



Math Trivia

Sixty is the smallest number with 12 divisors. Those divisors are 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, and 60. There are four other two-digit numbers with 12 divisors. They are 72, 84, 90, and 96. No two-digit number has more than 12 divisors.

The smallest number with exactly 100 divisors is 45,360.



Using Numbers in Powerful Ways

1. Get a deck of playing cards and take out all of the face cards.
2. You will need to ask 1 to 4 students to participate in the game with you.
3. Four cards should be dealt to each player.
4. One extra card should be placed face up so everyone can see it.
5. The goal for each player is to use all of the numbers on all of his/her cards to match the number on the card that is face up.

Addition, subtraction, multiplication or division may be used.

Count the ace card as 1. Order of operations will be used.

6. The student who gets the answer first scores a point.

The first player to score 4 points wins!

(1.03)



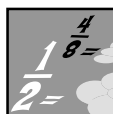
Investigations

Max Baer made some 3-legged stools, and some four-legged chairs. If he has exactly 29 legs for furniture, how many stools and how many chairs could Max have?



Write a detailed explanation showing how you found your answer. Your explanation will be scored using the rubric from the Making Connections section.

(1.03)



Fraction Fun

Using each digit only once, what is the largest sum that you can make with 8, 5, 3, and 2? smallest difference?

$$\frac{\square}{\square} + \frac{\square}{\square}$$

$$\frac{\square}{\square} - \frac{\square}{\square}$$

(1.02)



For Further Study

Each edge of a cube is 1 cm long. Find the total area of the faces of this cube.

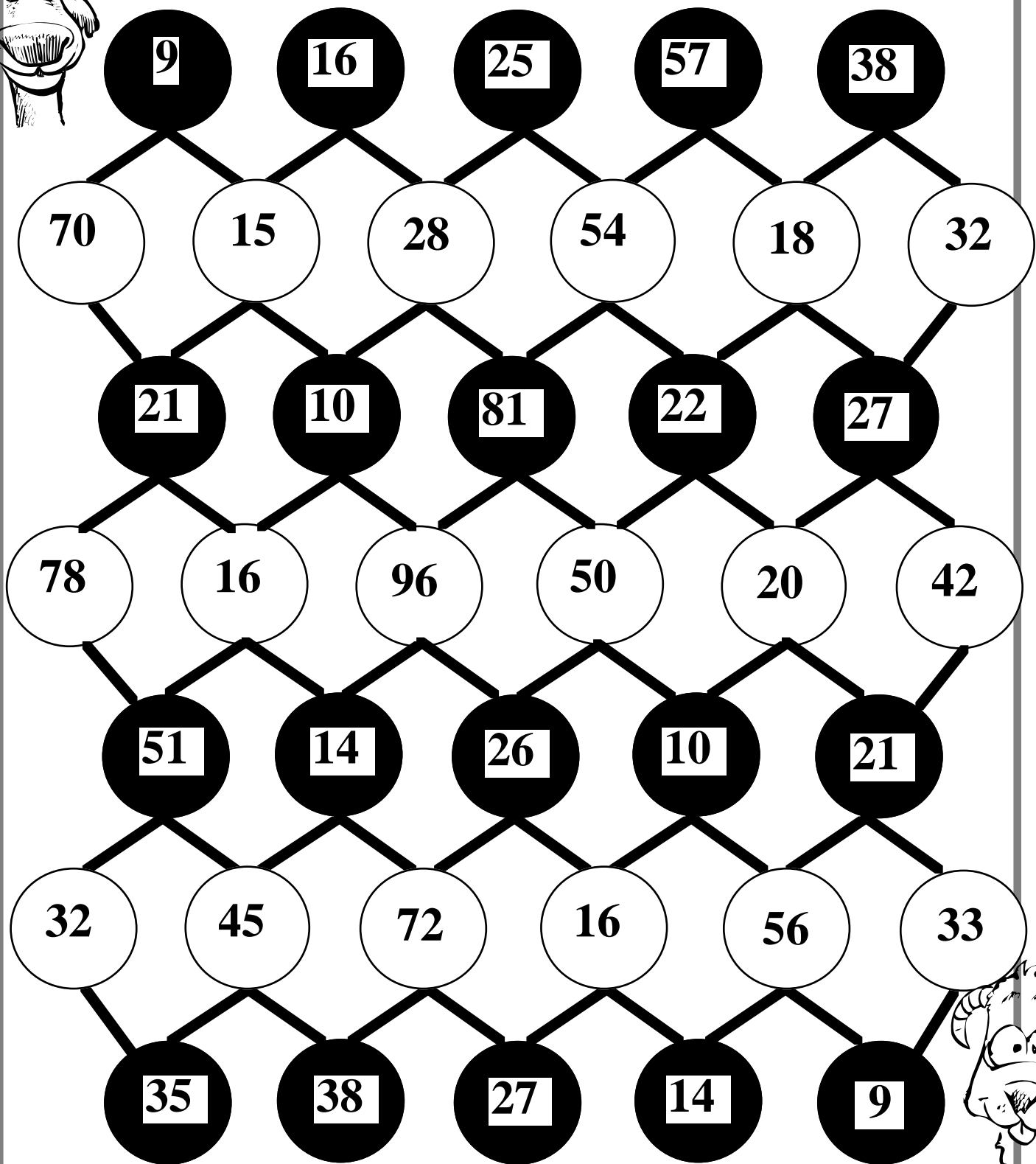
(1.03)



No Remainder Maze

Start

(Division review)



Start

Rules: Players start at opposite ends of the gameboard and move their markers according to the roll of a number cube. On the first roll each player may move to any shaded circle that is evenly divisible by the number on the cube. For all subsequent turns, a player may only move if the number on the cube evenly divides a number in one of the connecting circles. First player to exit the maze at the opposite side wins.



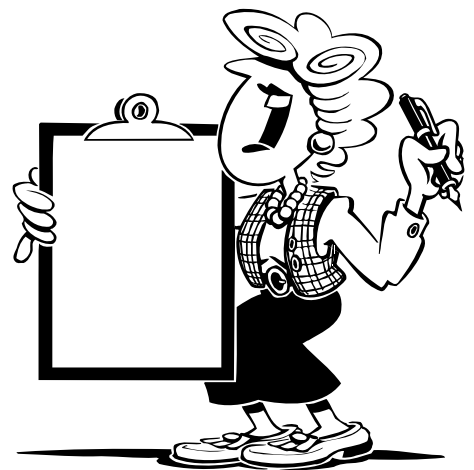
Keeping Skills Sharp

1. $\$70.00 - \48.29
2. 356×20
3. $4260 + 892 + 4915$
4. Ron had \$14.00 to spend on souvenirs at Carowinds. He wanted to buy 3 hats at \$4.25 each. Did he have enough money?
5. President Kennedy spoke 327 words in a 1-minute speech. How many words could he say in 5 minutes if he spoke at the same rate?
6. $\frac{1}{4}, \frac{3}{4}, 1, 1\frac{1}{2}, 1\frac{3}{4}, 2\frac{1}{4}, _, _$
7. $896 \div 8$
8. $(7 \times 8) + 12 = ?$



Solve this!

A farmer has both pigs and chickens on his farm. There are 78 feet and 27 heads. How many pigs and how many chickens are there? Describe how you figured this out.



(1.03)



To the Teacher ..

Grade 5

WEEK
7

Investigations:

3 stools and 5 chairs and/or 7 stools and 2 chairs

Solve This:

Before this week's problem solver special, see Booth's Bicycle shop from the **Problem Solving Deck B**. This should be modeled showing the "drawing a picture" strategy so students might use it.

Example 19:

tricycles and bicycles total.

Draw 19 circles. You know each one has to have at least 2 wheels, so put 2 lines on each circle, this uses $(19 \times 2 = 38)$ wheels, leaving 7 wheels.) Add those 7 wheels to 7 circles for another wheel to make a tricycle. This gives 7 tricycles and 12 bicycles. Students can use this same strategy to solve this week's SolveThis.

Solve This:

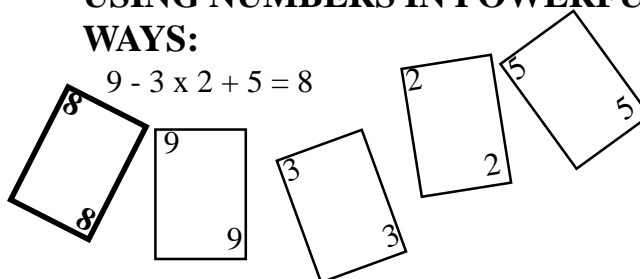
12 pigs and 15 chickens.

Suggested strategy:

Draw a picture.

**USING NUMBERS IN POWERFUL
WAYS:**

$$9 - 3 \times 2 + 5 = 8$$



Suggested Strategy:

Act it out.

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.

- $(12 + 6) \div 2 \times 8$
- $(3 \times 7 + 4) \div 5$
- Expanded form for 2,340
- Nearest hundred to 483
- Factors of 18
- Geometric figure with 6 square faces all congruent
- Symbol for meter
- Cups in 3 pints
- Days in 4 weeks
- Half an hour later than 2:20

Keeping Skills Sharp

- | | |
|---------------------|-----------------------|
| 1. \$21.71 | 5. 1635 |
| 2. 7,120 | 6. $2\frac{3}{4}$, 3 |
| 3. 10,067 | 7. 112 |
| 4. Yes
(\$12.75) | 8. 68 |



Math Trivia

There are more than 2,700 languages in the world plus more than 7,000 dialects. On the continent of Africa there are more than 1,000 different languages spoken. Mandarin Chinese is the most widely spoken language in the world; it is spoken by 885 million people. Hindustanic is second (461 million), English is third (450 million), and Spanish is fourth (352 million).



Investigations

Which is the best? Fast food restaurants now have nutritional information available about their products. While nutrition is an important factor, taste and personal preference along with costs are also important.

In your team design comparative studies of burgers, fries, shakes, chicken sandwiches, etc. You may decide to include preference surveys, nutritional information, or sales volume in making their presentations about which is the best food.

(4.01)



Using Numbers in Powerful Ways

What do these four numbers have in common?

1, 2, 4, 8

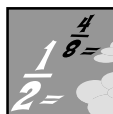
How many different statements can you make about all four?

Be creative - can you find a dozen or more?



Think beyond mathematics, too!

(1.03)



Fraction Fun

What's missing?

$$\frac{3}{8} + \frac{1}{4} = \frac{3}{6} + ?$$

$$\frac{2}{3} + \frac{3}{6} = \frac{5}{10} + ?$$

(1.02)



For Further Study

List all of the rules for divisibility that you can find.

Partners _____
 Names _____



Discovering Divisibility

A. Use a calculator to fill in the chart. As you work with your partner, talk about patterns you notice.

B. Are numbers divisible by 3 also divisible by 9? Are numbers divisible by 9 also divisible by 3? What does the sum of the digits tell you?

(5.01)

Number	Divisible by 3?	Divisible by 9?	Sum of Digits	Sum divisible by 3?	Sum divisible by 9?
36					
37					
78					
79					
117					
393					
396					
405					
456					
514					
600					
891					
892					
1539					
1630					
1632					



Keeping Skills Sharp

1. $9186 - 758$
2. 804×7
3. $\$52.55 \div 5$
4. $5.6 + 41.3$
5. Carlos spoke on the telephone for 20 minutes. If the telephone company charges 15¢ a minute, how much will his call cost?
6. If we want to arrive at the concert 45 minutes before it begins at 7:30 p.m., what time do we need to get there?
7. When the numerator and the denominator of a fraction are the same, the fraction equals _____.
8. Kaylee mailed 4 post cards for 20¢ each and 3 letters for 33¢ each. How much did she pay for stamps?



Solve this!

A fire inspector standing outside the building is checking the 29 exits of a theater. She must go through every door to check it. When she is finished, she'll have passed through every exit only once. Will she be inside or outside?



(1.03)



To the Teacher ..

Grade 5

WEEK
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Solve This:

When students are solving the problem they should keep in mind that testing a few numbers of doors would let the students conclude that if the number of doors is odd, the inspector will be inside the building. If the number of doors is even, the inspector will be outside the building. So, since there are 29 doors, the inspector is inside the building.

Investigations:

This week's investigation activity is an opportunity for students to review graphs. Make sure the students use graphs and measures of central tendency (mean, median, mode) for support during their presentations. You may want to extend this activity over the weekend.

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. $(8 \times 4 + 3) \div 5$
2. $(7 \times 5 + 1) \div 9$
3. Word form for 4,096
4. Estimate the sum: $52 + 31$
5. First 4 multiples of 6
6. Geometric figure that is the shape of a ball
7. Grams in kilograms
8. Inches in 2 yards
9. Seconds in 3 minutes
10. Change for 15¢ from half-dollar

Keeping Skills Sharp

- | | |
|------------|-----------|
| 1. 8,428 | 5. \$3.00 |
| 2. 5,628 | 6. 6:45 |
| 3. \$10.51 | 7. 1 |
| 4. 46.9 | 8. \$1.79 |



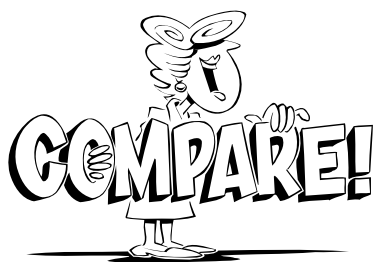
Math Trivia

A googol is 1 followed by a hundred zeros. A googolplex is 1 followed by a googol of zeros. A googolplex is so big that if you started writing it where you are, went around the earth and then to the farthest star, you would not have enough room to write it. The words "googol" and "googolplex" grew out of a discussion between Edward Kasner of Columbia University and some kindergarten children concerning numerals needed to describe the number of raindrops falling on New York City during a spring rainfall. Both terms were invented by Kasner's nine-year old nephew.



Using Numbers in Powerful Ways

How do you determine the area of a figure that is not a regular polygon? Trace your hand on a piece of centimeter grid paper. Find the approximate area of your hand.



Using a copy of Michael Jordan's handprint, find the approximate area of Michael's hand in square centimeters. Be ready to explain your answer in class and compare your results with other students.

(1.03, 3.04)



Investigations

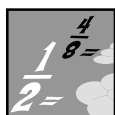
Many students mistakenly believe that multiplication always results in a larger product. Use your calculator to investigate these pairs:

8×4	8×0.4
16×5	16×0.5
49×2	49×0.2
10×83	0.10×83
100×35	0.100×35



The digits in these pairs are the same. Why are the answers very different? What does it mean to multiply by a decimal number?

(1.03)



Fraction Fun

Find three different values for N .

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} < \frac{1}{3} + N$$

(1.02)



For Further Study

There are several ways to write the symbol for multiplication

$$\begin{aligned} 4 \times 3 \\ 4 \cdot 3 \\ 4(3) \end{aligned}$$

Rolling, Rolling, Rolling



Directions:

1. Each player needs 10 markers of one color.
2. Players take turns rolling 2 number cubes and making a fraction. The players may cover an equivalent fraction on the gameboard.
3. If a player rolls doubles, he or she may roll again and either cover the equivalent fraction rolled or remove an opponent's marker.
4. The first player to get 3 in a row in any direction wins.

$$\frac{4}{20}$$

$$\frac{12}{16}$$

$$\frac{6}{9}$$

$$\frac{12}{20}$$

$$\frac{6}{12}$$

$$\frac{20}{30}$$

$$\frac{12}{15}$$

$$\frac{8}{20}$$

$$\frac{20}{24}$$

$$\frac{20}{24}$$

$$\frac{3}{12}$$

$$\frac{3}{18}$$

$$\frac{4}{24}$$

$$\frac{5}{15}$$

$$\frac{4}{12}$$

$$\frac{7}{14}$$

$$\frac{4}{8}$$

$$\frac{9}{12}$$

$$\frac{5}{10}$$

$$\frac{3}{9}$$

$$\frac{10}{25}$$

$$\frac{8}{12}$$

$$\frac{15}{25}$$

$$\frac{12}{18}$$

$$\frac{9}{15}$$



Keeping Skills Sharp

Write the value of **6** in problems 1-3:

1. 6,290
2. 263
3. 52,612
4. Write 4 related facts using the numbers: 6, 7, 42
5. Carl had \$4.25. He earned \$2.75 by running errands and \$4.50 by mowing lawns. How much money does he now have?
6. Thirteen hikers began a trip to Mount Mitchell. Five dropped out. How many made it all the way?
7. Write in standard form: $8000 + 500 + 40 + 9$
8. $12 + 8 \div 4 \times 3 = n$ $n = ?$



Solve this!

Latoya put a number into her calculator and subtracted 2016.

Then she doubled the result, added 364, and divided by 4.

The result was 2003.

What number did Latoya put into her calculator?



(1.03)



To the Teacher ..

Grade 5

WEEK
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Solve This:

Students need to know that for working backwards they must start at the end of the problem and perform the opposite operations. The opposite of addition is subtraction and the opposite of multiplication is division.

5840	2003	$\frac{3824}{2}7648$	$\frac{3824}{+2016}$
	$\times 4$		
	8012		5840
	-364		
	7648		

Suggested Strategy: Work backwards.

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. $(7 + 8 - 9) \times 5 \div 3$
2. $(4 + 8 - 5) \times 4 + 6$
3. Expanded form for 19,363
4. Estimate the sum: $324 + 475$
5. Prime numbers between 1 and 10
6. The polygon with the least number of sides
7. Symbol for kilogram
8. Pints in 1 quart
9. Months in $1/2$ year
10. Sum of the digits in 888

Keeping Skills Sharp

- | | |
|----------|------------|
| 1. 6,000 | 5. \$11.50 |
| 2. 60 | 6. 8 |
| 3. 600 | 7. 8,549 |
| 4. check | 8. 18 |

Michael Jordan's hand!

