



## Math Trivia

Bees are smart mathematicians. They choose to build hexagonal cells in their honeycombs. Mathematicians have shown that only regular hexagons, squares, and equilateral triangles can be fitted together so there is no wasted space (tessellated). Since the hexagonal cells have the smallest perimeter when their areas are equal, the bee uses less wax and does less work for the most space.



## Investigations

(2.01, 4.03)

What is a typical "cubit" in your class? Use centimeters to decide. Gather the data and display them. Talk about median, range, and mode.

What is the typical foot length in your class (in cm)? Is that two-thirds of a typical cubit? For how many students is their foot two-thirds of their cubit?

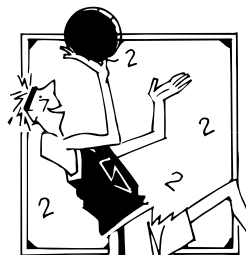
Explore the other relationships. Organize and display your data. Use your cubit, digit, palm, foot, and inch (thumb width) to measure some lengths in the classroom.



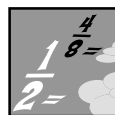
## Using Numbers in Powerful Ways

Basketball is a sport which uses geometry in its plays, statistics to describe the action, and data in determining the teams.

You have a sheet for the ACC and NCAA tournaments. Be sure to keep records of the tournament play. Make a prediction of the teams you think will win.



(1.03)



## Decimal Fraction Fun

Barry has a job that pays him \$12.25 an hour. He worked five hours this week and spent 0.4 of his earnings for lunches and half of what was left went into savings. How much money is available for other expenses?

(1.02, 1.03)



## For Further Study

Use only these keys on a calculator:



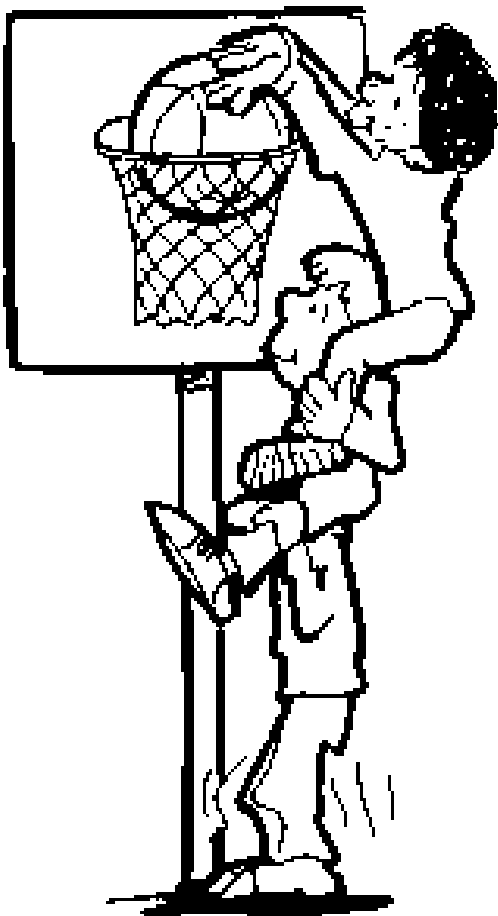
to get a display of 6.

(1.03)

# Basketball Mathematics

Name \_\_\_\_\_

Partner \_\_\_\_\_



1. What are the different ways mathematics is used in basketball? With a partner, brainstorm a list to present during a class discussion.

2. List the basketball teams in the Atlantic Coast Conference.

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3. Which team is your favorite? Why? (Each partner can write on the back of this sheet.)

4. Accuracy with free throws as well as shooting from the floor are described in percents. Percents relate to decimals in that they can be thought of as "parts of 100." Thus, 25% means 25 parts out of 100 parts or 0.25 of the entire effort. So a 25% shooter means that the player usually makes 25 out of 100 free throws (or 1 out of every 4). Decide how you and your partner will gather the data you need and who will illustrate which data. Would these displays influence predictions of who might win the tournament? Explain.

5. Set up the tournament chart for the ACC Championship. After the games begin, continue the chart until you know this year's champion.

6. Which ACC teams do you think will be invited to be a part of the 64-team NCAA tournament? Why these?

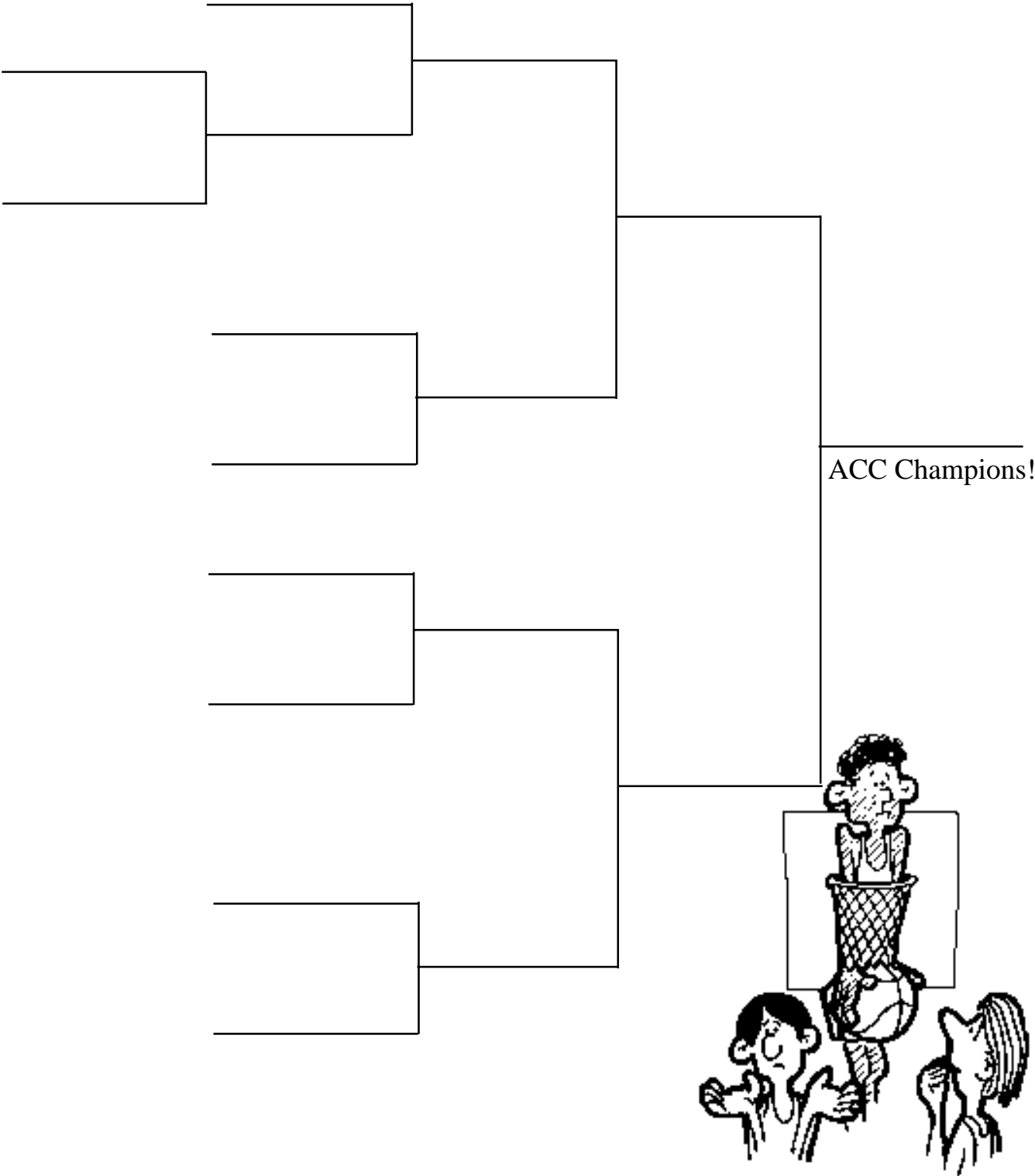
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7. How many rounds will occur in the NCAA tournament before the winning teams will reach the "Sweet Sixteen?" How do you know?

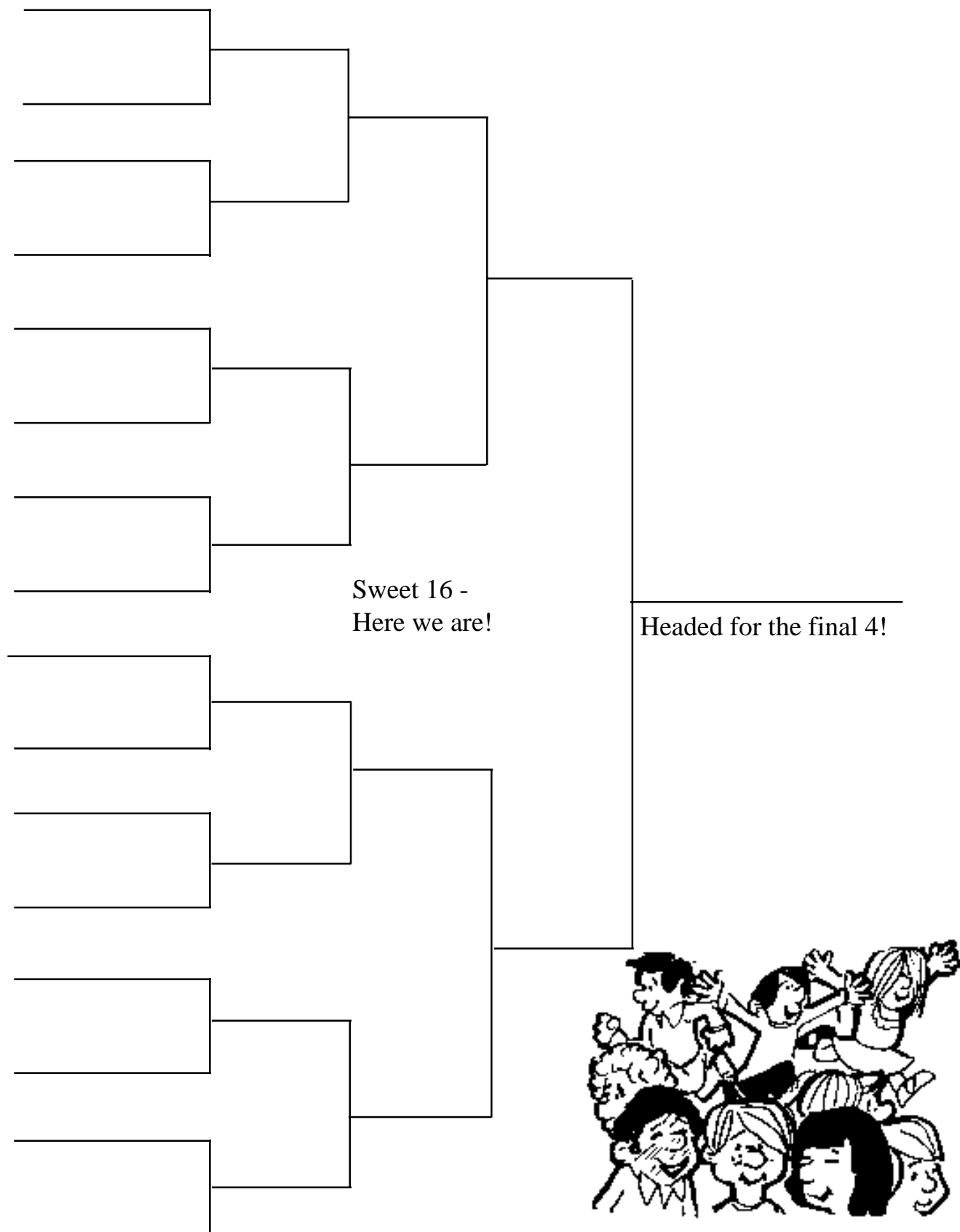
8. Use the Blackline Master to keep up with the rounds of the NCAA tournament.

# ACC Basketball Tournament

Thursday      Friday      Saturday      Sunday



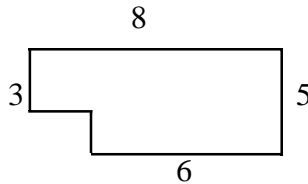
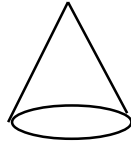
# NCAA Basketball \_\_\_\_\_ Regional





# Keeping Skills Sharp

1.  $341.6 + 1.4 + .27$
2. What is the name of this shape?
3. How much is 42 tens?
4. Warren bought two cartons of orange juice for \$2.19 each and a loaf of bread for \$1.29. What was his change from a ten dollar bill?
5. When Clarissa was 8, her mother was 41. How old was her mother when Clarissa was born?
6. When a certain number is multiplied by itself, the product is 400. What is the number?
7.  $2001 - 1976$
8. Find the area:



# Solve this!

At a checkers tournament there were 64 players. It was an elimination tournament. When a player lost, that player was out of the running. How many games were played before there was a champion?



(1.03)



# To the Teacher ..

Grade 5

WEEK  
22

## Looking ahead to the ACC and NCAA tournaments:

There are activities for students which focus on these big tournaments. You may wish to begin by having students survey all of the classes in the fifth grade (or the school) and make a display for the hall showing favorite ACC and/or NCAA teams before the action begins. Note that the fourth activity on the Basketball Mathematics sheet is an informal exploration of percent and is a way to relate decimals to percents. Blackline Masters are provided for tournament play.

**Solve This:** 63

**For Further Study:**  $7 - 4 + 7 - 4 = 6$

### 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.  $(8 + 24) \div 4 \times 6$
2.  $(40 + 16) \div 8 \times 7$
3. Write in fraction and word form 0.21
4. Round to the nearest thousand dollars: \$8,295
5. Factors of 45
6. A triangle with only 2 equal sides
7. Term for 1000 milliliters
8. Inches in 10 feet
9. 8 quarters, 3 dimes, 2 pennies = ?
10. Change for 78¢ from \$1.00

### Keeping Skills Sharp

1. 343.27
2. Cone
3. 420
4. \$4.33
5. 33 years old
6. 20
7. 25
8. 36 square units



## Math Trivia

Magic Squares have fascinated mathematicians and puzzle fans for centuries. They yield the same sum in every direction. Can you find the missing numbers in this magic square?

	89	41
		113
101		



## Investigations

Write a 3-digit whole number using 3 different digits. Repeat the digits in the same order. For example, 356356. This number will be divisible by 7, 11, 13, 77, 91, 143, and 1001.

Try several more examples. Why does this work? Work with a friend to figure this out.

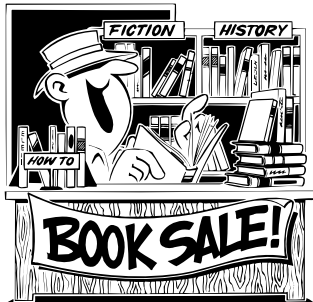
If you need a hint after several days, try multiplying your original 3-digit number by 1000 and comparing it with the 6-digit number.

(1.03)



## Using Numbers in Powerful Ways

Mark has less than 100 books to sell. If he groups them in 2's, 3's or 4's, he has one book left over. If he groups them in 7's he has no books left over. How many books does Mark have?



(1.03)



## Decimal Fraction Fun

Find numbers, A and B, that make these statements true:

- 1)  $4.5 < A < B < 4.6$
- 2)  $2.03 < A < B < 2.04$
- 3)  $1.007 < A < B < 1.008$
- 4)  $0.25 < A < B < 0.26$

(1.01c)




## For Further Study

Here is another magic square to try. Place the numbers 1 to 9 in a three by three grid so that all sums are 15.

(1.03)

# Flying High

	8	8	9	9	9
	6	7	7	7	8
	5	5	5	6	6
	3	3	3	4	4
	1	1	2	2	2

## Materials: Gameboard and Markers

**Directions:** Each player needs 10 markers. Players decide on a target number between 20 and 100 and write it on a sheet of paper. Players take turns placing a marker on one of the numbers on the board, each time announcing the cumulative result (product, quotient, difference or sum) of the covered numbers. Each number may be covered only once. Example: Player one covers 3, the second player covers 6 and announces

$$3 \times 6 = 18.$$

The third player may cover 2 and announce

$$18 \div 2 = 9.$$

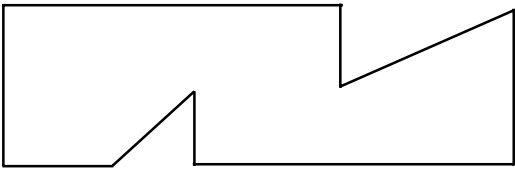
The first player to reach the target number exactly wins. If a player goes over the target number, he or she is out.

(1.03)





## Keeping Skills Sharp

1. The cost of joining the computer club is \$20.00 for 5 students. How much will it cost for 28 students to join?
2.  $299 \times 30$
3.  $8 + 6 = n + 8$      $n = ?$
4. On the back of this sheet, draw a pentagon with a perimeter of 30 cm.
5. Bruce can type 52 words a minute. Arty can type 6 more words a minute than Bruce. How many words can they each type in 10 minutes?
6. Measure the perimeter of this polygon to the nearest cm:  

7. Complete the pattern:  
 $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \text{ ———}, \text{ ———}$
8.  $879 \div 6$



## Solve this!

Divide \$6.00 among 3 students so that when Amy gets 3¢, Bono gets 5¢, and Teri gets 7¢. How much does each receive?





# To the Teacher ..

Grade 5

WEEK  
23

**Using Numbers:** 49

**Solve This:**

1. \$1.20
2. \$2.00
3. \$2.80

## 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.  $(9 \times 2 + 10) \div 7$
2.  $(8 \times 5 - 4) \div 4 \times 7$
3. Write as a fraction and a decimal sixty-two hundredths
4. Round to nearest whole number: 4.3
5. Second largest factor of 30
6. A quadrilateral with two sets of parallel lines
7. Term for 1,000 grams
8. Pounds in two tons
9. Minutes in  $10 \frac{1}{2}$  hours
10. Number of stars on 5 American flags

## Keeping Skills Sharp

1. \$112.00
2. 8,970
3. 6
4. check
5. Bruce 520  
Arty 580
6. 21 cm
7.  $\frac{4}{5}$ ,  $\frac{5}{6}$
8. 146.5 or 146 r 3 or  $146 \frac{1}{2}$



## Math Trivia

Divisibility by 5 is easy to see. Any number which ends in 0 or 5 is divisible by 5. Divisibility by 4 is almost as easy. Look at the last two digits of the number. If that number is divisible by 4, so is the entire number. For example, examine 643,024. The last two digits are 24. Since 24 is divisible by 4, the entire number is too! Try this same divisibility rule for division by 8. How is it the same? How is it different?



## Using Numbers in Powerful Ways

After The King's Chessboard by David Birch has been read to the class, use a calculator to continue the pattern of grains of rice as far as you can. With a calculator, predict how many days you think you can make an accurate prediction.

Can you figure out how many tons of rice were given on the 64th day if 549,755,830,887 grains of rice were given to the Wise Men?



(5.01)



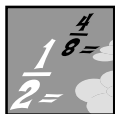
## Investigations

Using a measuring tape provided by your teacher, help measure the arm span of all students in your group. Measure accurately in centimeters. Be especially careful if student's arm span is greater than the length of your measuring tape.

Once all data have been collected and displayed on the board, construct a back-to-back stem and leaf plot separating the girls' data from the boys' data.

Find the range, median, mode(s) to help determine the typical arm span for a 5th grade boy and girl.

(2.01, 4.01)



## Decimal Fraction Fun

What number(s) will make these statements true?

- 1)  $3A > 4.7$
- 2)  $6 - B < 12.03$
- 3)  $C + 4.03 = 9$

(1.01c, 5.02)



## For Further Study

Nancy went to the store to buy cookies costing \$1.10. She counted her 30 coins and found she was a penny short. What coins did she have?

(1.03)

# *The Phantom Tollbooth*

## by Norton Juster

Name \_\_\_\_\_

Name \_\_\_\_\_

"Pardon me for staring," said Milo, after he had been staring for some time, "but I've never seen half a child before."

"It's 0.58 to be precise," replied the child. . . "Every average family has 2.58 children. . . each family also has an average of 1.3 automobiles." (pp. 195-196)

1. Averages are one way to talk about the center of data. *Averages or means* are determined by adding data and dividing by the number of data entries. Work with a partner and find these averages by using different groups of students for each task. Keep the data on each investigation separate.
  - a. Average weight of 7 of your best friends.
  - b. Average number of minutes of homework of 9 different students.
  - c. Average age of 7 other students' mothers.
  - d. Average number of letters in 9 other students' last names.
2. With your partner, compare the *average* of each set of data with the *median* and *mode*. Which gives the best answer to the question "What is *typical*?" Talk it over with your partner. Is your answer the same for every situation? Be prepared to discuss when *mean*, *median*, or *mode* are useful and when they might be misleading.
3. In the book *The Phantom Tollbooth*, the 0.58 child gave several examples of when, from his point of view, averages are beneficial. Read pages 193-197 in *The Phantom Tollbooth*. Explain the logic the boy was using. Do you agree with his reasoning? Explain:  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_
4. Combine your data from question 1 with that of others in the class. Does this alter your thinking for question 2?

Juster, Norton. *The Phantom Tollbooth*. New York: Alfred A. Knoff (Bullseye Books), 1989.

(4.03)



# Keeping Skills Sharp

1. Complete the pattern: 1, 4, 9, 16, \_\_\_\_, \_\_\_\_
2.  $\$40.25 - \$8.50$
3.  $706 \times 700$
4. Coach Byrd gives 7 tennis lessons a day. How many days will it take him to give 100 lessons?
5. What is the perimeter?  
What is the area?
 

6
6. The custodian is asked to set up chairs for a meeting in the library. He needs seats for 72 people. If he can put 8 seats in a row, how many rows must he make?
7. Thomas walked 2 miles in 45 minutes. At this rate, what time would he arrive at the park if the walk is 10 miles and he leaves at 8:30 a.m.
8. Lou paid a deposit of \$5.00 for a shirt that costs \$32.50. How much more does he owe?



## Solve this!

Arrange five red counters and five yellow counters in five rows, where each row has two chips of each color.



(1.03)

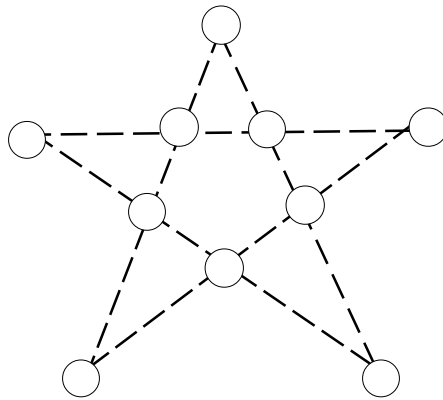
# To the Teacher ..

Grade 5

WEEK  
24

**For Further Study:** 1 quarter, 3 dimes, 7 nickels,  
and 19 pennies.

**Solver This:**



## 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.  $6 \times 6 + 6$
2.  $2 \times 2 \times 2 + 5$
3. 6,000,703 in words
4.  $15.3 \times 2$
5. Second largest factor of 35
6. The area of a square with a side of 8 cm
7. Abbreviation for kiloliter
8. Pounds in  $1 \frac{1}{2}$  tons
9. Wheels on 3 tricycles and 2 bicycles
10. 10 minutes before noon on a digital clock

## Keeping Skills Sharp

1. 25, 36
2. \$31.75
3. 494,200
4. 15 days
5.  $P = 54$  units  $A = 96$  sq. units
6. 9 rows
7. 12:15 pm
8. \$27.50