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Georgia Tech

CSI: MATHEMATICS
Curriculum Support Information
A mathematics resource for parents, teachers, and students

GEORGIA DEPARTMENT OF EDUCATION
Kathy Cox, State Superintendent of Schools

Further investigations:

Provide your child with opportunities to count by 10s, 20s, 50s, and 100s.

Look for patterns in nature and your environment, such as, "If one chair has 4 legs, how many legs do 5 similar chairs have?"

Discuss how symbols are used to represent relationships among quantities. For example, discuss the relationships in the number sentences below to determine the missing numbers.

2+3= ÷3   Answer: =15
□ + □ = 16 Answer: □ = 8

Invite your child to play "number of the day". Choose a number that you will call the "number of the day." The first time you do this activity, choose a number under 15. Ask your child to think up different ways to make the number of the day using equations. Example: "Let's come up with different ways to make 11. Here's one way: 8 + 2 + 1 = 11. Can you find a different way?"

Terminology:

Sum: the total or whole amount as a result of adding; the answer in an addition problem

Addends: the numbers being added together to get the sum

Difference: the number that is the result of subtracting one number from another; the answer to a subtraction problem

Product: a number that is the result of multiplying two or more numbers together; the answer to a multiplication problem

Multiple: the product of a given whole number and an integer or the result of repeated addition. For example, multiples of 3 are: 3,6,9,12,15, etc.

Factors: a whole number that divides exactly into another number, or whole numbers that can be multiplied together to make a third number. "To factor" means to write the number as a product of its factors. For example: 4 and 5 are factors of 20.

Pattern: a set of numbers or objects that are generated by following a specific rule. Patterns can be numerical or geometric.

Related Files:

www.ceismc.gatech.edu/csi

ALGEBRA: The Study of Patterns

Students will:
- Apply patterns and rules to describe relationships and solve patterns
- Represent unknowns using symbols such as □ and ▲
- Write and evaluate mathematical expressions using symbols and different values

Classroom Cases:

1. Look at the pattern.   100, 97, 94, ___, ___,___
Continue the pattern. Use words and numbers to explain the rule.

Case Closed - Evidence:

91, 88, 85
Rule: Subtract 3 to get the next number in the pattern.

**2.** Find the missing numbers in the function. Explain how you know.

Input	Output
7	49
3	21
10	70
5	?
?	56

Case Closed - Evidence:

Input	Output
7	49
3	21
10	70
5	35
8	56

I noticed that 7 x 7 =49 and 7 x 3 = 21 and 7 x 10 =70. So I decided that 7 x input = output. Then I multiplied 7 x 5 to get 35 and worked backwards to get 8 by dividing: 56 ÷ 7.

3. How many oranges (on right side) equal one melon? If we put one more melon on the left side, the scales will be balanced. Use words and numbers to explain.
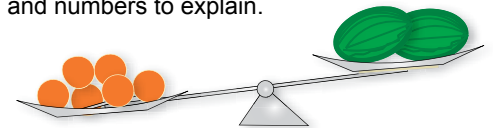
Case Closed - Evidence:

2 oranges = 1 melon because if I have 3 melons and 6 oranges, then it would take 2 oranges to equal one melon (3 x 2 = 6).

Clues:

The word "algebra" is often associated with content in middle and high school and can cause a feeling of anxiety. When children are exposed to algebraic thinking in elementary school, they can learn the foundations for algebraic thinking and enjoy success in later grades. Algebraic thinking includes understanding patterns and relationships, analyzing situations and change, and using models to represent relationships. Students in grades pre-K–5 enjoy studying patterns and figuring out how they work, whether the patterns are geometric or numeric, repeating or growing. So have fun with patterns which are everywhere!

Book'em:

One Hundred Hungry Ants by Elinor Pinczes
The Doorbell Rang by Pat Hutchins
Anno's Magic Seeds by Mitsumasa Anno
The Rajah's Rice by David Barry
The King's Chessboard by David Birch