



Grade 6 Math Circles
November 24, 2010
Jeopardy

Jeopardy

Multiply

1. 9×12
2. 21×47
3. 74×95
4. 89×53
5. 142×261

Divide

1. $132 \div 11$
2. $1188 \div 22$
3. $4462 \div 97$
4. $2924 \div 68$
5. $41412 \div 238$

Negatives

1. $(-17) \times (-27)$
2. $3822 \div (-78)$
3. $(-2720) \div 34$
4. $131 \times (-183)$
5. $(-1) \times (-1) \times (-1) \times (-1) \times (-1)$

Exponents

1. Expand 7^6
2. Write $8 \times 8 \times 8 \times 8 \times 8$ in exponent form
3. Evaluate of 4^4
4. $(9 \times 10^8) + (3 \times 10^7) + (7 \times 10^4) + (7 \times 10^3) + (4 \times 10^1) + (6 \times 10^0)$
as a number in base
5. Convert the following from binary to base 10: 11010011

Solve

1. $27 + 8 = x + 11 + 15$
2. $(9)(4) = 12x$
3. $x - 16 - 22 = 43 + 81 - 5$
4. $\frac{117}{13} = \frac{x}{8}$
5. $5x - (3)(9) = (6)(7) - \frac{(8)(12)}{4}$

Double Jeopardy

Percents

1. $\frac{79}{100}$ as a percentage
2. 0.3562 as a percentage
3. 80% as a fraction in simplest form
4. $\frac{2}{5}$ as a percentage
5. The greatest percent from $\frac{9}{10}$, $\frac{46}{50}$, $\frac{4}{5}$, and 96%

Geometry

1. A normal soccer field can't have an area less than $7500m^2$. If a soccer field at an elementary school has a length of $93m$ and a width of $81m$, does this elementary school's soccer field meet the standards?
2. The perimeter for Mrs. Tham's 3 sided garden is $63m$. The first side is $18m$ long. If the second side is half the first side and the third side is double the first side, what is the difference between the third and second side?
3. An isosceles triangle has two sides of $45cm$. If the perimeter of the triangle is $152cm$, how long is the third side?
4. How many parallel faces does a cube have?
5. A pumpkin patch is $10m$ by $20m$. There is a sidewalk the width of $1m$ around the pumpkin patch. What is the area of the sidewalk?

Sequences

1. The 8th term in the sequence $\{2, 17, 32, 47, 62, 77, \dots\}$
2. The 8th term in the sequence $\{1, 3, 6, 10, 15, 21, \dots\}$
3. The missing number in the sequence $\{1, 3, 4, ?, 7, 9, 10, \dots\}$
4. The missing number in the sequence $\{100, 98, 99, 97, ?, 96, 67, \dots\}$
5. The last number to be counted greater than 1 starting at 666 and counting backwards by 7 ($666, 659, 652, \dots$)

Logic

1. The youngest person in the statement 'Mark is older than Steve, but younger than Stacey'.
2. The word "MATHEMATICS" is to be centered in a space allowing 37 letters. No spaces are allowed to be between letters. What is the number of blank spaces that must be left before typing the word?
3. There are 15 Blue Jays and 14 Orioles perched in 3 trees. Each tree has at least 4 Blue Jays and 2 Orioles. No tree is allowed to have more Orioles than Blue Jays. What is the largest number of birds that could be in a tree?
4. Ali has 10 blue socks and 16 pink socks in her drawer. Ali reaches into the drawer in the dark and pulls out socks. What is the smallest number of socks Ali must take to ensure she has a matching pair?
5. Three friends each have a bag of marbles. Kelly said, 'If only I had one more marble, I would have four times as many as Stef, 3 times as many as Andrew, and five times as many as Greg.' What is the least amount of marbles Kelly could have?

Word Problems

1. Heidi works at a book store 6 days a week. Each day she works 12 hours. If Heidi earns \$13.45 an hour, how much does Heidi make in two weeks?
2. In a game show you win \$100 for every correct letter guessed in a sentence. Contestants will receive an extra \$500 for every seven correct letters. If Ron guesses 65 correct letters how much money does he have at the end of the show?
3. A bank is buying new computers for their employees. They have a total of \$5000 to spend on computers. If each computer costs \$300 and each computer has a shipping charge of \$21.50, how many computers can the bank buy without going over budget and how much change will they have?
4. A teacher gave her class five numbers to add together, the fifth number is 32. She then told the class to multiply their sum by six. While adding the five numbers one student added 22 instead of 32. After the student multiplies the sum by six what is the difference between his answer and the correct answer?
5. Some students decide to split equally the cost of a \$3.00 pizza. When it arrives, two of the student find they have no money and the remaining students have to pay an extra 40 cents. What is the number of students originally involved in paying?

Final Jeopardy

Your task is to house pigeons in cages so that each cage contains at least one pigeon and no two cages contain the same number of pigeons. Find the maximum number of cages that can be used to house 100 pigeons.

HINT: to maximize the number of cages you must minimize the number of birds in each cage.

Jeopardy Solutions

Multiply

1. 108
2. 987
3. 7030
4. 4717
5. 37062

Divide

1. 12
2. 54
3. 46
4. 43
5. 174

Negatives

1. 459
2. -49
3. -80
4. -23973
5. -1

Exponents

1. $7 \times 7 \times 7 \times 7 \times 7 \times 7$
2. 8^5
3. 256
4. 930077046
5. 211

Solve

1. $x = 9$
2. $x = 3$
3. $x = 157$
4. $x = 72$
5. $x = 9$

Double Jeopardy Solutions

Percents

1. 79%
2. 35.62%
3. $\frac{4}{5}$
4. 40%
5. 96%

Sequences

1. 107
2. 360
3. 6
4. 98
5. 8

Geometry

1. yes
2. 27m
3. 62cm
4. 3
5. $64m^2$

Logic

1. Steve
2. 13
3. 14
4. 3
5. 59

Word Problems

1. \$1936.80
2. \$11 000
3. 15 computers, \$177.50 change
4. 60
5. 5

Final Jeopardy

1. 13