

## Math Trivia

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. W ho 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 $\$ 3.87$.

W hich is the better buy?


## Investigations

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

H ere's a possible plan of action:

1. Complete the census form on the back of this page.
2. Decide what question(s) you will use to help describe a typical fifth grade student. D etermine how you will collect your data.
3. Write a paragraph describing a typical fifth grader at your school.
(4th review)


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 onefifth of the shape weighs 12 ounces, how much will the whole weigh?


## For Further Study

What is a census and how is it used?

## FIFTH GRADE CENSUS

Name $\qquad$

Date of Birth: $\qquad$ Height: $\qquad$
Month Date Year

Birth Weight: $\qquad$ Length at Birth: $\qquad$
Place of Birth $\qquad$
City
County
State

Current Address $\qquad$
Street

Home Telephone Number: $\qquad$ e-mail $\qquad$
Number of people who live at this address: $\qquad$
Number of brothers: $\qquad$ Number of sisters: $\qquad$
Hair color: $\qquad$ Eye color: $\qquad$ Shoe Size: $\qquad$
Right handed or left handed? $\qquad$
Circle grades attended at this school: $\begin{array}{llllllll}\mathrm{K} & 1 & 2 & 3 & 4 & 5\end{array}$
How do you usually come to school? (check one) _ Walk _ Ride Bike _ Bus _ Car _ Other Do you have a pet(s)? __ No ___ Yes If yes, please describe:

What is your favorite: Subject in School: $\qquad$
At Home Activity: $\qquad$
Sport: $\qquad$
Television Program: $\qquad$
Musical Group: $\qquad$

## Keeping Skills Sharp

1. $23+146$
2. 287-194
3. $5 \times 23$
4. $804 \div 4$

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?


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?

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!

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.
EXAMPLE:

(favorite color)
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.

Mental Math
D irections to Students: Number your paper from 1 to 10 . Write your answers as the questions are called out. Each question will be repeated only once.

1. $(5-3) \times 7+6$
2. $4+2 \times 5-3$
3. Word form 237
4. Round to nearest ten: 83
5. Number of days in this month
6. number of sides on a hexagon
7. Width of pencil: centimeter or meter
8. Length of notebook paper: foot or yard
9. $1 / 2$ dozen
10. Number of years in a century

## Keeping Skills Sharp

1. 169
2. 29
3. 93
4. $\$ 3.38$
5. 115
6. 654
7. 201
8. 368


## Math Trivia

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

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## Using Numbers in Powerful Ways

A boxing ring is a square with a maximum perimeter of 80 feet. W hat 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:

| W ords <br> race car | $\frac{\text { N umbers }}{1991}$ |
| :--- | :--- |
| 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.
2. Continue this process with each successive sum until you get a numerical palindrome. Examples:

9023

| 245 | +3209 |
| ---: | ---: |
| +542 | 12232 |
| 787 | +23221 |
| 35453 |  |

3. N ow choose 3 other numbers. Add the numbers and their reversals until you get palindromes.

## Fraction Fun

W hat fraction of this figure is shaded? H ow do you know?

(1.03)

##  <br> For Further Study

Try to discover a number sentence that is the same when you read its digits from either direction, such as $10989 \times 9=98901$

## 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 50 seconds, yellow for 5 seconds, and green for 65 seconds.

In a 24 -hour period, how long is the light red?


- How many days are there in one million seconds?
- If human life expectancy is 75 years, how many hours is that?
- 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 2 nd friend took 5 peanuts, and so on, until the 12th person took peanuts and the bowl was empt


How many peanuts were in the bowl in the beginning?

## 湯 Keeping Skills Sharp

1. $16+243+9$
2. $60 \times 7$
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 : $\begin{array}{lllll}438 & 348 & 843 & 483\end{array}$
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)

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: $\mathrm{ABCD}, \mathrm{ABDC}, \mathrm{ACBD}, \mathrm{ACDB}, \mathrm{ADBC}, \mathrm{ADCB}$. 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.

$$
4!=4 \times 3 \times 2 \times 1=24
$$

There are 24 ways to arrange these 4 books on the shelf.
Suggested strategy: Make a list.

Mental Math
Directions to Students: Number your paper from 1 to 10 . Write your answers as the questions are called out. Each question will be repeated only once.

1. $(18-9) \times 7+4$
2. $(13-5) \times(6-5)$
3. Word form for: 108
4. Round to nearest ten cents: $37 \phi$
5. Factors of 6
6. Geometric figure: shape of a soup can
7. Number of centimeters in a meter
8. Number of quarts in a gallon
9. Number of quarters in $\$ 2.00$
10. Number of tens in 320

## Keeping Skills Sharp

1. 268
2. 420
3. 224
4. 460
5. 500
6. 33
7. 348,438 ,
8. 39 483, 843

## Math Trivia

H ow many triangles are in this shape?

(3.01)

## F24 Using Numbers in Powerful Ways

Shuffle the numbered 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.

## Investigations

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

1. O dd 3 -digit numbers with the sum of the digits $=5$.
2. N umber of times the digit 5 is written when you write from 1to 1000.
3. Even 3-digit numbers greater than 700 whose digits total 11.
4. M ultiples of 5 that are 3 -digit numbers whose digit product is 90 .
In each case, write an explanation of how you figured these out.

## Fraction Fun

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

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


## For Further Study

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

Think Small!
 $\square$


Each group needs a deck of cards which has the Ace, 10, Jack, Queen, and King removed.
Players each need a gameboard. Play is in groups of 2 to 4 people.
Players each need a gameboard. Play is in groups of 2 to 4 people.
An alternate deck would be 4 sets of 0 to 9 cards.

Materials:
Materials.


## Keeping Skills Sharp

1. $\$ 4.03-\$ 2.17$
2. $36+298+7+314$
3. $245 \div 3$
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. $(3 \times 8)+7=$


Use the digits 1 to 9 , once each in the square, and make a sum of 999 .


## SOLVE THIS:

One possible solution is:
584
136
$+279$
999
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

Mental Math
Directions to Students: Number your paper from 1 to 10 . Write your answers as the questions are called out. Each question will be repeated only once.

1. $5 \times 2 \times 6$
2. $4 \times 2 \times 7$
3. Word form for: 409
4. Round to nearest ten: 374
5. Factors of 11
6. Two lines that will never intersect
7. Symbol for centimeter
8. Number of inches in a foot
9. 3 tens and 12 ones in standard form
10. Value of 2 quarters, 3 dimes, and 1 nickel

## Keeping Skills Sharp

1. $\$ 1.86$
2. 655
3. 81 r 2
4. 114 miles
5. 114 miles 8. 31
6. 85 miles; less
7. 312
8. 1235
