

Name \_\_\_\_\_



## Mysteries of the Crystal Cavern

**Directions:** Use what you've learned about mixed operations and equations to solve these challenging problems. Show your reasoning clearly. Some have more than one correct answer - explain your thinking!

**1. Compare the Expressions:**  $A = (8 + 4) \times 3$      $B = 8 + (4 \times 3)$

Which is greater, A or B?  $\rightarrow$  \_\_\_\_\_

**2. Add the Parentheses:** Place parentheses in the equation to make it **equal 20**:

$$8 + 12 \div 3 \times 2 = 20$$

**3. True or False Challenge:**  $(15 - 3 \times 2) + 6 = 24 \rightarrow$  \_\_\_\_\_

**4. Missing Number Puzzle:**  $6 \times \_ + 4 = 46$

**5. Make It True:** Insert parentheses in  $6 + 4 \times 2 + 8 = 28$  to make the statement true.

**6. Two-Step Word Problem:** A cave explorer collects 6 crystals per trip. After 5 trips, she sells 12 crystals. How many does she have left?

**7. Reasoning Riddle:** The result of an operation is 25.

If  $(x \times 3) + 4 = 25$ , what is x?

**8. Pattern Puzzle:**  $2 \rightarrow 8$      $3 \rightarrow 12$      $4 \rightarrow 16$

If this pattern continues, what number does 5 correspond to?

**9. Double Equation:** If  $x + 7 = 15$  and  $2x - 5 = ?$ , find the missing value when x satisfies the first equation.

**10. Compare and Reason:** Which is greater:

$$(20 \div 5) + 6 \times 2 \quad \text{or} \quad 20 \div (5 + 6 \times 2)?$$

**11. Expression Builder:** Use the numbers 3, 6, 9, and 2 **once each** with +, -,  $\times$ ,  $\div$  to make 15. (There may be more than one solution!)

**12. Reverse It! -** Start with 10.

Multiply by 3, subtract 4, divide by 2, then add 5.

What number do you end with?