### Week MATHEMATICS Essentials...





Week

### Math Trivia

by

The ancient Greeks believed that if you studied numbers you had to be a peson who did not need to work because you would probably be a person who was interested in strange and wonderful things. Who studies numbers today?



#### Using Numbers in **Powerful Ways**

Package A contains 5 pounds of hamburger meat for \$4.95.

Package B contains 3 pounds of hamburger meat for \$3.87.

Which is the better buy?



### Investigations

Let's find out about our class. What is the typical fifth grade student like? What do we mean by "typical?" What questions do we want to answer about ourselves?

Here's a possible plan of action:

Complete the census form on the back of this 1. page.

2. Decide what question(s) you will use to help describe a typical fifth grade student. Determine how you will collect your data.

3. Write a paragraph describing a typical fifth grader at your school.

(4th review)



#### **Fraction Fun**

If the red pattern block shape represents three-fifths of a shape, what does the whole look like?

If two-fifths of the shape costs \$0.50, how much would the whole shape cost?

If one-fifth of the shape weighs 12 ounces, how much will the whole weigh? (1.03)



#### FIFTH GRADE CENSUS

|                      | First               | Middle              |               | Last Name      |
|----------------------|---------------------|---------------------|---------------|----------------|
|                      |                     |                     | <b>TT • 1</b> |                |
| Date of Birth:       | Month Date          | Year                | Height:       |                |
| D. 1 W. 1 1          |                     | ·                   |               |                |
| Birth Weight:        |                     | Length              | at Birth:     |                |
| Place of Birth       |                     |                     |               |                |
|                      | City                | County              | Ĩ             | State          |
| Current Address      |                     |                     |               |                |
|                      |                     | Street              |               |                |
| City                 |                     |                     | Stata         | Zin Codo       |
| City                 |                     |                     | State         | Zip Code       |
| Home Telephone N     | umber:              |                     | e-mail        |                |
| Number of people w   | who live at this ad | dress:              |               |                |
| Number of brothers   | :                   | Number of sisters:  |               |                |
| Hair color:          |                     | Eye color:          |               | Shoe Size:     |
| Right handed or left | handed?             |                     |               |                |
| Circle grades attend | ed at this school:  | K 1 2 3             | 4 5           |                |
| How do you usually   | come to school?     | (check one) Walk    | Ride Bike     | e Bus Car Othe |
| Do you have a pet(s  | ) No V              | as If yas plassed   |               |                |
| Do you have a per(s  | ): 110 1            | es il yes, please ( | lescribe.     |                |
|                      |                     |                     |               |                |
|                      |                     |                     |               |                |
| What is your favorit | e: Subject in Sch   | nool:               |               |                |
|                      | At Home Activ       | /ity:               |               |                |
|                      | Sport:              |                     |               |                |
|                      | Television Pro      | gram:               |               |                |
|                      | M 1 1 0             |                     |               |                |
|                      | Musical Group       |                     |               |                |



- 5. When Joe was 5 years old, his father was 34. How old was the father when Joe was born?
- 6. Sal bought 2 boxes of cookies for \$1.69 each. What was the total bill?
- 7. Write the largest possible 3-digit number using 4, 5, 6.
- 8. What is the sum of two hundred sixty and one hundred eight?

## Solve this!



There are 18 students from Mr. Bishop's class seated in a circle. They are evenly spaced and numbered in order.

Who is directly opposite student #1? Who is directly opposite student #5? Who is directly opposite student #18?

If, in Mr. Simmons' class, pupil 47 is opposite pupil 16 when the group is seated in a circle, how many students are in this PE class?

# To the Teacher ... WEEK

#### **Commentary on Investigations:**

The census should be kept to access throughout the year. Do not try to graph all of these categories this week. The information from the census can also be used to form a class database.

Before having your students look at any of these data, be sure the students understand the difference between categorical and numerical data. Data that are words or categories are called categorical data, for example, where a person is born or a student's hair color. Data that are numbers are called numerical data, for example, a person's height or number of brothers and sisters.

#### **Misconception ALERT!**

**EXAMPLE:** 

Watch out for students using the count to find the range, median, or mean of categorical data. With categorical data the only accurate measure of central tendency is MODE.



The mode is blue. There is no range, median or mean. Students may try to say the range is 7 or 8 (using the y-axis, which is a label of count, not the actual data.) They may also try to say the range is red to yellow; however, the range is always a number. There is no mean with categorical data because the words cannot be added and divided. There is also not a median since the definition for median is the middle number in a set of ordered data.

**Solve This:** #10 is across from #1, #14 across from #5 and #9 is across from #18. 62 students in PE class. Suggested Strategy: Draw a picture.

| Me  | ntal Math       | Directions to Students: Number your paper from<br>1 to 10. Write your answers as the questions are called<br>out. Each question will be repeated only once. | a K | leeping | g Skills S | Sharp  |
|-----|-----------------|---|-----|---------|------------|--------|
| 1.  | (5 - 3) x 7 + 6 |   | н.  |         |            |        |
| 2.  | 4 + 2 x 5 - 3   |   | 1.  | 169     | 5.         | 29     |
| 3.  | Word form 237   | ,   |     |         |            | -      |
| 4.  | Round to neare  | est ten: 83   | 2.  | 93      | 6.         | \$3.38 |
| 5.  | Number of day   | s in this month   |     |         |            |        |
| 6.  | number of side  | s on a hexagon  | 3.  | 115     | 7.         | 654    |
| 7.  | Width of penci  | l: centimeter or meter  |     | -       |            |        |
| 8.  | Length of notel | book paper: foot or yard  | 4.  | 201     | 8.         | 368    |
| 9.  | 1/2 dozen       |   |     | -       |            |        |
| 10. | Number of yea   | rs in a century   |     |         |            |        |

# Week Essentials.

Grade S



Week

### Math Trivia

by

Regular number cubes are sometimes called seven cubes. Can you tell why?



#### Using Numbers in Powerful Ways

A boxing ring is a square with a maximum perimeter of 80 feet. What is the area of a boxing ring with the maximum perimeter?





#### Investigations

Palindromes are words or numbers that read the same backwards and forwards.

Examples of Palindromes:

| <u>Words</u>     | <u>Numbers</u> |
|------------------|----------------|
| race car         | 1991           |
| Rise to vote sir | 34543          |
| Try this:        |                |

1. Take any 2-digit (or greater) number and add the digits in reverse order to that number.

Continue this process with each successive sum until you get a numerical palindrome.
Examples: 9023

| <b>.</b>    | 3023    |
|-------------|---------|
| 245         | + 3209  |
| <u>+542</u> | 12232   |
| 787         | + 23221 |
|             | 35453   |

<sup>3.</sup> Now choose 3 other numbers. Add the numbers and their reversals until you get palindromes.

(1.03)

#### Fraction Fun

What fraction of this figure is shaded? How do you know?





Try to discover a number sentence that is the same when you read its digits from either direction, such as  $10989 \ge 98901$ 

(1.03)

### **Putting Your Calculator To Work**

*Directions:* During the week try to solve all of these problems. If you have trouble getting started, talk to a friend. Choose one of the problems, and write a letter explaining how you figured out the solution.

A stoplight flashes red for • How many days are there in 50 seconds, yellow for 5 seconds, one million seconds? and green for 65 seconds. • If human life expectancy is 75 In a 24-hour years, how many hours is that? period, how long is the light red? • About how long would the line be if the fifth graders in your class laid down head to toe to create a long line of students?

Sean passed a bowl of peanuts around to 11 friends. Counting Sean, there were twelve people.) Sean took 1 peanut, his 1st friend took 3 peanuts, the 2nd friend took 5 peanuts, and so on, until the 12th person took peanuts and the bowl was empty



How many peanuts were in the bowl in the beginning?

(1.03)

## Keeping Skills Sharp

- 1. 16 + 243 + 9
- 2. 60 x 7
- 3. 470 246
- 4. Round to the nearest 10: 461
- 5. What is the value of 5 in 12,584?
- 6.  $(5 \times 6) + 3 = ?$
- 7. Write in order from least to greatest : 438 348 843 483
- 8. Jana paid 50 cents for a pack of 14 baseball cards and 75 cents for a pack of 25 baseball cards. How many baseball cards did she buy?



How many ways can the librarian arrange these books on a shelf?





(1.03)

# To the Teacher ... WEEK

**Solve this:** Special for this week is a permutation because the listing of the order is important. The students may list all of the ways or create a tree diagram.

Help the students see the importance of using good order when making a list.

Example: ABCD, ABDC, ACBD, ACDB, ADBC, ADCB. Continue with the other 3 letters for 24 ways! This may also be a good time to introduce factorial notation but only if you feel your students are ready to discuss this. Since this is a permutation with 4 choices, it is a 4 factorial. The shorthand notation for factorial is an exclamation point. So 4! is called 4 factorial.

There are 24 ways to arrange these 4 books on the shelf.

Suggested strategy: Make a list.

| Men           | <b>tal Math</b><br>Directions to Students: Number your paper from<br>1 to 10. Write your answers as the questions are called<br>out. Each question will be repeated only once. |   | Keeping | Skills | Sharp     |
|---------------|--|---|---------|--------|-----------|
| 1.<br>2       | $(18 - 9) \times 7 + 4$<br>$(13 - 5) \times (6 - 5)$   | 1 | . 268   | 5.     | 500       |
| 2.<br>3.      | Word form for: 108   | 2 | . 420   | 6.     | 33        |
| 4.<br>5.<br>6 | Factors of 6   | 3 | . 224   | 7.     | 348, 438, |
| 6.<br>7.      | Number of centimeters in a meter   |   |         |        | 483, 843  |
| 8.<br>9.      | Number of quarts in a gallon<br>Number of quarters in \$2.00   | 4 | . 460   | 8.     | 39        |
| 10.           | Number of tens in 320  |   |         |        |           |

# Week Essentials.





Week

by

#### Using Numbers in Powerful Ways

Shuffle the <u>numbered</u> cards of an ordinary deck of cards (aces equal 1). Pick out one card to be the answer card. Then deal off the top four cards to use for an equation. Try to use 2, 3, or all 4 cards to form an equation. Example: Answer card is 4. Equation cards are 2, 6, 8, and 10. Possible equations are

 $(10 + 6 - 8) \div 2 = 4$  or 8 + 2 - 6 = 4 or

 $8 \div 2 = 4$ . Assign 5 points if you use all 4 cards to make an equation, 3 points for using 3 cards, and 1 point for using only 2 cards.

(1.03)



#### Investigations

Working with a partner, can you find one or more of these:

- 1. Odd 3-digit numbers with the sum of the digits = 5.
- 2. Number of times the digit 5 is written when you write from 1 to 1000.
- 3. Even 3-digit numbers greater than 700 whose digits total 11.
- 4. Multiples of 5 that are 3-digit numbers whose digit product is 90.

In each case, write an explanation of how you figured these out.

(1.03)

### Fraction Fun

This shape represents five-eights of a whole. What does one-half look like?

If the area of the given shape is 30 square cm, what is the area of the whole?

(1.03)



### For Further Study

Can you create a subtraction problem using all the number tiles 0-9?

| i de la compañía de | ing it on the gameboard. Once<br>inner is the person who has the<br>est to 0.5 or the player with the   | (1.01c) |
|--|---|---------|
| <b>Think Small!</b><br>Play is in groups of 2 to 4 people.<br>Is which has the Ace, 10, Jack, Queen, and King removed<br>its of 0 to 9 cards.  | down on table. Players take turns drawing a card and placted. Continue until each player has drawn 3 cards. The with <i>the continue</i> . Winner is the player with the decimal number close |         |
| Players each need a gameboard.<br>Each group needs a deck of carc<br>An alternate deck would be 4 se   | Shuffle cards and place deck face<br>a card is placed, it cannot be mov<br>smallest decimal number. <i>Altern</i><br>largest decimal number.  | -       |
| Materials:   | Directions:   |         |

## Keeping Skills Sharp

- 1. \$4.03 \$2.17
- $2. \qquad 36 + 298 + 7 + 314$
- 3. 245 ÷ 3
- 4. A wagon train could travel 19 miles a day. How far could it travel in 6 days?
- 5. The Pony Express rider rode 5 horses each for 17 miles. Did he ride more or less than 100 miles?
- 6. Write the largest possible even number using digits, 1, 2, and 3.
- 7. 2300 1065
- 8.  $(3 \times 8) + 7 =$



# To the Teacher ... WEEK

#### SOLVE THIS:

One possible solution is:

The students should discover more possibilities.

**Hint**: Instead of making a sum of 9, the students need to make 19 for the last 2 digits of the number. Example: 4 + 6 + ? = 19 (carry the one to the tens column).

Suggested Strategy: Guess and check

Math Trivia: twelve triangles

| Me  | ntal Math $\frac{D}{1}$ | irections to Students: Number your paper from<br>to 10. Write your answers as the questions are calle<br>ut. Each question will be repeated only once. | ed | Keeping     | Skills Sha | rp     |
|-----|-------------------------|--|----|-------------|------------|--------|
| 1.  | 5 x 2 x 6               |  | Ш  |             |            | , i    |
| 2.  | 4 x 2 x 7               |  | Ш  |             |            |        |
| 3.  | Word form for: 4        | 09   | Ш  | 1. \$1.86   | 5.85 m     | niles: |
| 4.  | Round to nearest t      | ten: 374   | Ш  | 1. 01.00    | less       | ,      |
| 5.  | Factors of 11           |  | Ш  | 2. 655      | 6. 312     |        |
| 6.  | Two lines that wil      | l never intersect  | Ш  | 2. 000      | 0. 012     |        |
| 7.  | Symbol for centin       | neter  | Ш  | 3.81 r 2    | 7. 1234    | 5      |
| 8.  | Number of inches        | in a foot  | Ш  | 5. 0112     | // 1200    |        |
| 9.  | 3 tens and 12 ones      | s in standard form   | Ш  | 4 114 miles | 8 31       |        |
| 10. | Value of 2 quarter      | rs, 3 dimes, and 1 nickel  |    |             | 0. 51      |        |