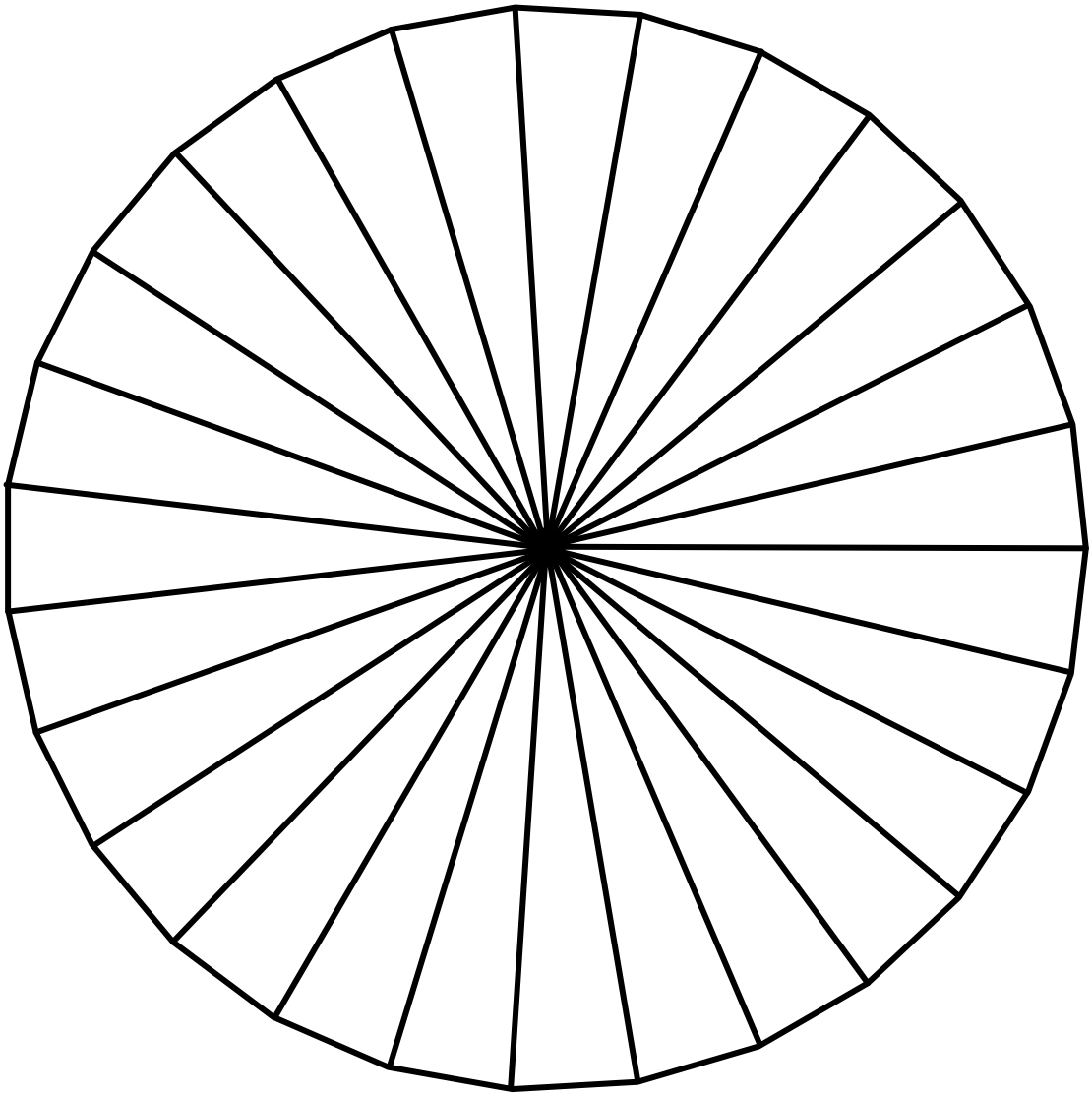
Survey Says...

Survey the class about a question of interest to you. Record the data below.

Survey Question: _____

Student:	Answer:
Gigi	
Sammi	
Madison D.	
Killian	
Alana	
Madison G.	
Tim	
Colton	
Allie	
Cassie	
Karla	
Josh	
Cameron	
Gabby	
Janice	
C.J.	
Corey	
Candace	
Lance	
Luke	
Zach	
Hunter	
Bret	
Jackson	
Youssef	
Katie	
Logan	

Now, using the data you collected, try to make a circle graph. You should use **one slice** for each answer and one color for each **different** answer. Use the key to show the answer that each color represents.



Key

☐

☐

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ORDERED PAIRS

OBJECTIVE:

Read points as ordered pairs on a coordinate grid.

MATERIALS:

1. Guide Transparency 2
2. Ordered pair connect-the-dots

PROCEDURE:

1. As suggested in Guide p.12
2. As a class, review the problems on pp. 12&13
3. Have the kids fill out a coordinate grid that works like a “connect-the-dots”.

ALGEBRA RULES

OBJECTIVE:

Explore algebra by looking for a pattern to find the rule.

MATERIALS:

1. "What's the Rule" handouts

PROCEDURE:

1. As suggested in Guide p.32. Include explanations of relevant algebraic concepts.
2. Have the kids finish the "What's the Rule" handout.

MARBLE DROP LINE GRAPH

OBJECTIVE:

Students will collect, interpret, and communicate data as they perform an experiment, graph their findings, and interpret the results.

MATERIALS:

1. Marbles, paper towel tubes, rulers, and meter sticks
2. "Marble Drop" charts (Math - Draw)

TEACHER DIRECTED:

1. Explain to the kids that today they will be working in groups of 4 to conduct an experiment. They will collect data and communicate the data through the use of a ***line graph***.
2. Show the kids how to create a line graph. Use information about the growth history of the world's tallest man as the data.

ACTIVITY:

1. Refer to **NCTM - Making Sense of Data**, pp. 29-30, "How Far and Why?"
2. Distribute "Marble Drop" charts for the students to use to record their data.
3. Instruct the kids to construct a line graph in their journals for the data they've collected once they've completed the "Marble Drop" chart.

CLOSURE:

1. As suggested in NCTM
2. Also talk about the reason we chose a line graph as our means of communication.

MR. DALY'S GREAT

Marble Drop TEST

What do you think the relationship is between the height to which one end of a tube is lifted and the distance a marble rolls when dropped through the tube?

Set a paper towel tube on the floor. Lift one end of the tube off the ground and measure its distance from the floor. Record the height in the space below. Drop a marble through the tube and measure the distance the marble rolls from the end of the tube. Record. Repeat the experiment for four other heights.

Marble Drop Chart

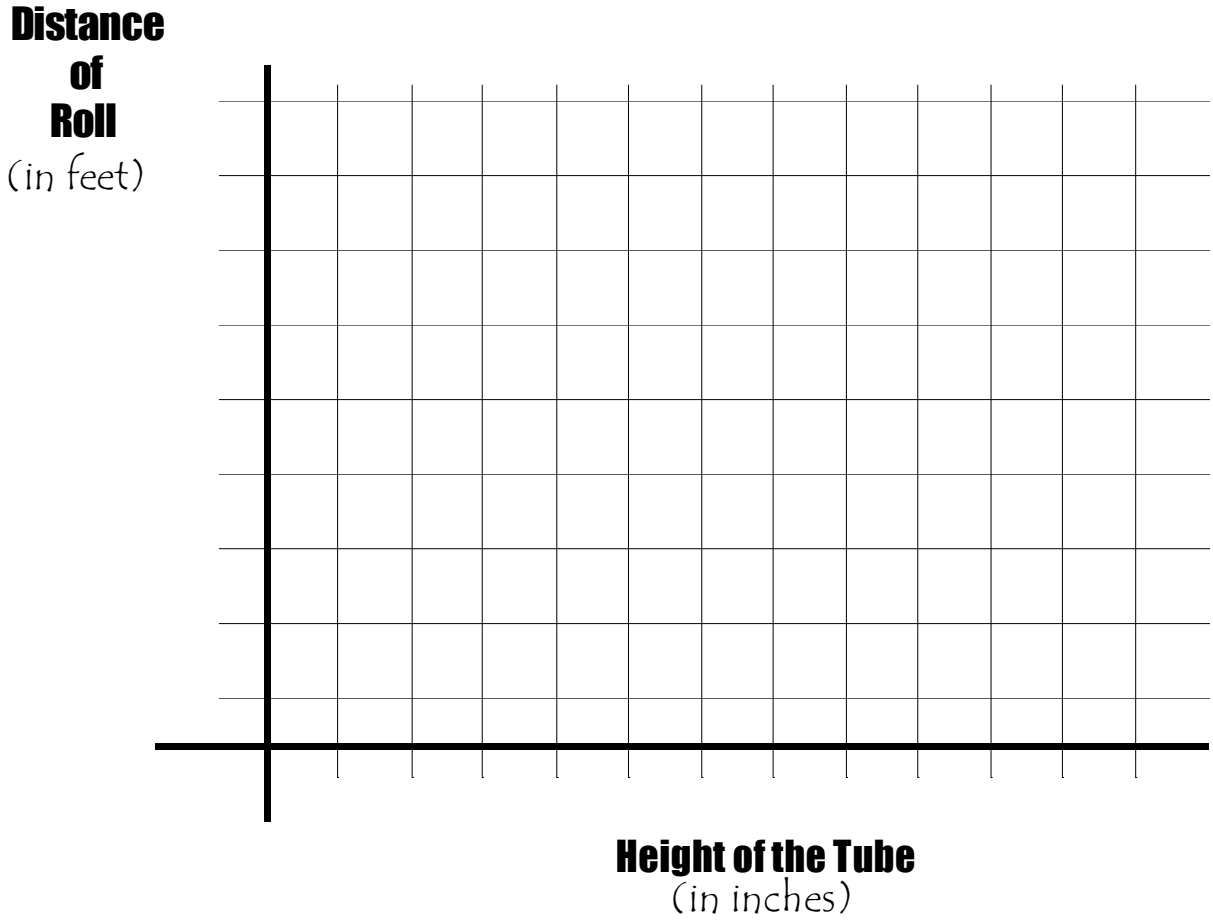
Length of Tube _____

Size of Marble _____

Height of tube (in inches)	Distance of Roll (in feet)

Using the result for each of your tests, graph the data on the following page and then answer the questions below the graph.

Marble Drop Test



1. Analyze the data. Describe the relationship between the height to which you lifted one end of the tube and the distance the marble rolled.

2. Would the results of your test be the same if the length of the tube and the size of the marble were different? If not, how would they be different? What other variables might effect the results of your test?

3. In general, what is the relationship between the height to which a tube is lifted and the distance a marble rolls?

PICTOGRAPHS 1

OBJECTIVE:

Students will collect, organize, communicate, and interpret data as they research information, create a bar graph, and analyze the data they've collected.

ASSESSMENT:

Based on the graphs the students create, and on answers to teacher questioning.

MATERIALS:

1. Construction paper
2. Colored markers
3. Encyclopedias or almanacs

TEACHER DIRECTED:

1. Explain to the kids that today they will gather some data by looking through an encyclopedia. They will then create a pictograph to show the data.
2. Show the students how to create a **pictograph**. Use a graph from the USA Today as an example.
3. Tell the students that they will work in groups of 2-4 and collect the data.
4. Brainstorm a few ideas as a whole class and discuss how the information could be displayed in a pictograph.

CHALLENGE ACTIVITY:

1. Give the kids some time to gather information.
2. After the data has been collected, have the students create their pictographs on construction paper.

CLOSURE:

1. Have the kids share their pictographs.

PICTOGRAPHS 2

MATERIALS:

1. White paper
2. Photo copies of a page from the almanac

TEACHER DIRECTED:

1. Have the kids copy the overhead "Pictograph" notes.
2. Discuss as you have the kids write their notes.
3. Show Victor's "Brawny Ad." pictograph as an example of a pictograph. (It's on my desk.)
4. Talk about other ideas for information that could be communicated using a "pictograph".
5. Explain to the kids that today they will be making "Pictographs".
6. They can use information from the "Almanac Handout" they're about to receive or they can simply "make up" information and show it with a pictograph. Go over some possible ideas. (Maybe they could make a pictograph which shows the height of their family members, maybe a pictograph which compares the price of different baseball or football cards, etc.)

ACTIVITY:

1. Distribute one piece of white paper and the "almanac" handout to each kid.
2. Kids should spend the rest of their time working on their pictographs.
3. At the end of class, collect all of the work (including the notes they took).

LINE PLOTS

OBJECTIVE:

Read and create line plots.

MATERIALS:

1. Number line (line plot) transparency
2. Worms
3. "Warming Up to Worms" recording sheets

TEACHER DIRECTED:

1. On the overhead show a transparency with a number line including the numbers 48-66.
2. Start soliciting volunteers to reveal how tall they are. Make the conversion into inches and put an X above the appropriate number.
3. Continue. Explain *Line Plots*. (See guide, pp. 16&17) Be sure to label the "Heights of Students" line plot. (**Note: keep this info, it'll be used in another lesson**.)

ACTIVITY:

1. Show another number line with the numbers 3-20. Grab a worm and measure it. Plot it.
2. Explain to the kids that they will all measure and plot the 20 worms that will be spread around the room.
3. Pass out the "Warming Up to Worms" recording sheet. As kids measure worm lengths (in cm), they should plot the numbers on their handout.
4. Check to see that the kids are labeling their line plots correctly.

5. Review results using questions like the problems about banana slugs in the text pp. 16&17.
6. Collect the line plots. They will be used again for an averaging lesson.

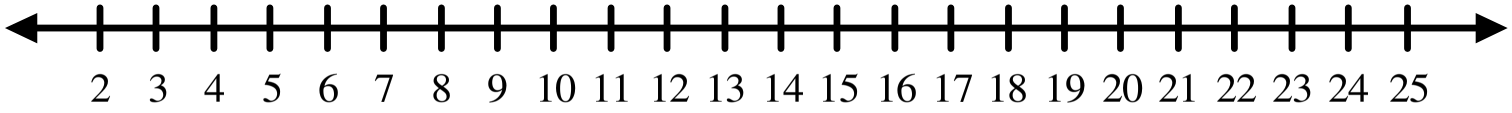
MR. DALY'S

Worm Plot

LINE PLOT

Name_____

Carefully measure the length of 17 worms (in centimeters). After each measurement, mark it on the line plot below.



1. Make a list of the different worm lengths you measured. List the **lengths** from smallest to greatest. There should be 17 numbers in your list (one number for each worm).

__ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __ , __

2. **Mode** is the number that occurs most often. What is the **mode** of the lengths?

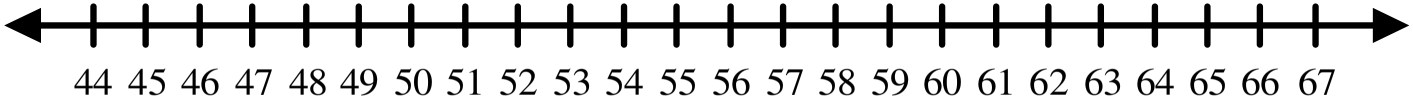
3. **Median** is the middle number when the numbers (data) are listed in order. What is the **median** length of the worms you measured?

4. **Range** is the greatest value minus the least value. What is the **range** of lengths?

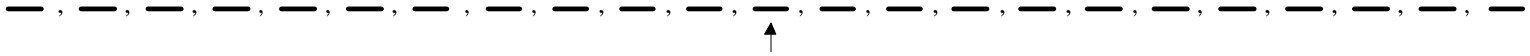
Name_____

Line Plot

Measure the class. Measure the height of each of your classmates (in inches). Record the results below by making a line plot.



1. Make a list of the different heights you measured. List them from least to greatest. There should be 23 numbers in your list (one number for each student).



2. Mode is the number that occurs most often. What is the mode of the lengths?

3. Median is the middle number when the numbers (data) are listed in order. What is the median height of the students you measured?

4. Range is the greatest value minus the least value. What is the range of heights?

RANGE, MEDIAN, AND MODE

OBJECTIVE:

Find range, median, and mode.

MATERIALS:

1. Practice Worksheet 1-10

TEACHER DIRECTED:

1. Have the kids pull out their worm line plots.
2. Discuss with respect to averages, etc. Just have the kids eyeball and estimate at this point.
3. Use ideas in Guide, pp. 30&31 to teach and/or review range, median, mode, etc. Use the "student height" data collected in previous lesson.

ACTIVITY:

1. Go over the second part of the "Warming Up to Worms" handout.
2. Have the kids complete it – calculating averages, etc.
3. Also have the kids complete Practice Worksheet 1-10.

FINAL ASSESSMENT

OBJECTIVE:

Students will interpret data and select the appropriate type of graph to show the data

MATERIALS:

1. Almanacs
2. Construction paper

TEACHER DIRECTED:

1. Show the students the titles of three different graphs (World's Tallest Buildings, USA Population; 1960-1990, etc.). Also include Almanac page #s to which the kids will refer.
2. Tell the kids that today's activity is a test.
3. Each kid will make one graph. He/she will choose one of the titles listed and graph the appropriate information. The information can be found in an almanac.
4. Kids will be assessed on how complete their graphs are and on the appropriateness of the types of graphs they chose to create.

CHALLENGE ACTIVITY:

1. Distribute almanacs and construction paper to students.
2. Give kids time to work on their graphs.

CLOSURE:

1. Call on students to share their graphs and explain.

Crayfish

Getting to Know the Crayfish (2 days)

OBJECTIVE:

Students will observe, and interact with crayfish.

MATERIALS:

- Food
- Tweezers

TEACHER DIRECTED:

- (Prior to or during this discussion have a couple kids put crayfish into tubs and/or plastic containers, ready to be distributed.)

1. Discuss crayfish – anything the kids might know about them.
2. Explain and demonstrate how to handle and how to feed a crayfish (see guide).
3. Talk about appropriate handling of the crayfish, etc., using a tub and maybe a tray.

ACTIVITY:

1. Distribute Crayfish. Hopefully, one for every 1 or 2 kids.
2. Kids experiment and observe.

3. Return crayfish to the pool. (In order to keep the pool water clean and free of food, kids should *place* each crayfish in the tub, and they shouldn't pour water into the tub.)
4. Discuss observations, etc.

Drawing Crayfish

OBJECTIVE:

Students will observe, and accurately draw their crayfish.

MATERIALS:

- Crayfish folder covers

TEACHER DIRECTED:

- (Prior to or during this discussion have a couple kids put crayfish into tubs and/or plastic containers, ready to be distributed.)

1. Discuss crayfish – anything the kids might know or have learned about them.
2. Distribute a "Crayfish" folder cover to each student.
3. Hold up a crayfish.
4. Choose students to identify the various body parts.
5. Draw a weak picture of one of the body parts. Discuss why it is weak (lack of detail).
6. Brainstorm details that could be included.

ACTIVITY:

1. Distribute Crayfish. Hopefully, one for every 1 or 2 kids.
2. Each kid observes and draws 2 ***detailed*** pictures of his/her crayfish's body parts on the folder cover (top and bottom view).

3. Return crayfish to the pool. (In order to keep the pool water clean and free of food, kids should *place* each crayfish in the tub, and they shouldn't pour water into the tub.)
4. Discuss observations, etc. while the kids glue their covers to a folder and color or otherwise decorate.

Asking Questions

OBJECTIVE:

Students will formulate questions about crayfish.

MATERIALS:

- Index Cards

TEACHER DIRECTED:

- (Prior to or during this discussion have a couple kids put crayfish into tubs and/or plastic containers, ready to be distributed.)

1. Pass out 4 index cards to each student.
2. Have them label the front of each "Question" and the back of each "Answer".
3. Explain that today kids will continue to "mess around" with their crayfish. Also, they should think of ***real*** questions they'd like answered about the crayfish.

ACTIVITY:

1. Distribute Crayfish. Hopefully, one for every 1 or 2 kids.
2. Kids should write each question they think of on the front of a card.
3. Even if they know the answer or were able to figure it out, they should leave the back of each card blank.
4. Have the kids put their cards in their "Crayfish" folders.

5. Choose kids to share their questions (no answers).

Factors of Answering Questions

OBJECTIVE:

Students will learn about the different ways scientific questions can be answered.

MATERIALS:

- "Means of Answering Questions" transparencies (Word)

TEACHER DIRECTED:

1. Remind kids of the questions they generated yesterday. Asking questions and then finding ways to answer those questions is what science is all about. Discuss.
2. Using overhead transparencies explain and discuss the 4 kinds of questions. See guide pp 201 & 202.
3. Discuss and take suggestions (guesses) before revealing the bottom part of each transparency.

ACTIVITY:

1. If there's time, let the kids continue to investigate their crayfish.

Categorizing Questions

OBJECTIVE:

Students will categorize questions they have about crayfish.

MATERIALS:

- Types of questions transparency (Word)

TEACHER DIRECTED:

1. Display transparency of different questions.
2. For each, discuss the best way to answer the question.

ACTIVITY:

1. Kids look at their own crayfish questions.
2. They label each of their index cards accordingly (observation, experimentation, etc.). If they want to they can work together and/or exchange cards.

3. Discuss the results whole class with an emphasis on those questions requiring observation and/or experimentation.
4. For several, design the necessary experiment verbally (see guide p. 204).
5. Explain to kids that for each of the next few days they will be choosing one or two experiments to complete.

Experimenting (Multiple Days)

OBJECTIVE:

Students will experiment and observe to answer questions about crayfish.

MATERIALS:

- Various materials (food, tweezers, balances) necessary for kids to perform experiments.
- Templates for students to perform the experiments that we've previously discussed

TEACHER DIRECTED:

- (Prior to or during this discussion have a couple kids put crayfish into tubs and/or plastic containers, ready to be distributed.)

1. Review and discuss crayfish questions and the experiments we've designed to help answer those questions.
2. Make sure that all of the kids have an experiment or two in mind and the materials they need to perform the experiment(s).

ACTIVITY:

1. Distribute Crayfish. Hopefully, one for every 1 or 2 kids.
2. Each student (or group) gathers the materials needed and performs the chosen experiment. They should use the results to answer one or two of their "index card" questions.

3. Discuss the results whole class.

DOING SCIENCE!

Name(s)_____

Question:_____

_____

_____

Hypothesis (educated guess):_____

_____

_____

Investigation:

1. _____
2. _____
3. _____
4. _____

Observations (record keeping):

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Conclusion and explanation: _____

_____

_____

Name_____

Lunch Time

Required Activity:

1. On the table place bits of different kinds of food. Let your crayfish try each kind of food. Then fill in the chart below. Mark "yes" or "no" under each food to tell if your crayfish ate that food. Repeat the experiment for other crayfish.

	Food				
Crayfish Name (or Number)	Bologna				

Optional Activities:

2. Observe your crayfish eating and then answer the following questions.
   - Where is his mouth?
   - Which claws and legs does he use in getting food to his mouth?

3. Try to set up an experiment to figure out if a crayfish can find food in the dark. Write down what you did and the results. (Did it find it's food?) Use the back of this page if you need more room.

Body Parts

Name_____

Required Questions:

1. Pick up a crayfish. Look at the long feelers. Which is longer?

2. Into **how many segments**is the **left** feeler divided?

3. Why do you think the feelers are divided into so many segments?

4. Look closely at the eyes. How are crayfish eyes different from our eyes?

5. How many walking legs does the crayfish have?

6 Why do you think the walking legs are divided into parts?

7. Describe the crayfish mouth.

8. Describe the tail section.

Optional Activity:

1. Using what you have observed, list the crayfish parts used on land and the parts it uses in water.

land	water

STRENGTH TEST

Name_____

REQUIRED ACTIVITY:

1. Select one of the crayfish. Is he big, small, or about medium? Record his size on the chart below (along with his number or name).
2. Place a variety of objects on a table. Then begin to test what items your crayfish has the strength to hold. Pick up your crayfish behind the claws. Holding him this way, have him try to hold the objects on the table. If your crayfish can hold an object for four seconds or longer, write "yes" under that object on the chart.
3. What was the heaviest object that your crayfish could hold? Record this info in the last column.
4. Repeat for other crayfish.

		OBJECTS					
Crayfish name (or number)	his size (S, M, or L)	paper clips	pencil				heaviest object

Name_____

Pool Watching

Required Activity:

1. Study the diagram of the differences between male and female crayfish. Find a male in the pool. Find a female. Try to figure out the sex of the other crayfish in the pool. Complete the following chart.

Crayfish Name (or Number)	Sex (Male or Female)

Optional Activity:

2. Try to set up an experiment to figure out if crayfish prefer light or darkness. Write down what you did and the results. (Do they prefer light or darkness?) Use the back of this page if you need more room.

Memoirs / 6-Traits of Writing

Gathering Ideas - Sentence Completion

Essential Learning:

Sentence completion is an effective prewriting technique.

Materials:

1. Copies of WriteSource p 6.

Mini Lesson:

1. Explain that today we're starting a new unit. The details of the unit will be discussed tomorrow.
2. Ask if anyone is familiar with a prewriting technique called "Sentence Completion".
3. Explain that as a way of generating ideas, writers sometimes complete open ended sentences. Give some examples and discuss.
4. Pass out copies of WriteSource p. 6.
5. Read the directions and discuss.

Procedure:

1. Kids fill out the worksheet.
2. When the kids are finished, table groups share their responses. One at a time and one response at a time, students share answers and then discuss.

Intro to Memoirs

Essential Learning:

When writing a Memoir, focus on experiences that are interesting and meaningful.

Materials:

1. Copies of WriteSource p 5.

Mini Lesson:

1. Explain that today we are starting a new unit.
2. Show WWSK p.102 on the overhead, maybe also pass it out and let the kids read it. See if they happen to know what ***type*** of writing it is. Explain and discuss Memoirs.
3. Ask if anyone can guess why we did what we did yesterday. Explain that as kids brainstorm potential topics for their narratives they should just think about those personal experiences that they enjoy sharing orally with friends.
4. Read from Writers Express p 110 and discuss. Emphasize that the experiences should be specific and span only a short period of time. Consequently, the Narratives might also be short. Kids may think about writing 3 or 4.
5. Pass out WriteSource p 5. Read and discuss. If time allows have the kids ***write out*** an answer to each of the bullet point questions.

6. Give the kids time to work on their stories.
7. Emphasize that they should do whatever they need to do to write a quality Memoir (make a list, a cluster, draw a picture, start the rough draft, etc.). They should keep everything in their Memoir folders.
8. Also, pass out construction paper and Table of Contents page.

Pre Writing - Free Writing

Essential Learning:

Free Writing is an effective prewriting technique.

Materials:

1. Copies of WriteSource p. 7

Mini Lesson:

1. Explain that today we will use another pre writing strategy to gather more ideas for potential Memoir topics.
2. When you "Free Write" you simply list ideas as they come to mind.
3. Pass out WriteSource p 7. Read and discuss.
4. Read from WriteSource p 149 for ideas.

Procedure:

1. Kids fill out the worksheet.
2. Have kids share some of their ideas for potential Memoir topics.
3. Discuss techniques for turning each idea into an interesting piece of writing.
4. Stress the importance of descriptive detail, dialogue, etc.

Awareness of Audience

Focus:

Appealing to the interests of the audience and being engaged in your topic

Materials:

None

Procedure:

1. Remind kids that if given the option, they should write about something that's interesting to them. Also they should think about their audience, and what might be interesting to them.
2. Write "Favorites" on the board. List some. Kids do the same on their own paper.

3. **Writer's Block** - Kids continue working on their Memoirs.

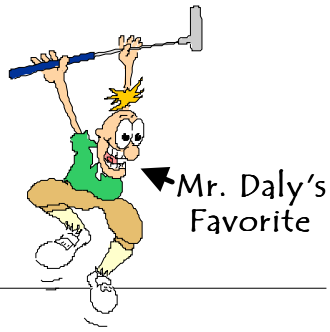
4. Share favorite lists and discuss.

5. Point out a ***"6-Trait" bulletin board***. Write "The writer is interested in his/her subject and it shows!" below the heading; "***Voice***". Also write "The writer seems to know about the topic." below "***Ideas and Content***" on the board.

Name_____

Favorites

What do you like to do? Where do you like to go? What are some tasty treats you love to eat? Make a list of your favorites.



My Favorites:

Leads

Essential Learning:

The introduction should "hook" the reader.

Materials:

1. Tape Player
2. Giant "hook"

Mini Lesson:

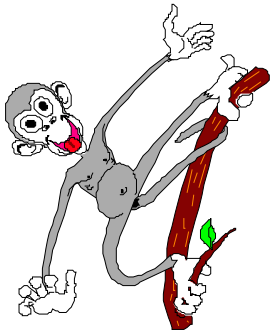
1. Stage a "Gong Show Talent Contest";
   a. Groups of 1-3 perform. They can dance, or perform magic; whatever.
   b. There are 3 judges.
   c. As groups perform, and after 1 minute, the judges can give the competitors "the hook". The worse the performance, the sooner the "hook".
   d. Repeat for other groups.

2. Explain that writing is like the "Gong Show" – you have to grab the audience right away or risk "getting the hook". The introduction needs to "hook" the audience.
3. Explain and discuss. (Refer to WWSK p. 139.)
4. Display and discuss WWSK PP 140 & 141.
5. Show the types of leads on butcher paper (WWSK). Tell the kids that volunteers will be chosen after Writer's Block to share examples of each.

6. **Writer's Block**

7. Add "Introduction grabs the reader's attention." below "***Organization***" on the 6-Trait board.
8. Share examples of each type of lead.

Name_____



LEADS

Writing is like a talent show – you have to grab the audience right away or you might "Get the Gong"! So come up with two good leads for the personal narrative you are writing. For each, use one of the types of leads we discussed in class.

Lead #1

Type of Lead: _____

Lead #2

Type of Lead: _____

Paragraphing

Essential Learning:

Every paragraph expresses one main idea.

Materials:

1. Hardware supplies
2. Food supplies
3. Sporting goods

Mini Lesson:

1. Show the kids a variety of hardware supplies, foods, and sporting goods all mixed up.
2. Select a kid to "*arrange*" the items.
3. Repeat with other students.
4. Explain that most (hopefully) of the kids *grouped* the items according to the type of product.
5. Say to the kids; "I'm writing a story about *My Favorite Stuff* and my favorite stuff is hardware supplies, food, and sporting goods. I'll probably group my words into paragraphs - just like we grouped the products." Explain and discuss.

6. **Writer's Block**.

7. Add "Paragraphs are placed where they belong." below "***Organization***" on the 6-Trait board.
8. Choose kids to share examples of paragraphs they've written and to then tell what the main idea is.

Name_____

Use Paragraphs!

Read the paragraphs that your friend transcribed. Can you figure out where one paragraphs ends and another begins? Write the last word of the first paragraph, followed by a dash and then write the first word of the next paragraph. Notice the example for the *Great Brain* paragraph we looked at in class yesterday.

Mr. Daly	days. / The
Katie	
Tina	
Robert	
Noel	
Sean D.	
Mikaela	
Joseph	
Rudy	
Samantha	
Chase	
Caley	
Ryan	
Cory	
Tucker	
Aaron	
Travis	
Sean T.	
Nikki	
Kala	
Kristen	

Specific Detail

Essential Learning:

When you write, include ***specific*** **detail**.

Materials:

1. Two paragraphs – one with specific detail and one without (or sentences)

Mini Lesson:

1. Show the kids 2 paragraphs – one with specific detail and one without.
2. Have the kids explain the differences between the two pieces.
3. Discuss the importance of specific detail. Give examples.

4. **Writer's Block**

5. Add "The piece includes important, specific details." below "**I*deas and Content***" on the 6-Trait board.
6. Select kids to share pieces they've written that include specific detail.

Name(s)_____

Strong Verbs
& Specific Nouns

Good writers use **strong verbs** and **specific nouns**. It helps a ton! Skim through a book you are reading. Make a list of strong verbs and specific nouns that the author uses.

Strong Verbs	Specific Nouns

Using a Variety of Words

Essential Learning:

The quality of the writing goes up when the variety of words used increases.

Materials:

1. Overhead of the words the kids are allowed to repeat (below)
2. A paragraph that repeats words (below)
3. Peanuts (or something)

Mini Lesson:

1. Show the students a paragraph that uses the same words over and over.
2. Ask how the paragraph could be improved.
3. Talk about the writing technique of using a good variety of words.
4. Have students share ideas for how the paragraph could be changed.

Procedure:

1. Give each student 7 peanuts. Tell the kids not to eat them.
2. Explain that each kid should write a two paragraph piece describing what they did when they received their first paycheck for $437,000 or when that alien abducted them..
3. Go over examples of what their piece might include.
4. When they finish, the kids are to exchange their paper with a classmate. The classmate gets one peanut for every word used more than once. The only exceptions are the following words; a, the, and, if, that, be, of, for, to, we, me, I, us, with, what, our, and my.

A GREAT PARAGRAPH?

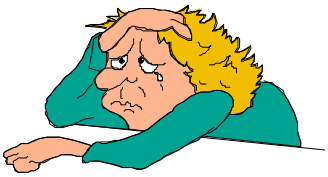
Yesterday I went to the gym. Yesterday I had a great day at the gym. At the gym yesterday I played a great game of basketball. I think basketball is a great game. Its great when you play basketball at the gym because dribbling is great. Playing basketball at the gym is also great because you get to make great passes. I think making a great pass at the gym yesterday was a great feeling.

Good Words

Name_____

Brace yourself for the most powerful tip you'll ever get to help you improve your writing. **Use good words!** It's that simple. Use a **variety** of interesting verbs, specific nouns, and other good words. Stop using those same boring words over and over!

On your birthday, a strange-looking lady came to your door and handed you a wrapped present. You rattled it. It made a noise. Write a story about this present. Use good words and don't use any words (except the ones on the list below) more than once.



The following words can be used more than once:

the, of, and, a, to, in, is, you, that, it, he, she, was, for, on, are, as, with, his, her, they, I, at, be, this, have, from, or, had, by, were, we, when, there, an, their, but

Good Words and Phrases

Focus:

Using striking words and phrases.

Materials:

1. Passage from a book with lots of good words and phrases

Procedure:

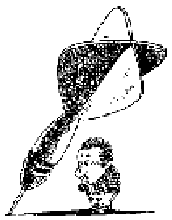
1. Read a page from a book. Have kids compile a list of good words or phrases. Discuss with respect to 6-Trait rubric – "Word Choice".
2. Share results and discuss

3. **Writer's Block**

4. Add "The writing contains a variety of strong and carefully selected words." below "***Word Choice***" on the 6-Trait board
5. Choose kids to share passages with good words and phrases

Name_____

Better Verbs



Look at the list of verbs below. They can be really boring if you use them all the time. Using a thesaurus, come up with a few fantastic synonyms for each verb. There's a few blank spaces at the end, in case you want to come up with a few examples of your own.

Verb	Synonyms (only better)
put	
get	
run	
say	
yell	
fall	
throw	
laugh	
walk	
break	
eat	
watch	
play	
see	
hold	
jump	
push	

Better Verbs

Word Search

Name_____

Make a word search using the "better verbs" you generated yesterday. Write the boring verbs with similar meanings below your word search.

Descriptive Vocabulary and Detail

Essential Learning:

Descriptive vocabulary and detail enhance writing.

Materials:

1. Overhead copies of descriptive writing as explained below.
2. Written descriptions of classroom "events" which the students will act out.

Teacher Directed:

1. Show the students a passage that describes an event. Read it.
2. Show them another passage that describes the same event but incorporates descriptive vocabulary and detail to enhance the writing.
3. Ask the kids which they prefer and why. Discuss.
4. Repeat with another example. Emphasize that good writing "doesn't **tell**, it **shows**."

Procedure:

- Kids use their observation skills as they watch a situation being acted out by a fellow student.

1. Select a student to "perform" and give him/her a written description of an event. He/she will then "act out" the event in front of the other students.
2. Subsequently, have each student compose a short description of the event they just witnessed. Hopefully, the descriptions will include descriptive vocabulary and detail.
3. Share the descriptions.
4. Repeat with additional "role plays".

Closure:

1. Add "The words create strong, detailed pictures in the reader's mind." below "***Word Choice***" on the 6-Trait board.
2. Share some of the better passages and discuss the characteristics of effective descriptions.

Very Eventful

You just had a dream that a group of aliens are planning to abduct a bunch of students and teachers from Dutch Creek. The only way to save a person is to stare right at them for 8 seconds without blinking and then give them the "thumbs up" sign. Rush into the room and "save" some people.

Very Eventful

Returning from the clinic, you're informed that there is a brick of solid gold worth a million dollars hidden somewhere in Mr. Daly's room. You rush in with excitement and begin searching everywhere for the jackpot.

Very Eventful

As you walk down the hallway returning from the LMC, a 1st grader accidentally bangs you on the head with a teather ball pole. You're dazed and confused as you walk into Mr. Daly's classroom. You think that you're in a health club and that you're the aerobics instructor. You go to the front of the class and lead everyone in jumping jacks, toe touches, etc.

Very Eventful

During recess the kickball flies into someone's backyard. The bell rings and everyone goes into the building. You hop over the fence to retrieve the kickball. You realize that you're stepping all over retired Sumu wrestling champ Yokozuna Akebonohidako's priceless flowers. He see's you, becomes bright red with rage, and lunges after you. You hop the fence, and run into the building. Paralyzed with fear, you rush into the classroom, grab the ruler by the dry erase board, and hide under Mr. Daly's desk.

Very Eventful

You have just been informed that Mr. Daly has recommended that you be demoted into the 3rd grade. You're angry as you rush into the classroom. You approach Mr. Daly as if inviting him to a fist fight. You circle around him acting very angry with you're fists in the air as if you're ready to fight.

Very Eventful

You're in the office picking up your lunch when you hear a tornado warning on the radio. You hurry into the classroom and crawl underneath the coat rack. You sit crossed-legged, with your head burried in your arms.

Sentence Length

Essential Learning:

Good writers use a variety of sentence lengths.

Materials:

1. Graph paper

Teacher Directed:

1. Choose a student to read a passage from a book. Agree that it's a decent piece of writing.
2. As a kid counts and using the overhead, graph the number of words per sentence for the passage.

Procedure:

1. Pass out graph paper.
2. Have each kid create a graph like the one that was just made.
3. They should choose a passage from a good book they are reading or have read.
4. Graphs should be labeled appropriately.

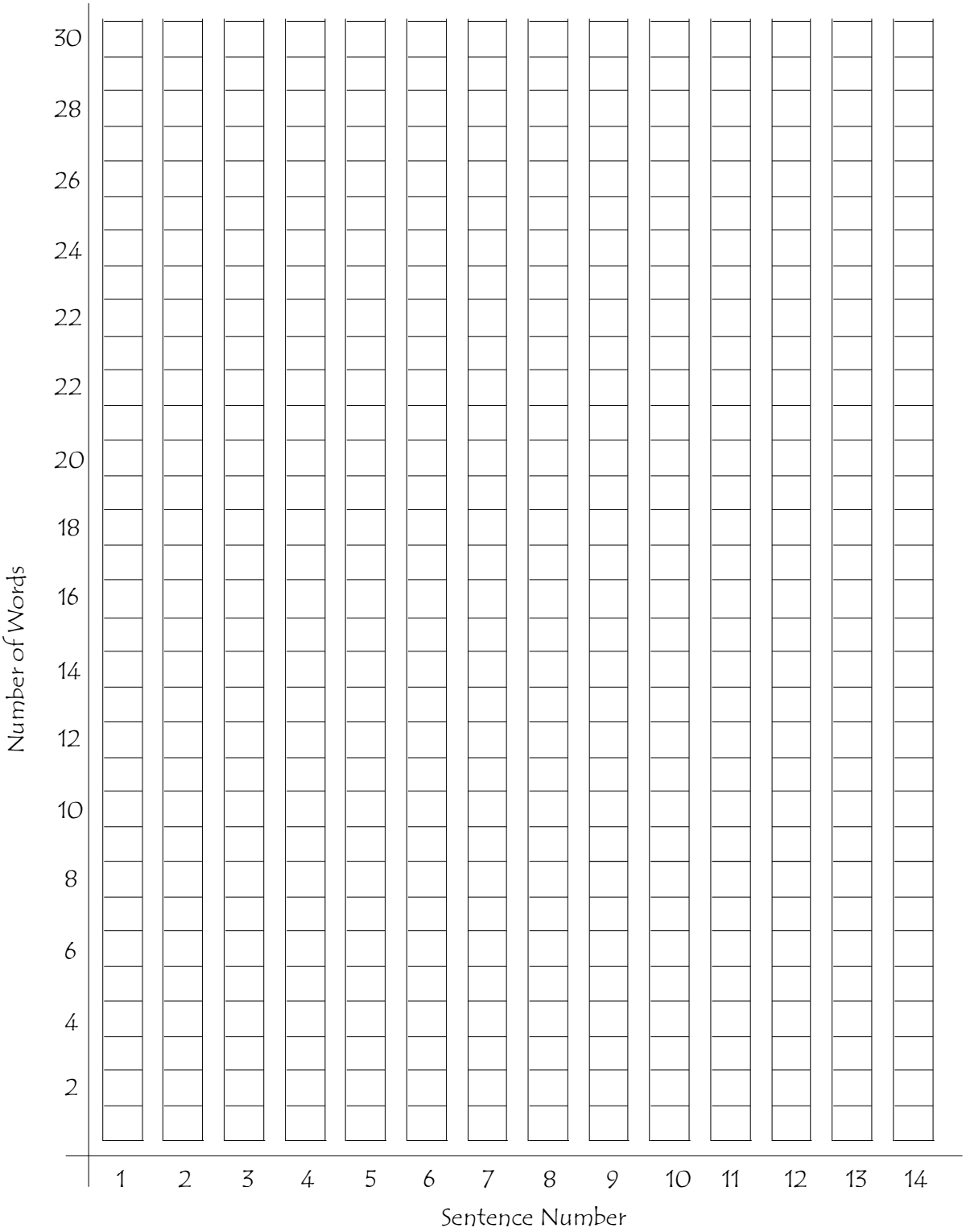
Closure:

1. Have the kids share the results of their graphs and the associated passages.
2. Students should then graph a passage from one of their own stories.

Name_____

Sentence Length Graph

Title of book _____



Varied Sentence Structure

Essential Learning:

Good writers use a variety of sentence structures.

Materials:

1. Cards which describe two or three actions;
   a. "With a determined look on his face, he marched over to the chalkboard, grabbed a piece of chalk, and threw it at the wall"
   b. "He tried unsuccessfully to grab the giant gummy worm stuck to the ceiling"

Procedure:

1. Pass out exactly 10 toothpicks and some clay to each kid.
2. Have them build a structure.

3. Share and have the kids notice that the materials are the same, but the ***structures*** are all different.

4. Tell the kids that one of them will perform a ***brief*** role-play.
5. The rest of us should carefully observe, and then write two sentences to describe what happened. Discuss.
6. Explain that even though each sentence will describe the ***exact*** same thing, there are an infinite number of ways to ***structure*** the sentences.
7. Choose kids to role-play (using the examples above).
8. After each role-play, share and discuss – emphasizing the various ***sentence structures***.

Closure:

1. Share stories, etc. with an emphasis on sentence structure.
2. Add "Sentences are different kinds and lengths." below "***Sentence Fluency***" on the 6-Trait board.

African Animal PowerPoint Reports

Characteristics of Nonfiction

Focus:

Characteristics of nonfiction texts (see Nonfiction Matters p.77)

Materials:

1. Power Point presentation ready
2. Quality nonfiction book to read
3. Chart paper with headings

Procedure:

- Demo a Power Point animal presentation.
- Explain that each kid will ultimately create a similar multimedia presentation.
- Explain to them that there are books in the classroom about African animals, but there's no guarantee they'll be able to research their "first choice" animal. However, they can always bring their own books to ensure they get the animal they want. Set a deadline for students to have their own book(s) ready.
- In order to succeed, kids will need to become familiar with the content and characteristics of non-fiction books.
- Show the kids a page of information (next page) that doesn't include any of the characteristics listed below. Tell the kids that as they are being read to, they should look for characteristics that separate that book from what they are currently looking at.
- Read out loud a nonfiction book. Stop frequently to talk about and list (on chart paper) interesting characteristics of the book.
- Finally, divide a piece of chart paper into 4 sections with the following headings; "Fonts and Special Effects"; "Illustrations and Photographs"; "Graphics"; and "Text Organizers".
- Explain each (see Nonfiction Matters; p.77). Have the kids put the various characteristics we listed into the proper sections.

Lookingatteethwedeveloptwosetsofteethd
uringourlifetimethefirstarethemilkordecid
uousteethwhichdevelopsoonafterababybe
ginstogrowinitsmotherswombwhenthebab
yisbornabouttwentyofthemilkteethhavefo
rmedbutarenotyetvisibletherearealsoafew
oftheadultorpermanentteethpresentatbirth
andtheseareposition edunderneaththemilkt
eethwaitingtodevelopyearslater

Skimming through African Animal Books

Focus:

Choosing a topic

Materials:

1. African Animal books

Procedure:

- Give each student one book about an African animal.
- Kids preview their book for 5 minutes and then books are passed clockwise.
- Remind students of the typical characteristics of nonfiction. Kids share examples from books they previewed.

More Characteristics

Focus:

Elements of nonfiction text

Materials:

1. Chart paper from the other day

Procedure:

- Display the chart paper compiled during "Characteristics of Nonfiction".
- Discuss.
- Break the kids into pairs.
- Have each group examine and "sticky-note" examples of nonfiction elements (see Nonfiction Matters p.78) in two or three nonfiction books that they choose from the class library. They should write a brief description on the sticky-note ("big bold print"; "timeline"; "graph showing population", etc.)
- Share and discuss - frequently referring back to the examples on the chart paper. Place sticky-notes on the chart paper in the correct section.

Asking Good Questions

Focus:

Research happens as a result of real questions about a subject - some make better research questions than others

Materials:

1. A nonfiction book to read to the kids
2. Sticky notes

Procedure:

- Explain to the kids that real people research because they have real questions they want answered. I want the kids to start thinking about real questions. To start wondering about animals.
- Give a couple examples using canker sores, squirrels and prairie dogs. Emphasize that good questions emerge from our own experiences and interests. Researching answers is fun in part because it satisfies our curiosity.
- Read a couple good nonfiction books. Stop periodically to discuss questions. Write down a number of the questions on chart paper.
- Explain that although all questions are important, some make better research questions. Discuss the various classifications of the questions (see Nonfiction Matters p. 29)
- Use a code and sticky notes to label the questions appropriately.

Recording the Questions

Focus:

Asking and recording good questions.

Materials:

1. Index cards

Procedure:

- Review the notion of wondering and asking **good** questions. Select volunteers to share some of their questions.
- Explain that today we will dive into the animal books available in the classroom. As kids read they should be aware of questions that pop into their heads.
- Give each student a few index cards and one African animal book.
- When a student thinks of a question he/she should write it on one half of an index card. Demo the T-chart format (see Nonfiction Matters p. 95). It can be any question that pops into their head as they read.
- If a student finds an answer as he or she reads, he should write the answer down.
- Kids exchange books every 5 minutes or so
- Share the questions and/or answers the kids formulated.

Mini-Research

Focus:

Mini Research - Scanning resources to answer specific questions and to satisfy curiosity (see Nonfiction Matters p. 29)

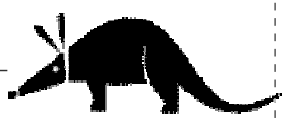
Materials:

1. Chart paper with a T-chart and a good question
2. A book which relates to the question
3. "Mini Research" pages

Procedure:

- Remind kids that people research to answer questions.
- Refer to all of the questions the kids recorded yesterday.
- On chart paper, show an example T-chart with a question on it. Model the process of researching to find an answer to the question. Model using the Table of Contents, Index, etc.
- Pass out 4 "Mini-Research" pages to each pair of students and one African Animal book.
- For each book, kids research questions on one of the pages.
- Rotate books every 5 minutes or so.
- Discuss the results. Point out that some questions are harder than others to answer.
- Together, figure out the animal that each student will research.

Mini Research



Name of animal_____

Question	Answer
Where does it sleep?	
How does it get its food?	
How old is the female when it is first able to produce offspring?	
How are babies cared for?	

Mini Research

Name of animal_____

Question	Answer
Where does it sleep?	
How does it get its food?	
How old is the female when it is first able to produce offspring?	
How are babies cared for?	

Focusing on a Topic

Focus:

Focusing questions around a single topic

Materials:

1. Book about squirrels

Procedure:

- Explain that today each student will focus his/her questions around the African Animal they've chosen.
- On the overhead model a "What I Know", "What I Wonder" type chart. (See Nonfiction Matters p.37) Use "squirrels" as the topic.
- Read a book about squirrels to the kids. Model the idea of reading with a purpose – to find answers to my questions.
- Have the kids create a chart similar to the one I modeled for the animal they will research.
- Share a few of the questions that kids have compiled.

Determining the Subtopics

Focus:

Determining sub-topics to use for research

Materials:

1. Chart paper with 6 spaces for subtopics

Procedure:

- Have kids refer to the "What I Wonder" questions they wrote yesterday.
- Have each student write at least 3 of their question on sticky-notes (one question per note).
- Select a student to share one of his questions. As a class, try to determine a more general "sub-topic" under which the question fits ("habitat", "enemies", "food", etc.)
- Label an empty section of a piece of chart paper accordingly and place the sticky-note in that section.
- Repeat with other students.

Finding Relevant Info

Focus:

Skimming to find relevant information

Materials:

1. Copies of a National Geographic article
2. Copies of an encyclopedia article

Procedure:

- Explain the importance of finding relevant information.
- Distribute photocopies of a National Geographic article about a particular subject.
- Explain to the kids that they should listen for information about a particular subtopic as we read the article aloud. Decide on the subtopic.
- Read the passage together.
- Next, create a "highlighter" key on the transparency (as should the kids on their paper).
- Read the passage again.
- This time, highlight the parts that are ***important*** (and related to the subtopic) with one color. Highlight the parts that are ***interesting / good writing*** with another color (see Nonfiction Matters p. 83). Talk about the contrast between the two.
- Explain that as kids take notes about their animal they should record only the important/relevant information.

Research

Focus:

Research

Materials:

1. Packets for kids to use for research

Procedure:

- Distribute "African Animal Research" packets.
- Today the kids will start searching for answers to the questions in their packet.
- On an overhead or on the board demonstrate what each page should include. Each should include information that helps to answer questions related to the subtopic.
- Have the kids turn to p. 145 in Write on Track. Read Andy's report. Explain that we will each write a similar report. The only difference is that hopefully the final copy will be on PowerPoint.
- Have the kids notice that each paragraph has one main idea. Have volunteers describe each.
- Explain that reports are simple in that the info for each subtopic will be used to construct one paragraph. Model using paragraph 4 from the example. (Show the note card [p.148], etc.)
- Tell the kids that as soon as they have all the info they need for one of the subtopics, they can start writing the paragraph**. Even though it won't be the first paragraph in the report**. When the paragraph is in good shape, they can create a Power Point slide for that question.
- Show the LIC Computer passes and explain the procedure.
- Kids begin recording notes for their African animal.

African Animal Report Notes

Name_____

Animal: _____

Habitat

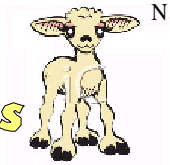
What type of biome does this animal prefer (does it live in the desert, grassland, tropical rainforest, river, lake or other habitat)? List the countries, and/or smaller areas that it lives in. What other animals, plants, and nonliving things are part of its habitat? How has the animal adapted to its habitat? Has part of its habitat been lost or damaged? If so, has it put the animal in danger of extinction? **When you think your notes are complete, share them with Mr. Daly.**

African Animal Report Notes

Animal: _____

Name_____

Babies



How old is the female when it starts to have babies? Does it bear live young or lays eggs? How many offspring does the animal typically have? How are babies cared for? How do the babies behave? How is the male involved in raising its offspring? **When you think your notes are complete, share them with Mr. Daly.**

African Animal Report Notes

Animal: _____

Name_____

Behavior

Describe interesting features of your animal's behavior. Does the animal live with a herd or is it a solitary animal? Does it burrow underground? Does it hibernate or migrate in cold weather? Is it nocturnal (most active at night)? How does your animal move (does it walk, fly, jump, burrow, etc.)? Is it slow-moving or fast-moving? Why is this important to its survival? For example, most fast-moving animals are fast so that they can catch dinner or avoid becoming dinner. **When you think your notes are complete, share them with Mr. Daly.**

African Animal Report Notes

Name_____

Animal: _____

Description

What does your animal look like? How big is it? What shape is its body? What does an average one weigh? Does it have horns, antlers, fur, crests or claws? Describe the teeth, head, neck, tail, etc. How many legs does it have? Are its legs long short? How many eyes and how many body parts does it have? Does it molt as it grows? Draw a picture if you can.**When you think your notes are complete, share them with Mr. Daly.**

African Animal Report Notes

Animal: _____

Name_____

Diet

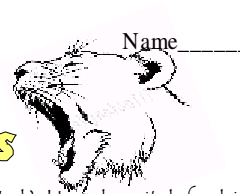
What does your animal eat and how does it get its food? Is it an herbivore (plant eater), carnivore (meat eater), omnivore (eating meat and plants), or something else? Is there something unusual in the way your animal eats? Does it have physical adaptations that enable it to get food? Where is your animal in the food web (is it a top predator, like the grizzly bear, is it at the base of the food web, like krill, or is it somewhere in the middle)? **When you think your notes are complete, sh them with Mr. Daly.**

African Animal Report Notes

Name_____

Animal: _____

Enemies



What animals eat or otherwise kill your animal? How is the animal hunted? How does it defend itself or otherwise stay saf from enemies? Does it use teeth, fangs, claws, armor, horns, antlers, pincers, poison, a stinger, muscles, a strong smell, and/or something else? Does it have other adaptations that keep it safe? Are humans an enemy of the animal? If so, how?

When you think your notes are complete, share them with Mr. Daly.

Specific Nouns and Precise Verbs

Focus:

The importance of specific nouns and precise verbs in expository writing

Materials:

1. Chart paper

Procedure:

- Display a transparency of an article about an animal.
- On chart paper, create two columns; one for “stuff/nouns” and one for “what stuff does/verbs”.
- Fill in the columns as you read (with specific nouns and precise verbs).
- Kids continue their research.

Leads

Focus:

Good leads hook the reader

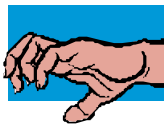
Materials:

1. Magazines, etc. with good leads
2. Chart paper with the different "lead" categories

Procedure:

- Read a few quality leads to the kids.
- Discuss characteristics.
- Explain to the kids that good leads hook the reader.
- Using the overhead or chart paper, show the different "lead" categories as outlined in Nonfiction Matters, p.151. Put the leads previously read into the different categories.
- Distribute magazines, Highlight Articles, etc. In pairs, the kids select one good lead, read it together, and decide under which category it belongs.
- Share the leads and the categorization.
- Tell the kids that their report should include a good lead – 1 paragraph (2 or 3 sentences). It should tell what the report is about and it should hook the reader.
- Kids continue to research, write paragraphs, and/or work on Power Point.

Grab Me!



My Name: _____

The animal I'm researching: _____

Grabber #1:

Type of grabber (circle one): Mystery Statement Shocking Statement Dialogue Onomatopoeia Humorous Statement Rhetorical Question

Grabber #2:

Type of grabber (circle one): Mystery Statement Shocking Statement Dialogue Onomatopoeia Humorous Statement Rhetorical Question

Place Value / Number Sense

CALL OF THE EGYPTIANS

OBJECTIVE:

Students will realize the difference between additive systems that utilize place value (like ours) and additive systems that do not utilize place value (like the Egyptians).

MATERIALS:

1. Transparency of blackline master "Egyptian Numerals".
2. Globe
3. Book, "Pyramids".
4. "Information Form" (Draw - Math)

TEACHER DIRECTED:

1. Explain the idea of using objects as a means of communicating a value. For example, shepherds may have used rocks to represent the number of sheep that they owned.
2. Have a student leave the classroom. Represent the number"4" using 4 small rocks. See if the student can guess the number being represented. When he does, show him some other numbers using the same system, and have him and others guess the corresponding values.
3. Have another student leave the room, and show the value of "6" with 1 medium sized rock and 1 small rock. When he guesses the correct value, represent other numbers using the same system.
4. Have another student leave, ask the remaining students to contribute ideas for another numbering system. Ex. - 1 large rock represents "10". See if the student can guess the value.
5. Mention the book "Pyramids" or perhaps even read a selection from the book to the students
6. Explain the Egyptian numbering system. It is an additive system.

PROCEDURE:

1. When the students indicate that they understand the system, distribute to each child a copy of an "information form" the questions of which require numbers for answers. (Date of birth, weight, age, age of father, age of oldest brother, etc.)
2. Have the children write the answers using Egyptian numbers.

WRAP-UP:

1. Ask the students what the big drawback of the Egyptian system is. Discuss.
2. Discuss tomorrow's lesson and tell students that they will soon be tested on the three systems that they will have learned.

STUDENT INFORMATION FORM

Complete this form using Egyptian Numbers.

Name:_____

Age:_____

Birthdate:_____/_____/_____

Height:_____' _____"

Father's Age:_____

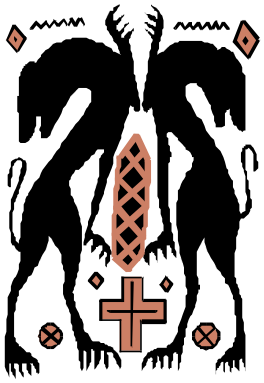
Mother's Age:_____

Number of people in family:_____

Favorite (Jersey?) Number:_____

Street Address:_____

Phone Number:_____



STUDENT INFORMATION FORM

Complete this form using Egyptian Numbers.

Name:_____

Age:_____

Birthdate:_____/_____/_____

Height:_____' _____"

Father's Age:_____

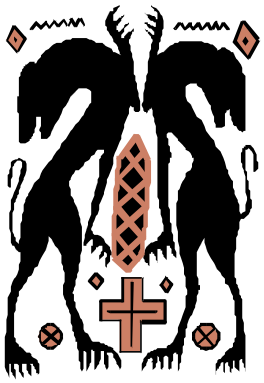
Mother's Age:_____

Number of people in family:_____

Favorite (Jersey?) Number:_____

Street Address:_____

Phone Number:_____



ROMAN NUMERALS

OBJECTIVE:

Students will become adept at converting Roman Numerals into our numbers.

MATERIALS:

1. Roman Numerals Concentration Cards
2. Overhead of Roman Numeral sheet

TEACHER DIRECTED:

1. Explain the development of the Roman Numeral system, beginning with tally marks.
2. Show an overhead of the Roman Numeral system and discuss.
3. Randomly select a number of students to come to the board and determine the value of different numbers.

PROCEDURE:

1. Give each group of 2 kids a set of “Roman Numeral Concentration Cards”
2. The kids should spend about 15 minutes playing “Roman Numeral Concentration

CLOSURE:

1. Review the systems we’ve learned so far.

XXX	XIV	LXXIV
CXLVII	MCDXVII	CMLXXXIV
30	14	74
147	1417	984

VIII	MIX	MMCDIV
XL	CDV	MCDLXXXIV
8	1009	2404
40	405	1484

VIII	IX	MM
XL	CDV	XXXIV
8	9	2000
40	405	34

XXX	XIV	LXX
CVII	CDX	CMLX
30	14	70
107	410	960












ROMAN NUMBERS

1. XXX =

2. XLIII =

3. MMMCDVI =

4. MXLVIII =

5. XXXIX =

6. MD =

7. MMCDXXXIV =

8. CCCXLIV =

MAYAN NUMBERS

OBJECTIVE:

Students will acquire a better understanding of place value and will realize that the place value system is not restricted to base 10.

MATERIALS:

1. Overhead of the "Mayan Numerals" blackline master.
2. Photocopies of Basketball team information for 4 or 5 teams.
3. Construction paper

TEACHER DIRECTED:

1. Emphasize the concept of order and place value.
2. Discuss face value, positional value, and total value. Give a few examples using decimal numbers and Mayan numbers.
3. Show how Mayan Numerals can be converted to their decimal equivalents.

ACTIVITY:

1. Divide the class into groups of 1 or 2, and have them complete a "Basketball Stats" sheet substituting Mayan #s for Hindu Arabic numbers.
2. They should use construction paper and show jersey numbers, age, years pro, etc. for 3 or 4 players. (Note: Use photocopies of information from the 1993 Basketball Handbook.)

WRAP-UP:

1. Review the system by going over some of the stats.
2. Emphasize the construction of Mayan numbers with values over 20.

STUDENT CREATED NUMBERING SYSTEMS

OBJECTIVE:

Students will begin to understand that there is more than one way to represent numbers.

MATERIALS:

1. Rocks; small, medium, and large
2. "Our System" activity sheet (Draw-Math)

TEACHER DIRECTED:

1. Review the different numbering systems we've studied.

ACTIVITY:

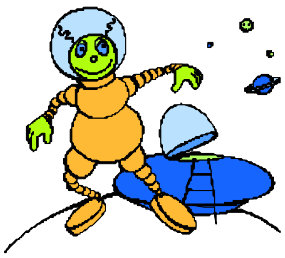
1. Divide the class into groups of 1 or 2.
2. Have each group create their own numbering system. Each symbol in their system should represent a different amount. When you add the symbols together, you have the value for any given number.
3. Tell the kids to show their symbols as well as 5 or 6 numbers that use those symbols. The students should not tell the value of the individual symbols. People that look at their work can try to guess the values.
4. Students should use markers and construction paper to create their piece.

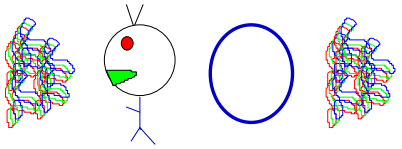
Wrap Up:

1. Review some of the systems and go over examples.

TRIACULATE NUMBERS

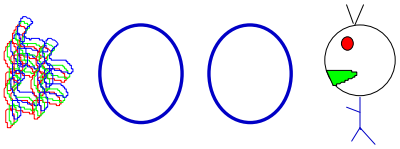
by Mr. Daly



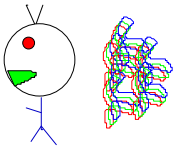


$= 23$

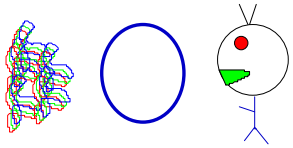
$= 1$



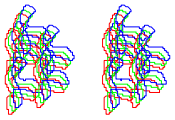
$= 14\frac{1}{2}$



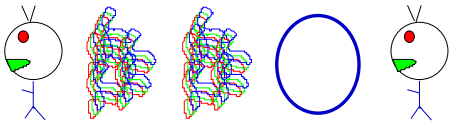
$= 3\frac{1}{2}$



$= 5\frac{1}{2}$



$= 2$



$= 100$

SPINNING PLACE VALUE

OBJECTIVE:

Students will acquire a better understanding of place value, face value, and total value. They will utilize problem-solving skills as they play a game of spinning place value.

MATERIALS:

1. Base 10 blocks
2. Random list
3. "Spinning Numbers" activity sheet (Draw - Math)
4. Spinner
5. Jolly Ranchers

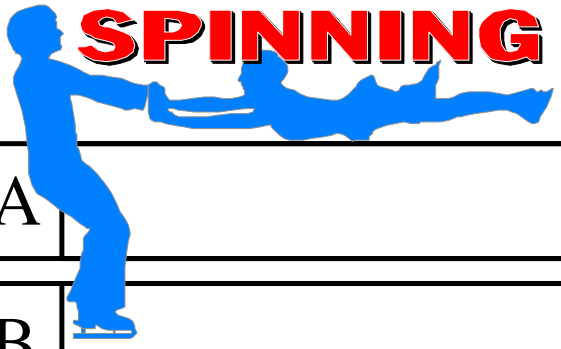
ACTIVITY:

1. Give each student a "Spinning Numbers" activity sheet.
2. Tell the students that you will be using a spinner to determine the first number for our game.
3. Students should place that number on a blank space for the first number on their sheet.
4. The object of the game is to create the highest number.
5. Continue for 6 numbers. Put each number on the board from left to right.
6. Upon completion of the game select students to read their number.
7. The student who has the highest number and can successfully read it is the winner.
8. Continue with other numbers.
9. Play a couple rounds using Egyptian numbers.

WRAP UP:

1. Discuss strategies. Ask why it didn't work with the Egyptian system. What's the difference? (Place Value)
2. Talk about our numbering system compared to others. Discuss place value, face value, and total value.
3. Show to the class the number 2,438 using base 10 blocks.
4. Ask what the "Total Value" of the 4 is.
5. Ask about place and face value using the blocks as a reference.
6. Use the blocks to show and talk about other numbers.
7. Solicit values from students using a random list.
8. Ask about playing this game with other numbering systems.

SPINNING NUMBERS



A	— , — — —
B	— , — — —
C	— — , — — —
D	— — , — — —
E	— , — — — , — — —
F	— — — , — — — , — — —
G	— — — , — — — , — — —
H	— — — , — — — , — — —
I	— , — — — , — — — , — — —
J	— , — — — , — — — , — — —
K	— , — — — , — — — , — — —

NUMBER PERIODS RUMMY

OBJECTIVE:

Students will practice identifying the period of different sets of numbers.

MATERIALS:

1. Random list
2. One playing card
3. 250 white index cards

TEACHER DIRECTED:

1. Write the number 254,378 on the board.
2. Ask for a volunteer to read the number.
3. Tell the students that to help us read large numbers we divide numbers into periods.
4. When we write numbers we separate the periods using commas.
5. Ask what period the 2,5, and 4 belong to in the number above. What about the 3,7, and 8?
6. Go over the periods for a variety of numbers. Use a random list.
7. Tell the students that if they can read one, two, or three digit numbers and they know the periods, they can read any number.
8. Practice reading three digit numbers. Do not let the kids use the word "and" as the read the numbers.
9. Practice reading a variety of big numbers.

ACTIVITY:

1. Show that any playing card is designed so that the numbers and suits are shown on opposite corners.
2. Tell the students that each child will make 12 playing cards.
3. Tell them that they should make cards in sets of two.
4. If they make one card that says "Billions" in opposite corners then they should make another card that shows a big number with numbers in the billions period circled.
5. When the students finish making their cards tell them that they will be playing a variation of the card game "Rummy".
6. Each student will be dealt seven cards.
7. The first player will then draw one card from the pile and discard one into the "Discard" pile.
8. The next player can then choose a card from either pile.
9. This continues until one player has 4 matches. (4 cards with same period circled or labeled)

WRAP UP:

1. Review identifying periods and saying numbers.

BIG NUMBERS RESEARCH

OBJECTIVE:

Students will practice doing research. They will acquire a better appreciation of how big numbers are used in the real world.

MATERIALS:

1. 25 "Real Big World Numbers" activity sheets (Draw - Math)
2. Overhead of "Real Big World Numbers"
3. 25 Almanacs

TEACHER DIRECTED:

1. Review place value. Use suggestions in Guide, p. 56.
2. List to the kids some facts that include real big numbers.
3. Tell the kids that we here facts like these all the time but very few of us really have a good appreciation of how big big numbers are. Give some examples.
4. Explain that good math problem solvers have good number sense and that part of having good number sense is having a good appreciation of big numbers.
5. Figure out how long it would take Larry Johnson to count his money, one dollar at a time. Read "How Much is a Million". Revisit some of the big number facts previously listed.
6. Tell them that today equipped with their new appreciation of big numbers, they will have the opportunity to see when and where real big numbers come up in the real world.
7. Show them an overhead of the activity sheet.
8. Explain that they are to look in an almanac to find interesting number facts with a given digit having a specified place value in that number.
9. Go over the example on the activity sheet.

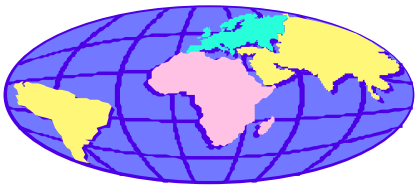
ACTIVITY:

1. Pass out one activity sheet and an almanac to each student.
2. The students can work in pairs but they should each fill out an activity sheet.

WRAP UP:

1. Share some of the interesting number facts that were discovered.

Names_____



Real World Numbers

An interesting number fact with a 1, 2, or 3 in the hundreds place:
An interesting number fact with a 5, 8, or 9 in the tens place:
An interesting number fact with a 2, 4, or 8 in the thousands place:
An interesting number fact with a 3, 7, or 2 in the ones place:
An interesting number fact with a 1, 2, or 3 in thousands place:
An interesting number fact with a 1, 6, or 7 in the ten thousands place:
An interesting number fact with a 5, 8, or 9 in the hundred thousands place:
An interesting number fact with a 2, 4, or 6 in the millions place:

COUNTING GRASS BLADES

OBJECTIVE:

The students will acquire an appreciation for the enormity of large numbers such as 1,000,000 and 1,000,000,000.

MATERIALS:

1. "Daly Dough" bills
2. Overhead calculator
3. 25 "Blades of Grass Recording Sheets" (Math - Draw)
4. Overhead of Recording Sheet

TEACHER DIRECTED:

1. Stage an incident where a student gets yelled at for picking grass; one blade at a time.
2. Ask the students if they agree that this is a problem and why.
3. Suggest that this is a real world problem. Possible solutions might be based on the number of grass blades in the field. To solve this problem we can use our good number sense and make a guess or we could use another estimation strategy.
4. Have groups of students guess the number of grass blades owned by the school.

ACTIVITY:

1. Solicit some ideas as to how we could estimate the number of grass blades in the field.
2. Explain that groups of two will count the number of blades in 5 square inches of grass, one square inch at a time. The students should use sheets with one inch squares cut in them to accomplish this.
3. Students should write down the total number of blades for each square inch that they count.
4. Explain that groups should be spread out on the field as they count.
5. Go over the whole procedure using an overhead copy of the recording sheet.
6. Distribute a "Blades of Grass" recording sheet to each student.
7. Take the students outside and show the boundaries.
8. Have the students count grass.

CLOSURE:

1. Return to the classroom and calculate the total number of blades owned by the school. (Use an overhead calculator.)
2. Challenge the kids to find a large number in print to bring the following day. Remember to bring the News article about the number of stars in the sky.

ORDERING RUMMY

OBJECTIVE:

Students will practice ordering large numbers.

MATERIALS:

1. Random list
2. One playing card
3. "Big number-Period" cards

TEACHER DIRECTED:

1. Review comparing numbers using ideas in Guide, p. 66.
2. Write the number 254,378 on the board.
3. Ask for a volunteer to read the number.
4. Write the same number on the board.
5. Ask for the symbol that shows that the two numbers are equal.
6. Write a larger number on the board.
7. Ask a volunteer to identify the smallest number.
8. Draw a pointer to that number. (Less than sign)
9. Explain the symbol.
10. Repeat for additional numbers using a random list.

ACTIVITY:

1. Explain that today we will be playing another variation of rummy using the cards the students created during the "Periods Rummy" activity.
2. Today the object is to acquire three cards in consecutive order.
3. Have each kid make four cards that show consecutive numbers. Have each table group shuffle the cards and pass three to each group member.
4. Explain that it will be necessary to keep your cards in order as you draw them.
5. Students should only use those cards with numbers on them and they should each begin with three cards.

WRAP UP:

1. Review ordering numbers. (Guide, p. 69)

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

Give it Up!

2,345,710

75,986

2,345,976

2,145,307

2,345,099

2,344,979

731,191

6,731,201

1,875

6,731,640

6,677,938

6,729,800

8,345,710

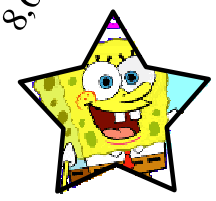
611,294

8,641,305

8,610,944

8,611,273

8,612,000



5,903,477

3,747

5,918,302

31,640

5,923,388

5,903,358

EXPANDING THE BIGGIES

OBJECTIVE:

Students will be able to give the standard form of expanded notation for large numbers.

MATERIALS:

1. World Record books or Almanacs
2. 100 3" x 5" cards

TEACHER DIRECTED:

1. Explain expanded notation. Ours is an additive system. We arrive at numbers by adding the total values of the digits. Total values are computed using face value and place value.
2. Go over a few examples using a random list.

ACTIVITY:

1. Explain to the kids that they will share their research with the rest of the class.
2. Each student should locate and expand at least four "impressive" numbers.

WRAP UP:

1. Select volunteers to share their research.

ROUNDING BINGO

OBJECTIVE:

Students will understand the basic procedure of rounding a number and they will practice that skill.

MATERIALS:

1. 25 bingo cards (Draw - Math)
2. Game Markers

TEACHER DIRECTED:

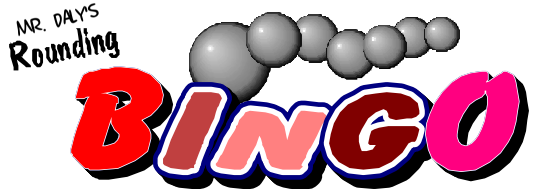
1. Write a number on the board.
2. Ask how we would write the number if we wanted to round it to the nearest 10.
3. Use ideas from the text; p. 70
4. Continue discussion; having the kids round various numbers to 10s, 100s, 1000s, 10,000s, and 100,000s.

ACTIVITY:

1. Give each student a "Rounding Bingo" card.
2. Tell them that they should fill in the card with multiples of 10 in the first column, multiples of 100 in the second, and so on.
3. The rules are as follows; If you asked the students to round 45,437 to the nearest 100, they would arrive at 45,400. They would then look for a 400 on their game board. If they had it they would cover it. The object is to get a bingo. If you asked them to round 6,322 to the nearest 10, they would get 6,320. They would look for a 20 on their game board.
4. Explain these rules to the class and go over additional examples.
5. Distribute game markers and proceed with the game by randomly calling out numbers and having the students round and look for matches. Write the numbers on the board so you can check answers when a kid thinks he's got a "Bingo".
6. When a student gets a "Bingo", check the answers and if it's a legitimate "Bingo" give him or her a prize.

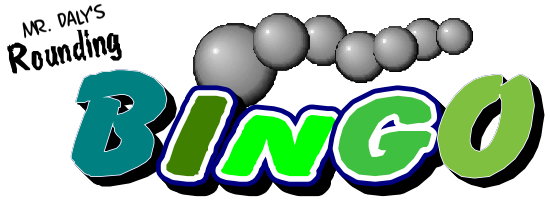
Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
40,000	2000	800	80
10,000	5000	400	90
70,000	9000	700	30
90,000	3000	300	10



Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
60,000	7000	600	40
20,000	4000	500	80
80,000	8000	200	30
30,000	2000	900	50



Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
80,000	7000	700	70
20,000	9000	200	40
50,000	2000	100	10
40,000	5000	500	80

Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
90,000	8000	600	40
40,000	4000	200	50
10,000	9000	900	90
60,000	3000	300	20

Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
40,000	2000	100	80
20,000	8000	700	30
90,000	3000	500	70
50,000	9000	300	50

Round each number called out to the greatest place. If that number is on the board, cover it. Try to get 4 in a row.

10,000s	1000s	100s	10s
80,000	6000	800	30
30,000	3000	200	80
70,000	9000	600	20
60,000	7000	900	60

GUINESS BOOK ESTIMATES

OBJECTIVE:

Students will learn that an estimate is an educated guess that utilizes one or more of a variety of methods.

MATERIALS:

1. "Guiness Book Estimate Cards"
2. Center Materials:
   a. A page full of dots
   b. A jar of popcorn seeds.
   c. A jar full of M & Ms
   d. A list of numbers to be totaled
   e. Handout asking kids to estimate the # of Pencils owned by kids attending Dutch Creek.
   f. Handout asking for the total number of strands of hair on the heads of all the kids in the classroom.

TEACHER DIRECTED:

1. Tell the students that I am thinking of a group. Each card I am about to show them either belongs to that group or it does not.
2. I will tell them which group each statement (on the card) belongs to but as I do they should try to guess the concept I am thinking of.
3. Show the kids the first card from the "Guiness Book Estimates" cards.
4. Continue showing cards. Eventually start asking for volunteers to determine whether the cards belong or not.
5. The concept is "Numbers that are estimates".

ACTIVITY:

1. Have the students work with their table group.
2. Each pair of students should be given a "What's Your Estimate" activity sheet.
3. The handout will ask for estimates for a variety of things; a list of numbers, a jar full of seeds, etc.
4. Each group will estimate something:
   a. A page full of dots
   b. A jar of popcorn seeds.
   c. A jar full of M & Ms
   d. A list of numbers to be totaled.
   e. Pencils owned by kids attending Dutch Creek.
   f. The total number of strands of hair on all the kids in the classroom.
5. Each group should explain on their activity sheet the method they used to make each estimate.
6. When groups finish they should pass their materials on to the next group.

CLOSURE:

1. Share the estimates with emphasis on the methods used.

Name_____

All ABOUT It

For each example below, estimate the total and explain how you arrived at your estimate.

Amount to be Estimated	Your Estimate	Your Method
Coins		
M&Ms		
Total of Numbers		
Pencils at Dutch Creek		
Hair Strands		
Dots		

SHOPPING LISTS

OBJECTIVE:

Students will practice a variety of estimating strategies as well as mental arithmetic.

MATERIALS:

1. A receipt from a potential shopping excursion
2. Newspapers (30)
3. A check for $5000
4. "Wish List Estimate" handouts (30)

TEACHER DIRECTED:

1. Tell the students; "I went shopping with $5000 in my pocket and tried to purchase the following items." Read a list. "Did I have enough money?"
2. Discuss methods of calculating totals.
3. Explain that there will be a contest. The objective is to look through a newspaper and compile a list of exactly 11 products the total value of which is around $5000.
4. The winner is the student(s) who comes the closest without going over.
5. Students can not use a calculator and they can not perform paper/pencil calculations. Only mental arithmetic is allowed.
6. Discuss the math skills that kids will likely incorporate into this activity (estimating, traditional rounding, rounding up, clustering, mental arithmetic, and a variety of other problem solving strategies).

ACTIVITY:

1. Tell the kids that each of them will compile a "Wish List" shopping list. They can work with a partner if they'd like.
2. Pass out a newspaper and a "Wish List Estimate" handout to each student.
3. They will search through the ads in a newspaper. They should name, and list the prices of exactly 11 items.

CLOSURE:

1. Share the lists and discuss the strategies that were used.