

Number and Operations	PAGE
1. Exploring Number Concepts	M 1
2. Front Page Numbers	M 1
3. Number Games	M 1
4. Number Creations	M 2
5. Estimation	M 2
6. Playing with Place Value (graphic organizer 1)	M 3
7. Computation in Context	M 4
8. Money Matters (graphic organizer 2)	M 4
9. Fun with Fractions	M 5
10. Dealing with Decimals (graphic organizer 3)	M 6
11. The Gift of Giving (graphic organizer 4)	M 6
12. That's Entertainment (graphic organizer 5)	M 7
13. Factors and Primes (graphic organizer 6)	M 7
14. Answer in the Circle (graphic organizer 7)	M 8
15. Classified Computations	M 8
16. Math in the News	M 9

Measurement	PAGE
17. Comparing Attributes	M 11
18. Calendar Concepts	M 12
19. TV Time (graphic organizer 8)	M 12
20. Problem-Solving	M 12
21. Recipe Rewrite (graphic organizer 9)	M 13
22. Weather Map Math	M 14
23. Measuring	M 15
24. Indirect Measurement	M 15

Geometry	PAGE
25. Spatial Sense With Shapes	M 16
26. Shape Creations	M 16
27. Attribute Analysis (graphic organizer 10)	M 17
28. Coordinates in the News	M 17
29. Geometry Scavenger Hunt (graphic organizer 11)	M 18
30. Polygon Problems	M 19
31. Circular Calculations	M 19
32. Angle Analysis	M 19

Data Analysis and Probability	PAGE
33. Data Designs (graphic organizer 12)	M 20
34. Sports Analysis (graphic organizers 13 and 14)	M 20
35. Charting Data	M 22
36. Charts and Graphs	M 23
37. Probability	M 25
38. Statistically Speaking	M 25

Algebra	PAGE
39. Attribute Soup (graphic organizer 15)	M 26
40. Pattern Play	M 26
41. Number Sentences and Symbols	M 27
42. Linear Equations	M 27

Real World / Practical Math	PAGE
43. Language of Consumers	M 28
44. Money Management	M 29
45. Comparing Costs (graphic organizer 16)	M 30
46. Income and Budgeting	M 32
47. Housing Problems (graphic organizer 17)	M 33
48. Savings and Investments	M 34
49. Stock Market Savvy	M 35
50. Fate and Choice (graphic organizer 18)	M 36

MATHEMATICS • EXPLORING NUMBER CONCEPTS

Goal: To develop number sense for a variety of numerical representations.

Preparation: Provide newspapers.

Activities: Have students identify articles, advertisements and pictures in the newspaper that show the various uses for mathematics. Simple examples are sizes of shoes and prices of items for sale. Less obvious examples are number words and numerical concepts. After students find the examples, have them identify the words or symbols that explain the meaning of the numbers. Examples are dollar signs, percentages and decimals. Emphasize that context clues tell the meaning and explain the use of numbers.

Number and Operations

MATHEMATICS • FRONT PAGE NUMBERS

Goal: To count and compare objects in a set.

Preparation: Provide front pages and markers.

Activities: Ask students to estimate how many numbers they can circle on the front page of the newspaper in one minute. They should write their estimates at the top of the page. Time the activity. Ask them to circle all the numbers they can find in one minute and compare the estimate with the number circled. Find out who circled the most and who came closest to their estimate.

Explore the following questions:

1. What is the largest number? The smallest?
2. Where were the most numbers found?
3. Were any number words circled?
4. What was the average number circled?

Write or have students write word problems based on front-page numbers. Use the word problems to teach or reinforce specific skills. For example, if studying range or subtraction ask: "What is the range of temperatures (or difference between high and low temperatures) predicted for today?"

Number and Operations

MATHEMATICS • NUMBER GAMES

Goals: To count and compare objects in a set.
To compare and order numbers.

Preparation: Provide newspapers, glue, scissors and markers.

Activities: Choose and assign tasks that require students to locate and group numbers found in newspapers.

- A. Find as many different numbers in an ad or on a page as possible. Put the numbers in order. Compare any two of the numbers or any series of numbers using terms "less than" or "greater than."

Number and Operations

MATHEMATICS • NUMBER GAMES, continued

Activities, continued:

- B. Find and match number words and numbers in newspapers.
- C. Race to find numbers in newspapers. Take five minutes and circle numbers between 1 and 200, or, circle the numbers between 1 and 25 in order using the entire paper. Compare with other students and see who found the most in the time limit.
- D. Make a collage of numbers or of the largest numbers in the news. Vary the size of print.
- E. Circle the largest and smallest numbers on each page of the newspaper, or, identify the largest number in papers for a period of time. Compare the numbers and the stories in which they appear.
- F. Circle two-digit, three-digit, four-digit, etc. numbers in the newspaper. Write five of the numbers in order on paper.

MATHEMATICS • NUMBER CREATIONS

Goals: To use groupings with models and pictures to count collections of objects. To create, model and solve problems.

Preparation: Provide newspapers, construction paper, glue, scissors and markers. Make creations to display numbers. Use those creations on a bulletin board or in centers.

Activities: Choose from the following ideas:

- A. Draw a picture of a caterpillar, spider, octopus or any interesting animal or object. Counting by ones (or skip counting by 2, 5, 10, 20, etc.), cut numbers from the newspaper and fill in the body segments or attach to the legs.
- B. Cut numbers from the newspaper to make a clock or calendar. Search for numbers, names of the days, weeks and months and for symbols and signs of seasons, holidays, or weather to add to the clock or calendar.
- C. Cut out a series of numbers. Paste them on paper, leaving room for sentences before and after each number. Write a creative story, such as: one tall basketball player hit ten field goals on February 20, 1988. Be funny and fanciful in writing the story. Also discuss how the meaning of numbers changes as the context changes.

MATHEMATICS • ESTIMATION

Goal: To make reasonable estimates in a variety of situations.

Preparation: Provide newspapers, construction paper, glue, scissors and markers.

Activities: Hold up a copy of the front page of the newspaper for a few minutes and ask students to study it. Then ask them to estimate how many of something appear on the page.

Activities, continued:

Some ideas include:

1. How many pictures?
2. How many headlines?
3. How many captions?

Then provide students with a copy of the front page. Ask them to estimate how many of a certain letter or number. Have them count and compare their estimate to the actual number.

Have students look through the text in the newspaper to find examples of estimation in context. For example, students may find cases where numbers are rounded or terms such as approximately are used in reference to numbers denoting quantities. Discuss the situations where it is appropriate to estimate versus when accuracy is essential.

MATHEMATICS • PLAYING with PLACE VALUE

Goals: To create and solve problems using a variety of strategies.
To build understanding of place value.

Preparation: Provide each student with a newspaper, scissors, glue sticks and a place value chart or blank paper for creating numbers. Also provide the student worksheet M 3-1.

Activities: Have students go through the newspaper and cut out as many single digit numbers as they can in a specified length of time. Once the time is up, have them spread their numbers out on the table. Students should work with the numbers in a variety of ways to build their understanding of place value. Here are directions to consider:

1. Count the digits and tell how many there are. Discuss place value (beginning with ones, tens and hundreds) and begin working with the digits by asking the following questions:
 - a. How many one-digit/two-digit/three-digit numbers can you make?
 - b. What is the largest or smallest one, two, three-digit number you can make?
2. Make as many three-digit numbers as you can and order them from least to greatest/greatest to least.
3. Create numbers by placing designated digits in certain place spots.
4. Turn all of their digits face down on the desk. Then draw four digits and make the largest number possible. Draw four more digits. Make the smallest numbers possible.
5. Give students the student worksheet M 3-1. Have them place numbers they find in the newspaper on the grid. They should put the numbers in the order of value from largest to smallest and indicate what the largest numbers measure. Often large numbers refer to government budgets or profits earned by businesses.

MATHEMATICS • COMPUTATION in CONTEXT

Goals: To create and solve problems using a variety of strategies.
To develop flexibility in problem solving by selecting strategies.
To develop fluency with processes such as addition, subtraction and multiplication.

Preparation: Collect all sections of newspapers that contain math-related materials. When teaching a skill such as addition or subtraction, look through the newspapers for a contextual application to show that skill being taught or reinforced.

Activities: Choose from the following activities for ideas. Identify problems that students can do with newspapers that practice the skills they are taught and show the applications of math computations.

- A. If teaching subtraction, have students figure out the differences in the cost of the daily and Sunday newspapers, the predicted high and low temperatures and the prices of any two advertised items.
- B. If working with averages, ask students to use sports statistics to figure average yards gained per carry, batting averages and points scored per player. Ask students to figure the average salaries in the Classified ads, the average cost for renting a two-bedroom apartment and the average cost of buying a three- to five-year-old car.
- C. When adding, students can be asked to figure the cost of several items from retail or classified ads and the savings from coupons they clip. They can be asked to add the minutes it takes to watch several television programs.
- D. When multiplication is the emphasis, have students figure the cost of three pounds of ground beef and two-dozen eggs or try doubling or tripling a recipe.
- E. If working with money, ask students to look at ads for items on sale. Have students calculate their savings for each item. Advanced students can calculate the percentage saved for each item.

Each time a new skill is introduced, scan the newspaper for information to use in teaching and reinforcing the skill. Keep in mind the sections of the newspaper that carry math-related information every day. The major sections are weather, sports, retail and classified ads, recipes, TV-movies, stock market reports and city-county statistics.

MATHEMATICS • MONEY MATTERS

Goals: To develop fluency with addition and subtraction of rational numbers.
To solve problems using models, diagrams and reasoning.

Preparation: Provide sections of the newspaper that deal with dining and shopping and the graphic organizer M 4-2. Send students shopping in the newspaper to apply real-world application of math skills.

Activities: Scenario #1: You've been saving your money from odd jobs and now you have enough to take your mom or grandmother out to eat as a special surprise. You know she likes seafood. Where can you go? Locate a restaurant and find the address.

Activities,

continued: Scenario #2: You want to have some of your friends come to a party. What foods do your friends like? Find four party foods and the price of each. Add them up and determine the total cost.

Scenario #3: Your brother's birthday is next week and you want to buy him a gift. Your limit is \$20.00. Shop in the newspaper for a gift he'd like. List the gift, the store where you will buy it and the price. How much change will you get from \$20.00?

Scenario #4: Find a business in the newspaper that sells each of the following items:

- Automobile Tires
- Television
- Men's Clothing
- Furniture
- Jewelry
- Real Estate
- Shoes
- Groceries
- Toys
- Used car

Figure out costs of selected items. Include tax.*

*Using Newspapers in Elementary Grades, NAA Foundation.

MATHEMATICS • FUN with FRACTIONS

Goals: To solve problems using models, diagrams and reasoning about fractions and relationships among fractions.
To model and describe common equivalents.

Preparation: Search the newspaper for information that can be used for activities involving fractions. Provide the pages or sections you locate. Scan articles and look in ads, recipes, stock market reports, sports pages and city-county statistics where fractions are often found. Use pictures or comic strips for introductory activities.

Activities: Use the following ideas to get started.

Simpler activities to introduce the concept of fractions should be done with pictures and comics. For example, have students locate a set of pictured items or a favorite comic strip in the newspaper. Ask them to circle $\frac{1}{2}$ or $\frac{1}{3}$ of the items or frames. Have them do the same with people, animals, adults, children and other categories derived from pictures and comic strips.

In ads that advertise $\frac{1}{3}$ to $\frac{1}{2}$ off, ask students to compute the savings and/or the sale price. Have students convert fractions to percents. Ask students to cut in half or fourths selected recipes.

MATHEMATICS • FUN with FRACTIONS, continued

Activities, continued:

Ask students to convert stocks to the dollar amounts expressed as fractions to decimals. The price per share is usually shown as $35\frac{1}{2}$, meaning \$35.50 is the cost per share. A gain in value of \$2.50 per share is expressed as $+\frac{1}{4}$.

Have students express as a fraction the number of points a player scored to the total scored by his team. Also ask them to determine if teams are in the upper half or fourth of the conference or league in which they play.

With city-county statistics and obituaries, have students figure out the number of girls born to the total number of children born. Also, ask them to figure out the number of deaths in a specific age group. Express the relationship to the total number of births or deaths as a fraction.

Create questions based on fractional concepts. For example, "If a two-thirds majority in the Senate is needed to pass a bill, how many must vote for the bill?"

MATHEMATICS • DEALING with DECIMALS

Goals: To develop number sense for rational numbers.

To develop flexibility in solving problems using various strategies.

Preparation: Provide sections of the newspaper that carry toy ads or ads for gift items. Many toy ads will appear in November and December. Gift items appear for various special occasions. Make available the graphic organizer M 6-3.

Activities: In teams, have students look through newspaper ads and choose several toys or other items that they find appealing. Ask them to either cut out the item and circle the cost or name the item and cost. In a class discussion, compare choices. They should rank them in order of preference. See if certain toys or other items are popular and talk about what makes them appealing and whether they are safe and worth the cost.

Have students order the objects according to cost from least to greatest or greatest to least. Ask if finding out which items are most expensive changes their preferences.

Have students analyze the rational numbers in monetary terms of dollars and cents.

MATHEMATICS • The GIFT of GIVING

Goals: To develop number sense for rational numbers.

To develop flexibility in solving problems using various strategies.

Preparation: Provide sections of the newspaper that carry ads for gift items and the student worksheet M 6-4. Gift items appear for various special occasions.

Activities: Have students shop for gifts for their family. They should choose gifts from a variety of price ranges, keeping in mind the idea of getting the best value for their money.

Activities, continued: Have students order the objects according to cost from least to greatest or greatest to least. Have students analyze the rational numbers in monetary terms of dollars and cents.

MATHEMATICS • THAT’S ENTERTAINMENT

Goals: To develop number sense for rational numbers.
To develop flexibility in solving problems using various strategies.

Preparation: Provide sections of the newspaper that contain entertainment schedules. Review the graphic organizer M 7-5.

Activities: Ask students to pretend that they have \$40.00 to spend on a family outing for a family of four. Have them locate as many activities as they can that cost \$40.00 or less.

After listing the choices, conduct a class discussion on what is likely to determine which activities are chosen. Ask students to state their preferences. Have them rate the activities from most popular to least popular and compare the costs to their preferences.

Once they choose a place to go or something to do with or without family members, have them explain why they chose the activity, how much it costs and what they'd wear. Make available the graphic organizer M 7-5.

Have students analyze the rational numbers in monetary terms of dollars and cents.

MATHEMATICS • FACTORS and PRIMES

Goals: To develop fluency in the use of factors, multiples and prime factorization.
To develop flexibility in solving problems using various strategies.

Preparation: Provide newspapers, scissors and factorization chart or blank paper, and graphic organizer M 7-6.

- Activities:** Give the following directions for working with factors and primes:
1. Find two numbers in the newspaper. Cut them out and glue them on the factor chart or on blank paper. Solve the problem and find the digits in the newspaper to represent the solution. Add to the chart.
 2. Search the newspaper and find prime numbers. Circle them. Then locate numbers that can be factored. Cut the number out and glue it to the factorization chart or on blank paper. Perform factorization until a solution is reached with a prime number. Locate that number in the newspaper and add it to the chart.

MATHEMATICS • ANSWER in the CIRCLE

Goals: To develop number sense for rational numbers.
To develop flexibility in solving problems using various strategies.

Preparation: Provide newspapers and the graphic organizer M 8-6.

Activities: Write a number such as “20” in the center of the graphic organizer and have students make up word problems based on newspaper content. The answer to each problem must be the number in the center.

Assign small groups of students different sections of the newspaper to make sure they come up with a variety of questions and to demonstrate how many math references there are in the newspaper. Sections would include news, weather, sports, grocery ads, recipes, TV/movies, stock market and business pages and retail and classified ads.

MATHEMATICS • CLASSIFIED COMPUTATIONS

Goals: To develop number sense to solve problems.
To develop flexibility in solving problems using various strategies.

Preparation: Provide the Classified section of the newspaper. If the classroom newspaper has an index for the Classified ads, use it to help show the variety of content and the organization of the ads. Engage the interest of your students by having them guess what people try to sell in the Classified ads and write their guesses on a chart. Have them try to classify their ideas and compare those with the newspaper classifications.

Activities: Begin by asking questions that require students to use the classification system and to scan for specific information. For example:

1. Locate the cost of a pet for sale, such as a beagle or a kitten.
2. Locate the rent for an apartment on First Street (or a street you designate).
3. Locate the cost of a 2000 Camry or other car.
4. Locate the phone number of a person selling a kitchen table and a couch.
5. Locate a job that pays \$2,000 to \$3,000 per month.

Then have students select items from each classification in the ads. Ask them to write math problems based on the information they select from ads. Those should involve computations the students need to practice. Also have them point out any missing information the buyer needs before making a purchase.

After the preliminary activities above, conduct activities that are appropriate for the age and interests of the students in your class. To check student work, have students write page numbers, columns and the ads, or have them cut out the ads and glue the ones they use on a sheet of paper. Students can work in groups or teams. Select from the following list of activities to get started:

1. Find the location of a yard sale close to where you live.
2. Find the price of a TV advertised in the For Sale section of the Classified ads. Compare with retail prices.

Activities, continued:

3. Compare the rent for furnished and unfurnished apartments.
4. Pretend you have \$600.00 to spend to furnish an apartment. Use the Classified ads to find living room and bedroom furniture. How much money did you use? Do you have any left over? How much?
5. Compare used car prices and equipment and determine the best deal according to both dealer and private-party ads.
6. Figure out the average salary of certain categories of jobs in Help Wanted, such as secretaries, receptionists, managers and skilled or professional workers.
7. Figure out the average size of office space for rent.
8. Look at resort property for rent. Compare the rents in resort areas to those in your community.
9. Find a farm that has acreage and a price listed in the ad. Figure out the total cost of land for sale or the cost per acre.
10. Pretend you were given \$20,000 to buy land on which to build a recreation area.
Use the Land for Sale section and locate the largest lot you can buy with \$20,000.
Where is the lot located? Does the location have anything to do with the cost?

MATHEMATICS • MATH in the NEWS

Goals: To develop flexibility in problem solving by utilizing a variety of strategies.
To collect, organize, describe and display data to solve problems.

Preparation: Use the following list of questions to determine if students can locate information in newspapers and complete computations based on what they find. To make the task easier or more enjoyable, have students circle answers or the information needed to do the computation and have them work in teams or small groups. Because the list of questions is long, consider assigning selected questions or have students finish a few at a time.

While students work, observe their handling of newspapers. If most students are unfamiliar with the newspaper, conduct activities that will acquaint them with the organization and content. If using questions as a test of students' abilities to apply math to real-life situations or to prepare them for tests, time the activity and use the questions as a pretest and posttest. Those should be given before and after a unit on math applications in the newspaper.

Activities: Give students one or more parts or all of the following activity.

- A. FRONT PAGE:
 1. What is the newspaper's telephone number?
 2. When was the newspaper published?
 3. Where is the top story continued?
 4. How much does the newspaper cost?
 5. How much does it cost to buy this day's newspaper for a week?
 6. What is the largest number you can find on the front page?

MATHEMATICS • MATH in the NEWS, continued

Activities, continued:

7. On what page will you find the following:
 - a. theatre information
 - b. sports
 - c. comics
 - d. cities with below-freezing temperatures

- B. WEATHER:
 8. What is the difference between yesterday's high and low temperatures?
 9. How does yesterday's record high and low compare with yesterday's actual high and low?
 10. How long between sunrise and sunset today?
 11. How much above or below normal is the rainfall this year?

- C. CLASSIFIED ADS:
 12. Name the location of the first two apartments in the For Rent section that cost less than \$500.00 per month to rent
 13. Find the first five two-bedroom apartments for rent that give the monthly rental rates.
What is the average rate for renting those five apartments?
 14. In the miscellaneous section of "Help Wanted," which job has the highest salary listed?
From the salary listed, figure out the income:
 - a. Per year
 - b. Per month
 - c. Per week
 - d. Per hour based on a 40-hour work week

- D. RETAIL ADS
 15. Choose three advertised items to give as a birthday present for your best friend. Each must cost less than \$15.00.
 16. Compare the costs of the following items sold at two different grocery stores: eggs, chicken, milk, lettuce, bread, flour, cheese, potatoes, ground beef and margarine.

- E. TV/ MOVIES
 17. Name programs that air at the following times:
 - a. 5:00 p.m.
 - b. 7:30 a.m.
 - c. noon
 - d. 9:00 p.m.
 18. Which movie(s) have a showing at 7:05 p.m.? (Or closest to that time.)
 19. Which TV show is the longest?
 20. When are most movies shown?
 21. What is the average length of movies?

**Activities,
continued:**

F. STOCK MARKET

22. Locate the first five companies that record losses on the stock market.
23. Locate the first five companies that record gains on the stock market.

G. SPORTS

24. Which sports team in the news lost by the largest margin?
25. Which individual players scored the most points for their teams?

H. OTHER

26. Read the first recipe in today's newspaper. How many people does it serve? If you doubled the recipe, how would it read?

Write math word problems based on the information in the newspaper. Exchange with a partner and solve the problem.*

*Cook, 1979

MATHEMATICS • COMPARING ATTRIBUTES

Goal: To compare attributes using appropriate vocabulary.

Preparation: Provide newspapers and scissors, paper and glue if desired.

Introduce terms that are used in comparisons such as same, different from, more than, less than, half as much as, fewer, more, most, minimum, maximum, bigger, biggest and average as well as words describing color, weight, height, length, texture and size.

Activities: Have students hunt newspapers for examples of comparative terms.

Younger students can classify objects by cutting them out and gluing them together in groups to represent similar attributes. For example, all boys and men or girls and women should be grouped together. Objects can be grouped by category, color or specified model. Use each opportunity to reinforce the term and meaning of the term "set." Some examples include:

1. Choose a set of items having the same number of sides.
2. Choose a set of items having the same shape or color.
3. Choose a set of items that are long or short, small or large.

Older students should be challenged to put items in a specific order. Ask students to cut out a set of no more than four items from the newspaper. Have them place the objects in order in any of the following ways:

1. Largest to smallest, in the photo and in real life
2. Least to most expensive
3. Least to most necessary
4. Most to least desirable
5. Most to least popular

MATHEMATICS • CALENDAR CONCEPTS

Measurement

Goals: To recognize concepts of calendar time.
To solve problems involving applications of time (clock and calendar).

Preparation: Provide sections of the newspaper that contain dates and other references to calendar language and time. If needed, highlight examples and identify context clues that aid students in their efforts to identify numbers that refer to time. Examples of context clues are a.m. and p.m., the colon used to separate the hour and minutes, the names of the months and days of the week, etc.

Activities: Students should go through the newspaper and locate all references to calendars and time. Create a class chart of calendar and time words and representations from the newspaper. Have younger students work individually or in groups to create a clock or calendar using the representations they find. Locate references to any dates located in the newspaper and order them sequentially. Locate any references to dates in history and make a time line or history book with them.

MATHEMATICS • TV TIME

Measurement

Goals: To tell time to the hour and half hour and various intervals.
To solve problems dealing with elapsed time.

Preparation: Provide sections of the newspaper that provide the television schedules. Movie listings and sports schedules can also be used for a variation of scheduling activities.
Make available the student worksheet M 12-8.

Activities: Have students select from the TV schedule the programs that they like to watch during their free time. Ask them to list the programs in order of preference and the times and channels. They should check to make sure that programs don't overlap and should consider whether they chose to watch too much television. Have students calculate the total amount of time they are planning to watch television and then cut the amount of time in half or to one hour and revise their selections.
Younger students should practice reading TV schedules by finding the time and channel for their favorite program(s). Have students highlight the name of the program and time and channel. Provide the graphic organizer M 12-8.

MATHEMATICS • PROBLEM-SOLVING TIME

Goal: To solve problems dealing with elapsed time.

Preparation: Provide sections of the newspaper that contain references to time. Have students find references to time on the front or sports page, in ads and throughout the newspaper. The entertainment section has many references to time.

Activities: Ask students to identify the symbols or words used to indicate that the number refers to time. Also have them circle less obvious time-related words and phrases such as yesterday, annual, limited warranty and 90-day guarantee. Discuss the meanings of examples the students find.

Develop activities that require students to add and subtract time. Directions follow:

1. Look in the weather pages for the time of sunrise and sunset. Subtract to find out the number of daylight hours for the day. Also, use tide tables if those run in the weather section to figure out when high and low tide occur at several coastal cities. Subtract to find out the amount of time between high and low tide.
2. Use information in ads to figure out how long stores are open daily and during special sales. When airline schedules run in the newspaper, subtract and find out the amount of time involved to travel from one city to another. Take time zones into account.
3. Recipes also have time references. Estimate the amount of time required to prepare a dish. Explain your estimate using information given in the recipe. Calculate how the time changes if you prepare several batches of the recipe or cook several things to make a meal.
4. Expand on activities using the TV schedule. Identify programs that are one-half, one, two and three hours in length. List the programs, times and channels. Classify programs by type such as situation comedies, soap operas, news and sporting events. Figure out the amount of time scheduled for each type.

MATHEMATICS • RECIPE REWRITE

Goals: To solve problems using measurement concepts using appropriate units. To deal with concepts of capacity, temperature and time.

Preparation: Provide food sections. Identify and have students identify foods that are appealing. Make available the student worksheet M 13-9.

Activities: Have students double recipes and/or cut them in half. They should write the recipes including the changes. Choose short recipes that have few fractions to make that easier.

Have older students pretend that they are on vacation at a place that has a limited number of cooking utensils. They have one teaspoon, a cup measuring $\frac{3}{4}$ cup and a mixing bowl and spoon. Have them rewrite a recipe from the newspaper to fit the instruments that are available. For example, if $1\frac{1}{2}$ cups of flour are called for, then it should be rewritten to read two $\frac{3}{4}$ cups of flour.

In addition, have students identify time references in recipes and calculate the time spent cooking, baking, stirring, blending or mixing. To extend the learning, have students locate temperatures.

Select a special occasion recipe such as a heart-shaped cake for Valentine's Day. Have students use the grocery ads to figure out how much it costs to prepare that recipe.

MATHEMATICS • RECIPE REWRITE, continued

Measurement

Activities, continued: Students should also compare ingredients in recipes. Ask: Which calls for more salt, sugar, eggs, oil, flour and seasoning? What is the total required if two recipes are prepared?
Provide the graphic organizer M 13-9.

MATHEMATICS • WEATHER MAP MATH

Number and Operations
Data Analysis and Probability

Goals: To solve problems dealing with temperature.
To collect, organize, analyze, and display data to solve problems.

Preparation: Provide sections of the newspaper that include weather information.

Activities: Point out the variety of information in the special section devoted to the weather. In addition to the temperatures and levels of precipitation, the weather page gives tide tables and times for sunrise and sunset. Ask students to read and interpret weather charts and graphs. Below is a list of possible questions:

1. What is the high and low temperature predicted for today? What is the difference between the two?
2. What is the record high and low for today? How does it compare with the high and low predicted for today?
3. What is the expected high and low in several major cities such as Atlanta, Chicago, New York, Los Angeles and Washington? Where is the difference between high and low the greatest? What are the highest and lowest temperatures predicted? Where are those predicted? What temperatures are most like the temperatures where you live?
4. What time does the sun rise and set? How many daylight hours will there be?
5. What is the precipitation level for this month? this year? Are those below or above normal levels? by how much?
6. What is the time for high and low tide in North Carolina coastal cities? How long between high and low tide?

Discuss related questions such as: What impact does weather have on daily life? Why?

Goal: To estimate and measure length, width, perimeter and area.

Preparation: Provide a page from the newspaper and a ruler.

Activities: Ask the students to measure the length and width of the following. Ask them to calculate perimeter and area of the shapes that permit such measurement.

width of a column
size of ads
length of a story
size of pictures

Use a ruler to determine the length, width, area and perimeter of the space used for each of the following on a given page:

news	captions (cutlines)
ads	photos
comics	headlines

Approximately 60 percent of every newspaper is devoted to advertising. See if this is true by measuring sections of the newspaper. Repeat this activity.

MATHEMATICS • INDIRECT MEASUREMENT

Goal: To apply and use concepts of indirect measurement.

Preparation: Provide newspapers and scissors but no measuring tools until the very end of an activity.

Activities: Have students look in the newspaper to analyze the size of the graphics. Give them a few minutes to look through the paper and then have everyone select one picture and write down the name of the object and its page number. Then have them look through the paper and find another object they believe is the same size. Once they believe they have found one, have them cut both objects out and compare their measurements.

Have students work in pairs. Students should go through the newspaper, cut out an object and show it to their partner and then hide it from view. Then partners should go through their own newspaper to find an object (but NOT the very same one!) that is the same size. Compare the two objects for accuracy.

Ask students to go through the paper and cut out pictures or advertising sections of specific measurements or requirements WITHOUT the use of a ruler. For example:

1. Cut out something that is taller than five inches
2. Cut out something that is twice as long as it is wide
3. Cut out something that is smaller than two inches

After the activity, have students measure for comparison and accuracy.

MATHEMATICS • SPATIAL SENSE with SHAPES

Geometry

Goals: To identify geometric shapes and concepts.
To model and use directional and positional vocabulary.
To complete simple spatial visualization tasks.

Preparation: Provide sections of the newspaper that have photographs and ads. Provide markers. Prepare directions that will allow students to apply math-related terminology.

Activities: Use the following list of words and examples to guide directions.

above	circle	inside	low	over	smaller
after	different	join	match	parallelogram	sphere
alike	down	larger	more	rectangle	square
around	enough	last	near	same	trapezoid
before	far	less	next	separate	triangle
below	heavier	line	none	shape	
between	high	longer	outside	shorter	

Sample Directions:

1. Place an X near the boy in the photograph.
2. Circle the larger object in the cartoon.
3. Draw a line around, between, under or outside the hamburger in the ad.

MATHEMATICS • SHAPE CREATIONS

Geometry

Goals: To identify and compare shapes.
To use appropriate vocabulary to compare, describe and classify figures.
To solve problems involving geometric figures.

Preparation: Provide copies of newspapers, crayons, scissors, glue and paper.

Activities: Have students locate and outline in different colors the shapes of triangles, squares, circles and rectangles from newspapers. Younger students should search in the newspaper for shapes and cut them out. Shapes can be classified and glued to charts or made into Shape Books.

Students should also cut out various shapes and use them to create a given shape or picture. That can be done as a collage and each shape labeled by name. Students should be encouraged to create symmetrical or congruent figures as appropriate.

Ask students to cut out triangles, squares, circles and rectangles from the newspaper. They should sort them according to characteristics of shapes, such as has three lines and three corners, has no corners, has four sides. Identify objects in the environment that have the same shape as the shapes cut from the newspaper.

Have students locate an advertisement that shows a variety of items. Identify the shapes in the ad.

Activities, continued:

Ask students to draw shapes on pages in the newspaper and vary the sizes. They should describe what falls in each shape. Older students can determine the lengths of the sides and diagonals as well as the measurements of the angles in their shapes.

Have students cut out shapes and manipulate them to perform transformations. Provide grid paper and have them trace their cutouts, then perform transformations and trace those. Have students describe their transformations. Students can work with reflections and rotations in the same manner as appropriate.

Students can increase geometric vocabulary by creating an ad in which shapes are advertised. Assign students to create ads for different types of shapes in which their attributes must be defined using appropriate vocabulary to compare, classify and/or describe the figures.

MATHEMATICS • ATTRIBUTE ANALYSIS

Goal: To describe the change in attributes as figures are cut and rearranged.

Preparation: Provide students with newspapers, scissors and markers or crayons. Make available the student worksheet M 17-10.

Activities: Instruct students to draw a series of shapes on a page of newspaper and cut shapes out. Have them describe the attributes of each of their shapes individually. Then students should combine shapes as a puzzle to create new figures. Each time they create a new figure they should describe the attributes of the new figure and compare the changes. Figures can be rearranged in a variety of ways. That would make an excellent paired learning or small group activity.

Another approach is to have students use a square of newspaper that is ten inches by ten inches. They should fold and cut to create a set of tangrams. Discuss the relationship of the pieces to the whole and to each other. Have students use the pieces to create shapes and pictures and describe their attributes. Compare the changes as the tangram pieces are rearranged to make new pictures. Provide the drawing of a tangram on M 17-10.

MATHEMATICS • COORDINATES in the NEWS

Goals: To use the coordinate system to solve problems.
To identify points using the coordinate system.
To use the coordinate system to describe position.

Preparation: Provide students with yardsticks, ruler and markers and model how they can use their ruler to draw a coordinate grid in the newspaper.

MATHEMATICS • COORDINATES in the NEWS

Geometry

Activities: After students draw a coordinate, have them complete the following:

1. Label your newspaper coordinate grid using letters and numbers appropriately.
2. Circle ten items on the newspaper page and, for each one, give the correct coordinates for the location of the item.
3. Make certain marks (such as a star or a red circle) in certain coordinates on your newspaper grid.
4. Analyze the structure of a page of the Classified ads and compare the structure to that of a coordinate plane or a graph. Use the same techniques as above to locate and identify positions on the Classified ads page.

MATHEMATICS • GEOMETRY SCAVENGER HUNT

Geometry

Goals: To use appropriate vocabulary to compare, describe and classify figures.

To describe positions of lines using concepts of parallelism and perpendicularity.

To use scaling and reasoning to solve problems related to similar polygons.

To identify, describe and draw from various views.

Preparation: After introducing information about geometric shapes and concepts, have students test their understanding by finding examples in newspapers and by taking measurements to classify them. Have them circle, cut out and paste on paper or display on bulletin boards all the shapes they find. You may also want to provide the Geometry Scavenger Hunt worksheet M 18-11.

Activities: To test student understanding of geometric shapes and concepts, have students find examples in newspapers and cut out and display shapes they find. Or use a scavenger hunt with time limits to locate shapes such as the ones listed below:

- | | |
|-----------------------------------|---------------------------------|
| a. two circles | f. two obtuse angles |
| b. three rectangles | g. two ray lines, line segments |
| c. one parallelogram | h. three quadrilaterals |
| d. two acute angles | i. four right angles |
| e. two examples of parallel lines | |

Students can also be asked to find other geometric objects such as:

triangles	acute angles	cylinders
perpendicular lines	squares	right angles
skew line	semi-circles	parallel lines
intersecting lines	obtuse angles	spherical objects
circles	rectangles	

Discuss the geometry used in newspaper pictures of buildings, such as houses, churches and schools, and of construction, such as state highways, dams, bridges and archways and office buildings. Have them measure acute, right and obtuse angles.

MATHEMATICS • GEOMETRY SCAVENGER HUNT, continued

Activities, continued:

Have students use house plans from the newspaper to measure and define angles, to determine perimeter and area and to figure out what portions of the house are devoted to the various living spaces such as bathroom, kitchen, foyer, garage, etc.

Ask students to analyze house plans according to scale. Tell them to think of the house plans in terms of their three dimensional view and draw the house from a different perspective such as from the top, side, front or corner. Real estate ads often feature house plans.

Geometry

MATHEMATICS • POLYGON PROBLEMS

Goal: To solve problems involving the properties of polygons.

Preparation: Provide newspapers and instruments for making and measuring geometric shapes and angles. Describe the various angles:

1. right angle – 90°
2. acute angle – less than 90°
3. isosceles angle – two congruent sides and angles
4. scalene angle – no congruent sides or angles
5. equilateral angle – three congruent sides and angles
6. obtuse angle – more than 90°

Activities: Ask students to find examples of each type of polygon. Have them choose one and identify the vertex and/or identify the rays, which form the sides. Have them measure each angle of a triangle and compute the sum.

Geometry

MATHEMATICS • CIRCULAR CALCULATIONS

Goal: To identify the characteristics of circles.

Preparation: Provide newspapers and instruments for making and measuring geometric shapes. Introduce the terms that explain the characteristics of a circle.

Activities: Have students find several circles of varying sizes in newspapers and construct the following: radius, diameter, center, chord, arc and tangent. Students can measure circumference as appropriate.

Geometry

MATHEMATICS • ANGLE ANALYSIS

Goal: To describe the relative position of lines using concepts of parallelism and perpendicularity.
To identify and describe the intersection of figures in a plane.

Geometry

MATHEMATICS • ANGLE ANALYSIS, continued

Geometry

Preparation: Provide newspapers and instruments to make and measure given geometric shapes.

Activities: Have students do the following:

1. Look through the newspaper and identify various lines. Describe each line in relation to its position to another line on the page.
2. Use a compass and straight edge to bisect an angle or line located in the newspaper.
3. Collect pairs of angles and pairs of lines whose measures satisfy the relations less than, equal to or greater than. Make a poster or book of the samples.
4. Find various figures in the newspaper and trace each line segment with a different color marker. Describe the intersections of the figures.

MATHEMATICS • DATA DESIGNS

Data Analysis and Probability

Goals: To collect, organize, describe and display data to solve problems.
To use Venn Diagrams to display data.

Preparation: Provide newspapers, scissors, glue and paper or Venn diagram. Make available the student worksheet M 20-12.

Activities: Ask students to locate three different sets of data (for example, words, numbers and pictures) and organize the data into like sets. Students should cut examples of words, numbers and pictures out of the newspaper and glue them in groups or into their Venn diagrams as appropriate based on their attributes or characteristics. Provide the graphic organizer M 20-12.

MATHEMATICS • SPORTS ANALYSIS

Data Analysis and Probability

Goal: To collect, organize, describe and display data to solve problems.

Preparation: Provide sports pages and student worksheets M 20-13 and M 20-14. Identify sports that are in season and discuss details and rules of the game. Use questions to encourage students who are interested in sports to tell others what they know about each sport, including:

1. How long does a game or match last?
2. How are the points scored?
3. What are the penalties?
4. When is the sport in season?

Activities:

Ask students to locate the results of games and matches in the sports pages. Then have them list all the winning and losing scores and figure out the margins of victory. First, they should look for that information in scoreboards or box scores and then inside stories. Having student read and interpret box scores develops chart-reading skills. Provide the graphic organizer M 20-13.

**Activities,
continued:**

After discussing the sports scores in today's newspaper, write questions that are based on information from the articles. Because sports are seasonal and rules vary from sport to sport, questions must fit the particular sport being discussed. Sample questions about three major sports are given below:

FOOTBALL: Find information about professional football games.

Identify the quarterback for each team and ask questions about each:

1. How many passes were attempted? completed?
2. What percentage of attempts was completed?
3. How many yards were gained on the average for each completed pass?
4. How many yards were gained on average for each carry?

Identify running backs and ask similar questions such as:

1. How many yards were gained overall?
2. How many yards were gained per carry?

Detailed information about specific football games can be used to compare the performance of the teams involved. Ask questions:

1. Which team had more first downs? How many more? What percentage overall?
2. Which team gained more yards per carry? How many more?
3. Which team gained more yards passing? How many more?
4. Which team was more successful in returning kick-offs?
5. Which team had the fewest interceptions?
6. Which gave up more yards on penalties?

Mark out final scores and ask students to study the statistics about each game. They should figure out which team won. Have them check their answers in another of that day's newspaper. For collegiate and high school teams, check conference listings that record wins and losses in and out of the conference.

Ask:

1. Whose overall record is worst? best?
2. What percentage of its games has this team won?
3. How do the in-conference and out-of-conference records compare?

Have students set up linear equations using football scores. Use the graphic organizer M 20-13 and the activity on linear equations on page M 27.

BASEBALL: Have students select a team and find the following information:

1. How many games has the team won or lost? What is the percentage won or lost?
2. How many games is the team back in the league or division (or conference, if high school or college baseball)?

BASKETBALL: Some abbreviations used in basketball statistics are given below. Have students select five players and find the following information about them: MP (minutes played) FG (field goals) FT (fouls thrown) R (rebounds) A (assists) TP (total points)

MATHEMATICS • SPORTS ANALYSIS, continued

Activities, continued: Use the graphic organizer M 20-14.

Name: MP FG FT R A TP

- 1.
- 2.
- 3.
- 4.
- 5.

Ask the following questions about the chart:

1. Who played the longest?
2. Who scored the most field goals or free throws?
3. In categories other than scoring, who contributed the most?
4. What percentage of the total points did each player score?

Think of other questions that are appropriate for sports. Emphasize the differences among the sports. Tennis and golf often receive coverage and students may know very little of the vocabulary and scoring of those games. Words like love, birdie and eagle have very different meanings when applied to tennis and golf.

MATHEMATICS • CHARTING DATA

Goals: To collect, organize, describe and display data to solve problems.
To use a variety of types of charts and graphs.

Preparation: Provide newspapers and take advantage of opportunities offered to identify, make and interpret charts and graphs. Use newspaper examples to explain the function of graphs and charts (to present data in a form that makes understanding it quicker and easier.)

Begin with an explanation of graphs and charts, such as: A graph shows how factors vary in relation to each other and present information in many forms. Characteristics and examples of several graphs are given below:

1. Bar graphs have bars that can be vertical and horizontal and are usually labeled by dates, time, or amount.
2. Line graphs use heavy lines to connect horizontal and vertical quantities. Points usually indicate amounts, dates and time periods.
3. Pictographs use symbols such as balls, cars or stick figures. The symbols are usually placed to the right of names, dates or time periods.
4. Circle graphs represent the whole amount. A wedge is designed to show a percentage of the entire amount.

Preparation,

continued: “Chart” is a broader term that applies to diagrams, outlines, maps and tables. A chart does not have to show how variables relate to each other. For example, it can show the route of a spacecraft or track a hurricane. In the form of tables, newspapers routinely chart weather information, sports statistics and TV schedules.

Activities: Have students locate a chart or graph in newspapers and try to write in paragraph form all of the information in it. Have them exchange papers and try to draw conclusions based on the information. Then have them look at the chart or graph. Ask:

1. In the time allotted, were you able to write all of the information in the graph or chart into paragraphs?
2. Were you able to draw conclusions based on the information other students gave you?
3. Were you able to figure out more when given the actual graph or chart?

Proceed with activities that help students identify and interpret maps and graphs in newspapers. For example:

1. Collect and label graphs found in the newspaper such as bar, circle, etc. Compare the different types located and tell why each was used for a particular set of information.
2. Locate a graph in the newspaper. Interpret the data to a friend. Does your friend agree or disagree with your interpretation?

Next, have students use statistics in newspapers to make graphs and charts. For example:

1. Choose any of the items given below to construct a graph you find interesting: temperature changes, team or individual points, food price variations, corporate profits or auto sales.
2. Use the same set of information to construct another type of graph or chart. Determine which graph presents the information most clearly.

MATHEMATICS • CHARTS and GRAPHS

Goals: To collect, organize, describe and display data to solve problems.
To use a variety of types of charts and graphs.

Preparation: Provide appropriate newspaper sections. Familiarize students with the meaning of graph and chart and their uses in newspapers. (See preceding activity.)

Activities: Assign student activities that require them to identify and interpret information in the newspaper and put it into a chart or graph. Vary the content and sections and give instructions as shown:

MATHEMATICS • CHARTS and GRAPHS, continued

Activities, continued: WEATHER:

1. Make a graph of high temperatures in your area for a period of a week. Do the same with low temperatures. Which day had the greatest extreme in temperature? What was the difference?
2. Find the times for sunrise and sunset for a month. Make a broken-line graph that shows the changes.

RETAIL AND CLASSIFIED ADS:

1. Use the grocery ads to follow cost of selected foods over a period of a month.
Make a line graph to show changes in the cost of those items.
2. Select 10 two-bedroom apartments from the classified ads. Make a graph comparing monthly prices from all ten apartments.
 - a. Which apartment costs the most?
 - b. Are there special features, such as location, recreation areas or paid utilities which justify the additional cost? Can you create a chart detailing those features? Or try creating a decision-making grid that lists all features including costs and check all that apply.

STOCK MARKET:

1. Use information about the twelve most active stocks to construct a bar graph.
2. Construct a graph showing the “highs” and “lows” of one or two companies listed in the stock market reports.
3. Make a line graph charting the indexes on a day-to-day basis. (The Dow Jones index is based on the performance of 500 companies that tend to show what the economy is doing.)

OTHER:

1. Select articles from the newspaper containing percentage breakdowns of a whole body (such as population increases in geographic regions in the U.S. or percentage of agricultural exports grown in North Carolina) and ask students to construct circle graphs to show the information in the story.
2. Use the lists of births in the newspaper to chart the number of boys and girls born over a certain period. Chart the information on a pictograph, bar graph and a graph of your choice. Determine which graph best presents the information and why.
3. Categorize the television shows in the TV listings: humorous, educational, sports and information. Make a graph showing how many programs are being shown in each category.
4. Graph the number of points in a major game from the sports section.

Goals: To describe events as certain, impossible, more or less likely to occur.
To assess statements for elements of probability.

Preparation: Provide appropriate newspaper sections. Discuss the concept of probability.

Activities: Ask students what they are likely to find in the newspaper. What kind of information is it probable to find in this type of text? What types of information/stories are they unlikely to find?

Have students look in the newspaper for examples of predictions, such as weather forecasts, sports forecasts/predictions, etc. Have them discuss the probability of those analyses being correct.

Have students look for examples of statements that are probabilistic. Some examples might include:

1. Chances of rain are...
2. The likelihood is...
3. On the average...
4. The odds are...

Discuss the expressions that were located. Ask: What do they mean? Are the terms always used in mathematically correct ways?

MATHEMATICS • STATISTICALLY SPEAKING

Goals: To locate statistical terms and vocabulary.
To identify misuses of statistical and numerical data.
To determine mean, median and mode.
To solve problems using data.
To design and conduct experiments or surveys to solve problems and report/analyze results.

Preparation: Provide newspapers. Discuss statistical terminology.

Activities: Choose from the following directions:

1. Search the newspaper for examples of statistical terms such as average and median.
2. Record all the numbers on the front page of the newspaper either in numeral or word form. Give the range. Compute the mean, median and mode.
3. Examine and analyze the statistics found on the sports pages. Use the sports data to perform a variety of calculations, as in the Sports Analysis Activity located on pages M 20 – M 22.
4. Analyze the newspaper to evaluate the use of statistical language for accuracy. See if you can locate any mistakes in pictorial representations of data.
5. Look for examples of advertisements that use sampling statistics, such as “Four out of five dentists recommend...” Discuss the choice of language and its impact on the reader.

MATHEMATICS • STATISTICALLY SPEAKING, continued

Activities, continued:

6. Design and conduct an opinion survey of some kind. Tabulate the results and report them in a brief news story with accompanying graphs. The completed story and graph can be published in a classroom or school newspaper.
7. Survey 20 people to find out how thoroughly they read the newspaper each day or how often they read the newspaper. Consider using the questions provided in the Newspapering section, Lesson 2, About the News. Graph the results.

MATHEMATICS • ATTRIBUTE SOUP

Goal: To sort and classify objects by attribute.

Preparation: Provide students with newspaper, scissors, glue and paper or the Attribute Soup student worksheet M 26-15.

Activities: Provide the class with a sorting rule and ask them to go through the newspaper and cut out everything they find that meets the criteria. Have them glue their set of objects to their poster or worksheet. You may want to assign different criteria to different groups or pairs of students or to allow them to come up with their own sorting rule. Encourage discussion by each group/pair to share their rule with the class at the end of the activity. Examples:

One criterion — words, numbers, pictures, people, shapes.

Two criteria — words with five letters, two-digit numbers, pictures of animals, people who are smiling, shapes with corners.

Choose other, appropriate criteria for more advanced students.

MATHEMATICS • PATTERN PLAY

Goal: To describe and extend number and geometric patterns.

Preparation: Provide newspapers and supplies for cutting and gluing as appropriate.

Activities: Have students search the newspaper for patterns within the paper. They should look for patterns in the way pictures, numbers, letters, words, captions, shapes and columns are laid out.

Ask them to use the newspaper to create patterns. Have students lay papers down on the ground in a pattern. Patterns can vary as much as the newspaper, folded, unfolded, opened, closed, broadsheet, double truck, single page, picture facing up, words only facing up.

Direct students to cut items/objects out of the paper to create patterns. They should glue the patterns onto paper and label the patterns.

MATHEMATICS • NUMBER SENTENCES and SYMBOLS

Goals: To write addition and subtraction number sentences to represent a problem.
To use symbols to represent unknown quantities in number sentences.

Preparation: Provide newspapers, scissors, glue sticks, markers and paper.

Activities: Give students ten minutes to go through the newspaper and cut out as many numbers as they can during that time period. Then, have them glue some of the numbers on a paper with a space in between each number and the next. In each space, have the students write a symbol. The symbols they can use include: +, -, ×, <, >, etc. Have the students analyze the relationships from one number to the next and write in a symbol to show that relationship.

Next, have the students manipulate the remaining numbers on their desks to make number sentences. Have them write the number sentences with the correct symbols and solve each problem.

Have them choose a page in the newspaper and circle two numbers with a marker. Then, they should write a symbol (addition, subtraction, multiplication or division) between the two numbers and solve the problem. Do that with as many pairs of numbers as possible on the page. The activity can be used to practice one particular skill such as addition or to illustrate mastery of a variety of skills.

MATHEMATICS • LINEAR EQUATIONS

Goal: To use and evaluate algebraic expressions, linear equations or inequalities to solve problems.

Preparation: Provide newspapers. Also have sections available to use in solving simple equations.

Activities: Introduce the idea of substituting one symbol for another by creating a math code. Assign each letter of the alphabet to a corresponding numeral. Headlines can be encoded by replacing each letter with a simple addition or subtraction problem whose solution is the same as the number of the replaced letter. (Example, the letter 'A' is replaced by the number one.) A math problem to replace the letter could be $0 + 1$ or $2 - 1$)

Continue to work with number/letter relationships by using the following system: A=1, B=2, C=3... Z=26. Go through the newspaper and cut out a word from a headline and find out how much the letters will equal using this system. Next, think of this in terms of money and find a word in the newspaper that is worth \$1.00. Challenge students to find the words that are worth the most and the least.

Have students practice expressing relationships that involve variables. For example, using coupons that show 35¢ off the regular price of a product and allowing P to represent the original price, what is the proper expression for the price of the item with the coupon? ($P - \$.35$).

Ask students to look for numbers to illustrate terms or relationships discussed in class. Examples of terms are positive and negative integers and examples of relationships are inequalities, ratios, percents and fractions.

MATHEMATICS • LINEAR EQUATIONS, continued

Algebra

Activities, continued: Set up equations using information in ads and statistics in sports. For example: Check the grocery ads and write an equation similar to the one given below that shows a short shopping list:

x @ price per lb. of ground beef y = price per head of lettuce z = price per lb. of cheese

$$3X+Y+Z =$$

Ask students to fill in the unknowns and see how much the food costs. If more than one price is given in the grocery ads, students should choose the lowest price.

Take final scores from football games reported in the newspaper and write or have students write equations that show how the teams could have earned their points. For example: A score of 20 could be earned in several ways. Two are shown here.

x = 6 points for each touchdown y = 3 points for each field goal z = 2 points for each safety a = 1 point for each extra point:

$$3X+A=20$$
$$2X+2A+2Y=20$$

After students come up with real possibilities, ask which equation most likely represents the actual score. Discuss which possibilities are impossible or improbable. For example, they should know that a team cannot score extra points unless they score touchdowns.

The following real-world and practical math problems apply to several areas of math, so the activities are listed together rather than in sections designated as Numbers and Operations, Algebra, etc.

MATHEMATICS • LANGUAGE of CONSUMERS

Vocabulary

Goals: To respond to and use the vocabulary of mathematics.
To solve problems related to money management concerns which are faced by the typical consumer.

Preparation: Provide newspapers and markers.

Activities: To make students aware of words that relate to mathematics, have them make a word bank containing words from all sections of the newspaper. To make the task easier, have students work together and/or match words that they are given. At the end of the activity, list all of the different words on a chart. Discuss and explain the relationship to math and have them learn to spell and use the words correctly. Give students an opportunity to add to the bank at any time. Make available LA 11-4 for recording new words and their definitions.

With older students, emphasize specific groups of words, especially those related to money management.

Activities: Use categories such as:
 banking and consumer credit
 housing
 transportation

Examples of words are:
 installment buying
 down payment
 interest rate
 social security
 savings and investment taxes
 federal and state budgets
 interest
 principle
 supply-side economics
 individual retirement account

Many of the words describe ideas or policies that are new. To find accurate meanings and explanations, have students study the use of words and phrases in newspapers over a period of time and look in other media for additional information.

MATHEMATICS • MONEY MANAGEMENT

Goals: To develop fluency with rational numbers.
 To use algebraic expressions to solve problems.
 To develop flexibility in problem solving, using a variety of strategies.
 To solve problems related to money management concerns, which are faced by the typical consumer.

Preparation: Provide newspaper ads, retail ads from clothing stores, transportation ads and travel sections, etc. as desired to complete the following activities. Look for ads that have several items costing less than \$30. Provide retail ads from clothing stores. Advertising inserts are excellent to use especially with younger students.

Activities: Ask students to find gifts in the newspaper that fit in each category listed below. (If students know how to compute tax, check after the activity to see if they remembered to include tax.)

1. under \$5.00
2. under \$10.00
3. under \$20.00
4. under \$30.00

MATHEMATICS • MONEY MANAGEMENT, continued

Activities, continued: Designate gifts for specific people, such as peers, family members, elderly friends or neighbors and for specific occasions, such as birthdays, graduation and religious holidays. Have students list the gifts and compare with other students' lists. To add interest to the activity, poll the class and find out which items are most popular under each category. Graph the results.

Tell students to pretend that they have \$100 to spend on new clothes. They must select the clothes from newspaper ads. After they have chosen the clothes, check to see who remembered to figure in tax and who came closest to spending all of the money. Have older students pretend they are setting up house. Give them \$200 to spend on small household items or appliances or \$1200 to spend on major appliances. They should look in retail and classified ads for bargains.

Look and have students look for ads related to transportation such as car sales and service, airline schedules and tires for sale. Ask questions that help students read the ads:

1. How long does it take to fly from one city to another taking into account changes in the time zone? What is the cost?
2. How much does it cost to buy four new tires? (Designate the type of tire.)
3. How much does it cost to have tires realigned or to have a tune-up?

Ask students to look for detailed information that can affect the quality, kind and cost of services advertised. For example: Are special services limited to certain times, places or types of car?

1. Use airline ads to compare the cost of airfares to any one location.
2. Pretend you won \$750 to spend on a vacation. Use the travel section and ads, particularly Resort Property in the Classified ads, to select your vacation spot, transportation, lodging and food. Note any missing information.
3. Look for tours advertised in the newspaper. Find and list the cost. See what the cost covers. Can it be broken down into transportation costs, food and lodging?

MATHEMATICS • COMPARING COSTS

Goals: To develop fluency with rational numbers.
To use algebraic expressions to solve problems.
To develop flexibility in problem solving, using a variety of strategies.
To solve problems related to money management concerns, which are faced by the typical consumer.

Preparation: Provide Food sections from newspapers. Wednesday afternoon and Thursday morning editions carry grocery ads, recipes and other information about diet. Sunday newspapers frequently carry grocery ads. Make available the student worksheet M 30-16.

Activities: Ask students to compare prices on items before and after the price is reduced. Also have them compare the cost of the same or similar items in different packages. For example: Compare the prices of orange juice canned, frozen or in cartons. Also give them an amount of money and ask for items that cost less than the amount, such as \$1.00 or \$20.00.

Older students should be asked to compare the cost of foods advertised in grocery ads. Make a list of items that appear in more than one store and have students search the ads for prices. Follow up by asking if one store has more items at a low price. Students should also list the four least or most expensive meats, fruits or vegetables and compare to see if other students find different items.

Students should also compare the cost of furniture and other items in retail and classified ads. For example: They should compare the price of new and used items. Also have them find five different prices for buying a home, list them from least to most expensive and from smallest to largest and determine whether the largest house costs the most. Follow a similar procedure when comparing salaries listed for jobs in the Classified ads.

Describe occasions for food buying. Select or have students select from ads the foods for each occasion. If a grocery list is given to students and the grocery store is named and pointed out in the newspaper, then the task is easier. To make the activity more difficult, have them select the foods from several stores and total the cost.

Try the following as team activities, small group tasks or independent learning. Choose or have students choose the items, list the cost of each and figure out the total cost.

1. Plan a birthday party for ten young people. (Some will choose pizza and others, cake and ice cream.)
2. Plan a picnic for yourself and a friend.
3. Shop for Thanksgiving, Christmas, Hanukkah or Sunday dinner. Plan meals during other religious holidays.
4. Pretend you are planning a meal for a family of three that consists of one adult and two children. Use the ads to find the cost of providing two meals a day for five days for the family. Can you stay within a \$30 or \$40 budget?
5. Shop for the ingredients for your favorite recipe or for one in the newspaper.
6. Compare the cost of cooking hamburgers at home with the cost at a fast-food store. Don't forget to add in the cost of all your favorite trimmings, such as tomato, lettuce, onion or pickle.
7. Look for information that affects the price of items. For example: Must you buy \$25.00 worth of groceries to get the low-priced item? Must you clip a coupon? Must you have a store card? Does the low price apply to purchases of more than five pounds?

MATHEMATICS • INCOME and BUDGETING

Goals: To develop fluency with rational numbers.
To use algebraic expressions to solve problems.
To develop flexibility in problem solving, using a variety of strategies.
To solve problems related to money management concerns, which are faced by the typical consumer.

Preparation: Provide newspapers, particularly classified and display ads and articles that carry consumer-related information.

Activities: Ask students to pretend they just graduated from high school or college and must find a job and place to live. Have them find five jobs in Help Wanted that match their interests and qualifications. (Students should predict what their qualifications will be when they graduate.)

After they identify jobs, have students figure the salary range and/or average salary for the jobs. Discuss the phrase “living within your means” and assign activities like those encountered in real life. Ask students to use monthly income as the basis for budgeting.

Have them use newspapers to complete the following activities:

1. Find an apartment to rent. (Rent should total no more than 30 percent of income.)
2. Furnish the apartment. Purchase new and/or used furniture from ads.
3. Buy groceries for a week and use the week’s total to figure monthly expenses.
4. Select a car and figure monthly payments. (Remind students that the list price does not include interest. Students should add interest to the cost. If an interest is not given in the ad, have them use the current rates charged by banks and other lending institutions. Most loans are set up on a three-year, 36-payment system.)
5. Select three outfits suitable for work and total the cost. After students complete the newspaper-related exercises, have them estimate other expenses not covered, such as entertainment, utilities, insurance and gasoline.

Follow up with a discussion. Ask:

1. Who stayed within the limits of his/her income?
2. Were anyone’s expenses based on unrealistic choices? (An extreme example of unrealistic budgeting is allowing \$5.00 for food.)
3. Did anyone think of alternatives and use those to reduce expenses? (Examples are having a roommate or eliminating the need for a car by living close to work or on a bus route.)

Choose a family from a book or newspaper story students read or describe a family such as the one below:

Sam Jackson has worked for an airline. He enjoys cars and spends much of his leisure time working on them. He and everyone else in his family like to participate in group and individual sports. Jean Jackson is a licensed practical nurse. She also enjoys pottery and is interested in returning to school. Joe is 16 and has worked part-time as a bus boy in

**Activities,
continued:**

a restaurant. Ellen is 12, has done babysitting and likes to work on projects with other members of the family.

Group students in fours. Each person should assume one of the family roles. Ask students to pretend that the family has sold its home and household belongings and is moving into their area. Because the family's house and belongings were sold, \$70,000 is in hand for the down payment on a house and for furnishings. Have each group of students choose a house and furnishings from newspaper ads and total the cost. Remind them to include interest when computing monthly house payments. Also explain that 30-year loans are common.

Continue the role play. Work with monthly budgets. Ask students to choose a job(s) for each person, total the earnings and then buy groceries and conduct any other business provided for in newspapers. (See preceding activity.) Ask each group: How much does your family have at the end of the month? How much was spent? Extra expenses come periodically.

Have students use newspapers to figure the cost of the following extras:

1. Jean buys her husband and daughter birthday presents.
2. The Jacksons have a neighborhood party to meet people who live near them. They invite three other families; the total number of people is 15.
3. Joe buys a dog advertised in the Classified ads.
4. The family buys a second TV or car.
5. The new house doesn't have a washer or dryer. See how much used ones cost.
6. Sam replaces the tires on the family car.
7. Choose a place for the Jacksons to eat. Find an ad that gives prices and total the cost for the family's meal.

After figuring the costs, discuss how many extras the family can afford.

MATHEMATICS • HOUSING PROBLEMS

- Goals:** To develop fluency with rational numbers.
 To use algebraic expressions to solve problems related to real-world experiences.
 To develop flexibility in problem solving, using a variety of strategies.
 To collect, organize, describe and display data to solve problems.

Preparation: Provide copies of the Classified ads and point out the sections related to housing. Have available enough copies of a house plan for individual students or groups to use. Many Sunday newspapers and real estate ads carry house plans. Also, see the graphic organizer M 33-17.

Activities:

Ask students to compare the cost of buying a condominium to buying a home for sale with similar size and features. Ask: Which costs more? How much more? Have them list and discuss some of the advantages and disadvantages of each kind of ownership. They should read the ads and see what the seller considers to be the advantages of the condominium or house.

MATHEMATICS • HOUSING PROBLEMS, continued

Activities, continued: Figure the square footage of each room to compute the cost of carpeting specific rooms. Also have them choose items to furnish the house and total the cost.

Ask students to figure the price range and average costs of three- and four-bedroom homes in their town or county. Discuss the factors other than number of bedrooms that determine the value of a house. Examples are total square footage, size of lot and location. See the graphic organizer M 33-17.

Have them use information in ads and decide how much a house costs per square foot, how much one-half, one and two acres affect the cost and where the most and least expensive houses are located.

After analyzing housing costs in their hometown or county, ask students to figure costs of housing in other areas of the state and compare. Discuss the reasons why housing in some areas of the state is more or less expensive than housing in the local community.

MATHEMATICS • SAVINGS and INVESTMENT

Goals: To develop fluency with rational numbers.
To use algebraic expressions to solve problems.
To develop flexibility in problem solving, using a variety of strategies.
To collect, organize, describe and display data to solve problems.
To solve problems related to savings and investment.

Preparation: Provide newspapers that have ads and articles related to savings and investment.

Conduct a brainstorming session before and after the activity. Have students list as many ways of investing money as they can. See if they add to the list as a result of the activity.

Activities: Have students pretend they acquired \$1,000. Ask them to find items in the paper that can be bought for the \$1,000 and serve as an investment. If additional directions are needed, mention several ways people invest and point out sections of the paper where those are advertised or discussed. Examples are real estate, cars, jewelry, art, stocks, small businesses and savings accounts. Those are listed in classified ads and/or discussed in the financial sections.

After compiling a list of possible investments, ask student to work in groups and decide which are best. In class discussion, compare their choices. Note anything unusual.

After completing the exercise, change the amount of money for investment to \$10,000 and follow the same procedures outlined for choosing investments for \$1,000. Ask and discuss: What can be done with \$10,000 that cannot be done with \$1,000?

- Goals:** To develop fluency with rational numbers.
 To use algebraic expressions to solve problems
 To develop flexibility in problem solving, using a variety of strategies.
 To solve problems related to savings and investment.

Preparation: Provide financial sections of the newspaper that carry stock market reports.
 Also provide the following background information about the stock market.

The stock market is a place where listed companies offer shares of stock. Stockbrokers, who represent individuals and/or institutions that want to invest in a company, handle the buying and selling. Someone who buys stocks in a company such as Hardee's or McDonald's hopes that it will make money and pay high dividends and/or increase in market value. Anyone who has money can buy stocks. The broker receives a fee for handling the transactions.

Two stock exchanges, the New York and the American, are located in New York City. Both list large companies. Stock market reports printed in many daily newspapers tell what happened the day before, whether the price per share increased or decreased and the high and low price for the year. Many investors follow their stocks through the Internet.

When a stock is in demand, the prices rise; and, likewise, when stocks are not selling, the prices fall. A study of the stock market crash of 1929 shows that the laws of supply and demand haven't always worked as designed. Ask students to discuss the stock market with stockholders and other interested and knowledgeable people. They should identify different points of view because advice regarding of the stock market varies.

Activities: Explain the stock market listings in the classroom paper. Have students look for abbreviated names of familiar companies and decide which are up and which are down. (Dollar amounts are not listed with a dollar mark or with a decimal. When a stock is up $1\frac{1}{2}$ cents per share, it is listed as $+\frac{1}{2}$. When the listed high is $10\frac{1}{4}$, that means \$10.25.)

Ask students to pretend that they have \$5,000 to invest in the stock market. They should select five different companies to diversify their holdings. Have them keep track of their investments for a designated period of time, for several weeks or months and decide at the end of the period how much money they'd lose or make if they sold their stock.

Also have them compare the information in the classroom newspaper with that in *The Wall Street Journal*. Explain that the *Journal* is a business publication and carries the most complete information about the stock market. To make buying and selling stocks more scientific and true to life, have students study reports in the *Journal* and other business publications and then choose stocks to buy and sell. At the end of the designated period, discuss what happened:

1. Who made money? Who lost money?
2. Which stocks were most profitable?
3. What caused ups and downs in the market?
4. What were the reasons for buying and selling when you did?

Students may also want to compare stock market reports printed in a newspaper with those available online.

MATHEMATICS • FATE and CHOICE

Goals: To solve problems using models, diagrams and reasoning.
To develop fluency with rational numbers.
To use algebraic expressions to solve problems related to real-world experiences.
To develop flexibility in problem solving, using a variety of strategies.
To collect, organize, describe and display data to solve problems.

Preparation: Provide copies of the current issue of the newspaper, preferably with business stories and/or a Business section. Also provide the six situations on the student worksheet M 36-18 for students to analyze.

Activities: To play “Fate and Choice,” students should be divided into small groups. Each group should select at random a card containing the information presented in one of six situations (see student worksheets M 36-18.). Groups should be given adequate time (20-40) minutes to use their newspaper to set up a four-category budget for each situation. (SUGGESTION: Have students divide tasks so that after monthly incomes are established, only part of the group is working on a single category.) Have the group share its findings.

Vary the activity by extending the game. Add more specific categories to the budget. Personalize the game by having students develop their own situations to use in preparing budgets and providing more fixed items (amounts supplied by teacher) in the budget so that younger students are able to complete the activities.

The original Fate and Choice student worksheets, provided by NIE, *Winston-Salem Journal*.