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BRAIN BENDERS

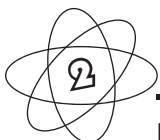
Advanced

Challenging Puzzles and Games for Math and Language Arts
Logic Puzzles • Number Problems • Word Games & More!



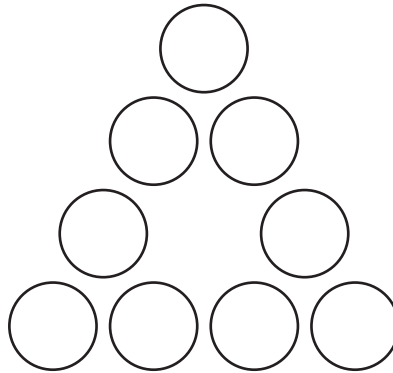
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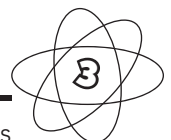
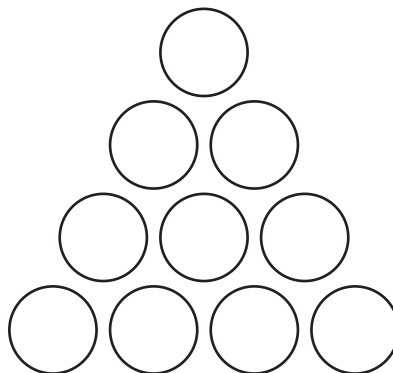


HELP PROFESSOR WHIZ

1. Professor Whiz had nine balls numbered from 1 to 9. The professor wanted to arrange the balls in the shape of a triangle so that the four numbers along each side of the triangle had the same sum. Write the numbers in the balls to show how he could do this.

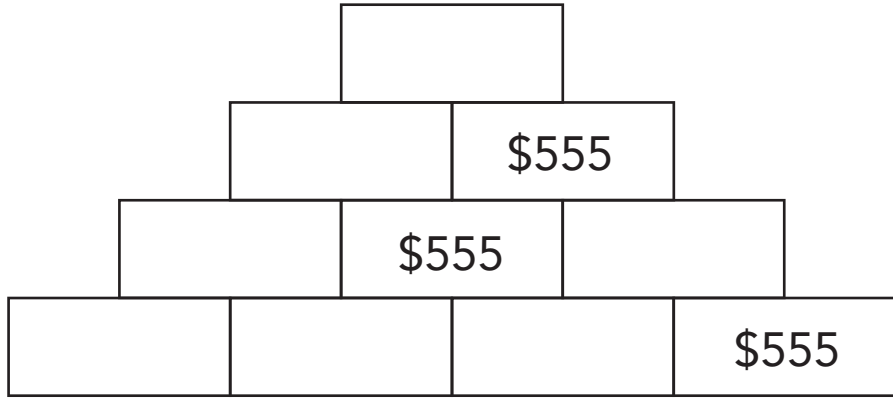


2. One of the professor's students gave him a ball with the number 0 on it. Professor Whiz decided to arrange the 10 balls to make another triangle. He still wanted the four numbers along each side to have the same sum. Write the numbers in the balls to show how he could do this, but do not put the 0 in the middle ball.

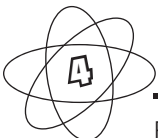
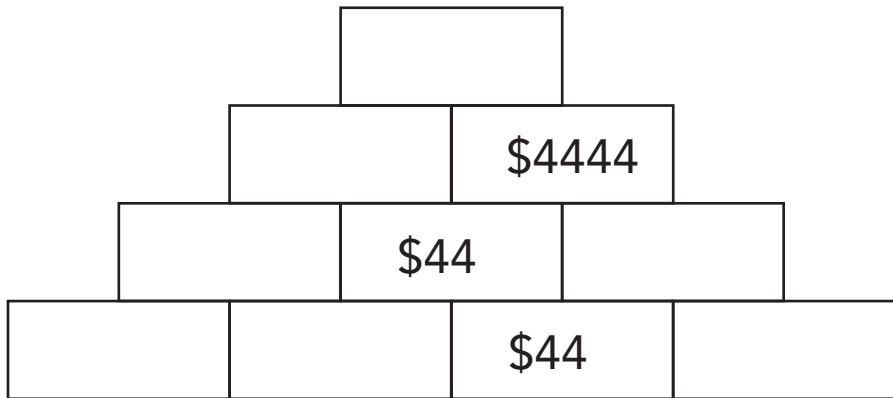


PYRAMID DOLLARS

1. Write the remaining dollar amounts on the pyramid to make a total of \$10,000. Use only the number 5. **HINT:** Use only whole dollar amounts.



2. Write the remaining dollar amounts on the pyramid to make a total of \$10,000. Use only the number 4. **HINT:** Use only whole dollar amounts.



MYSTERY DIGITS

One number in each equation has been replaced with the letter x. Write the number for x that makes each equation true on the line provided.

1. $\frac{x}{8} + \frac{x}{8} = \frac{x}{x}$

x = _____

6. $xx + \frac{x}{x} = 100$

x = _____

2. $\frac{2}{x} + \frac{2}{x} = 2$

x = _____

7. $\frac{(x)(x) - x}{x} = 3$

x = _____

3. $x + \frac{x}{x} = 4$

x = _____

8. $\frac{(x)(x) + x}{x} = 8$

x = _____

4. $\frac{x}{x} - \frac{x}{9} = \frac{x}{18}$

x = _____

9. $\frac{xx}{x} - x = 10$

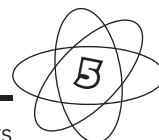
x = _____

5. $\frac{x}{9} - \frac{1}{x} = 0$

x = _____

10. $\frac{xx}{x} - 6 = x$

x = _____



AN AMAZING RECORD

Follow the steps to learn about an amazing record.

Step 1: Write the number $2,144,448,000$ on a separate sheet of paper.

Step 2: Divide the number by the product of 12 and 5.

What do you get? _____

Step 3: Divide the quotient by the sum of 33 and 27.

What do you get? _____

Step 4: Divide that quotient by the quotient of 48 and 2.

What do you get? _____

Step 5: Finally, divide that quotient by the difference between 454 and 89.

What do you get? _____

The answer in Step 5 represents the number of years that a person had the hiccups!

Bonus! What unit of measurement does $2,144,448,000$ represent?



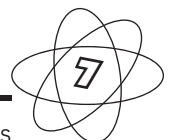
COUSIN TALK

1. Cory and Keith are cousins who live exactly 36 miles apart. The boys decide to meet halfway between their houses. At the same time, they start riding their bikes toward each other. Each boy is riding 6 miles per hour.

Keith has a dog that starts running the instant that Keith starts biking. The dog runs back and forth at 18 miles per hour between the two cousins' houses until the cousins meet. How far does the dog travel?

2. Kyle, Gladys, and Robert are cousins. All three cousins have different heights. Kyle is 14 inches taller than Gladys. The difference between Kyle and Robert is 2 inches less than the difference between Robert and Gladys. At 6'6", Kyle is the tallest. How tall are Robert and Gladys?

3. Jim wants to buy his cousin a guitar as a birthday gift, but the guitar costs \$625. Jim decides to wait until the guitar is on sale. Luckily, the store has a sale the following week, and Jim sees that the guitar then costs \$400. Unfortunately, that is still too expensive. The following week, he returns to the store and finds the guitar priced at \$256. Jim decides to wait one more week. The next week, Jim sees that the price has been reduced again, at the same rate that it was reduced in each of the previous weeks. Jim buys the guitar. How much does he pay for it?



MR. KERR'S DOGS

1. Mr. Kerr is a math teacher. One day, he asked his students to guess the ages of his three dogs. He said, "I have had each dog for at least 2 years. If you multiply their ages, you get 36."

There was no response. The class looked puzzled.

Mr. Kerr continued, "If you add their ages, you get an odd number."

The class still looked puzzled.

Mr. Kerr said, "This is my final clue. The oldest dog was a gift from my mother. The youngest dog was a gift from my wife."

Suddenly, a student called out, "I know the ages, Mr. Kerr!"

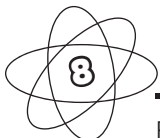
What are the ages of Mr. Kerr's dogs? _____

Explain how you got your answer. _____

2. Mr. Kerr has three dogs—a German shepherd, an Irish setter, and a Scottish terrier. Each dog has a mat of a different color to sleep on—a blue mat, a yellow mat, or a red mat. Use the clues to find each dog's name, breed, and mat color.

- The German shepherd does not have the yellow mat.
- Bandit has the blue mat.
- The Irish Setter's name is either Jericho or Pepper.
- Jericho does not have the red mat.
- The Scottish terrier loves its red mat.

Write the name of each dog, its breed, and its mat color. _____

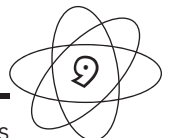


MS. BAKER'S BROWNIES

Ms. Baker is famous for her delicious brownies. She usually bakes each batch in her 8 x 8-inch pan. One batch makes 16 brownies that are all the same size.

Ms. Baker needs to bake 72 brownies for a family reunion. She decides to use her 12 x 12-inch pan to bake the brownies instead. That way, she can bake more brownies at a time. Ms. Baker wants the brownies to be the same size as the brownies she makes in her 8 x 8-inch pan. How many batches will she need to bake?

Write your strategy and the solution. _____

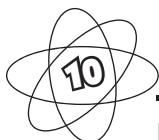


MULTIPLICATION PUZZLER

Replace each letter with a number to make the multiplication problem in the box true. Each letter represents a different digit. The questions will help you narrow your search.

$$\begin{array}{r} ABCDE \\ \times 4 \\ \hline EDCBA \end{array}$$

1. How many digits are in the number being multiplied by 4? _____
2. How many digits are in the product? _____
3. What is the smallest number that $ABCDE$ can be? _____
Why? _____
4. What is the largest number that $ABCDE$ can be? _____
Why? _____
5. What is the solution? Use the space below to solve the problem.

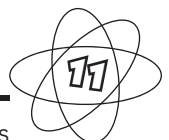


HOT DOG SURVEY

Mrs. Cook runs the school cafeteria. She took a survey of 100 students to find out how they ate their hot dogs. Here are the results:

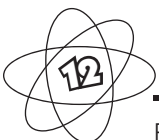
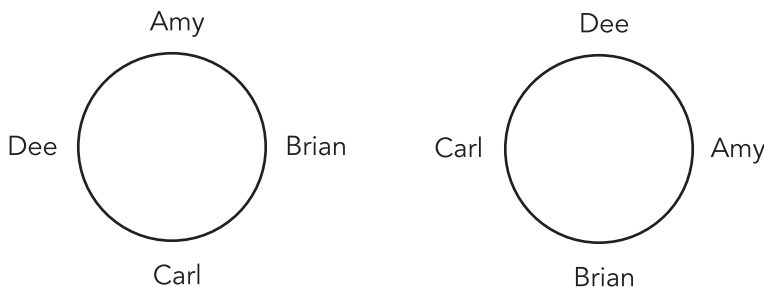
- 40 students put at least relish on their hot dogs.
- 55 students put at least mustard on their hot dogs.
- 65 students put at least ketchup on their hot dogs.
- 15 students put on at least relish and mustard on their hot dogs.
- 35 students put on at least ketchup and mustard on their hot dogs.
- 20 students put on at least relish and ketchup on their hot dogs.
- 10 students put relish, mustard, and ketchup on their hot dogs.

What percentage of the students put relish and/or mustard on their hot dogs?



AT THE RESTAURANT

1. Six people met at a restaurant for a business luncheon. They all shook hands with one another before they sat down. How many handshakes were there in all?
2. The restaurant menu included a salad with lunch. Customers could choose between a lettuce salad or a spinach salad. They could also choose a topping of cheese, bacon bits, or sesame seeds. The choices for dressing were ranch, Italian, or blue cheese. How many different salad combinations were possible?
3. Amy, Brian, Carl, and Dee were planning to sit at a circular table. They were trying to decide where each person should sit. How many different ways could they sit around the table? **HINT:** Because the table is circular, arrangements such as the two shown are considered identical.



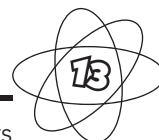
LINE THEM UP

1. Write the numbers 5, 6, 7, and 8 in the boxes so that each row, column, and 4-square diagonal contains all of the numbers.

5	6	7	8

2. Now, write the numbers 5, 6, 7, 8, and 9 in the boxes so that each row, column, and 5-square diagonal contains all of the numbers.

5	6	7	8	9



LETTER GRID

Write the letters in the grid using the clues.

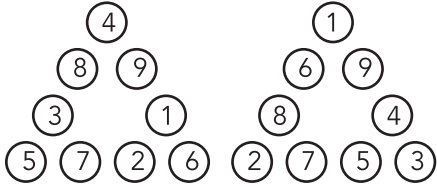
1. M is in the same column as P and S.
2. Q is directly above O and directly to the left of M.
3. R is directly to the right of P and directly above T.
4. O is directly to the left of S.
5. L is in the same row as P and R.
6. N is in the same column as R and T.



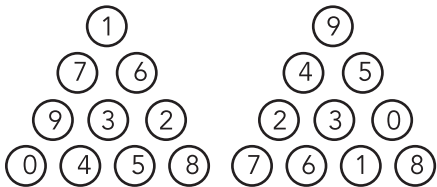
ANSWER KEY

P. 3—Help Professor Whiz

1. Answers may vary but could include:

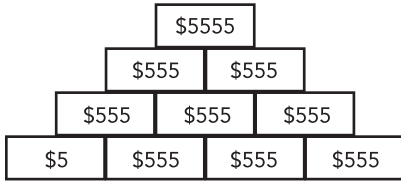


2. Answers may vary but could include:

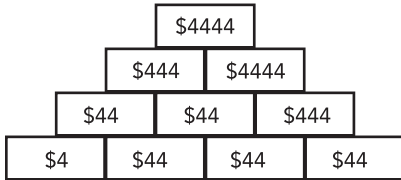


P. 4—Pyramid Dollars

1.



2.



P. 5—Mystery Digits

1. 4; 2. 2; 3. 3; 4. 6; 5. 3; 6. 9; 7. 4; 8. 7; 9. 1; 10. 5

P. 6—An Amazing Record

Step 2: $2,144,448,000 \div 60 = 35,740,800$; **Step 3:** $35,740,800 \div 60 = 595,680$; **Step 4:** $595,680 \div 24 = 24,820$; **Step 5:** $24,820 \div 365 = 68$; **Bonus!** The number 2,144,448,000 represents the

P. 6 (continued)

number of seconds that is equivalent to 68 years.

P. 7—Cousin Talk

1. 54 miles; 2. Robert is 6' tall, and Gladys is 5'4" tall.; 3. \$163.84

P. 8—Mr. Kerr's Dogs

1. The dogs are 2, 3, and 6 years old. Since the product of the ages is 36, the possibilities are the following: 1, 3, 12; 2, 3, 6; 2, 2, 9; and 3, 3, 4. Because all of the dogs have been with Mr. Kerr at least two years, the ages 1, 3, and 12 are not correct. Because the sum of the numbers is an odd number, the ages cannot be 3, 3, and 4. Because there is an oldest dog and a youngest dog, the dogs must all be different ages.; 2. German shepherd: Bandit, blue mat; Irish setter: Jericho, yellow mat; Scottish terrier: Pepper, red mat

P. 9—Ms. Baker's Brownies

Ms. Baker will need to bake two batches of brownies in the 12-inch pan to get 72 brownies that are the same size as the 16 brownies made from the 8-inch pan. To solve, first find the area of the 8-inch pan: $8" \times 8" = 64$ square inches. Divide 64 by 16 to find the area of each brownie: 4 square inches. Then, find the area of the 12-inch pan ($12" \times 12" = 144$ square inches) and divide that by 4 square inches to find the number of brownies the pan will make (36). Finally, divide 72 by 36 to determine that 2 batches made in the 12-inch pan are needed to make the desired number of brownies.

P. 10—Multiplication Puzzler

1. 5; 2. 5; 3. 10,234; 4. 24,987; 5. 21,978

P. 11—Hot Dog Survey

80%

P. 12—At the Restaurant

1. 15; 2.18; 3. 6

P. 13—Line Them Up

1. Answers will vary. One possible solution is shown.

5	6	7	8
8	7	6	5
6	5	8	7
7	8	5	6

2. Answers will vary. One possible solution is shown.

5	6	7	8	9
7	8	9	5	6
9	5	6	7	8
6	7	8	9	5
8	9	5	6	7

