

**LESSON
1.2****Investigating Algebra Activity:
Evaluating Expressions***For use before the lesson "Apply Order of Operations"***Materials:** paper and pencil**QUESTION How can you evaluate an expression?****EXPLORE Evaluate expressions**

Evaluate each expression.

- (a) $12 - 5 \times 3 + 10$
 (b) $24 \div 8 - 2 \times 9$
 (c) $2 \times 6 - 5 \times 1$
 (d) $6 \times 12 \div 3 - 16 + 4$

STEP 1 Evaluate from left to right

Evaluate each expression from left to right.

- (a) $12 - 5 \times 3 + 10 = 7 \times 3 + 10 = 21 + 10 = 31$
 (b) $24 \div 8 - 2 \times 9 = 3 - 2 \times 9 = 1 \times 9 = 9$
 (c) $2 \times 6 - 5 \times 1 = 12 - 5 \times 1 = 7 \times 1 = 7$
 (d) $6 \times 12 \div 3 - 16 + 4 = 72 \div 3 - 16 + 4 = 24 - 16 + 4 = 8 + 4 = 12$

STEP 2 Perform multiplication and division first

Evaluate each expression from left to right, performing multiplication and division first and then going back and adding and subtracting.

- (a) $12 - 5 \times 3 + 10 = 12 - 15 + 10 = -3 + 10 = 7$
 (b) $24 \div 8 - 2 \times 9 = 3 - 2 \times 9 = 3 - 18 = -15$
 (c) $2 \times 6 - 5 \times 1 = 12 - 5 = 7$
 (d) $6 \times 12 \div 3 - 16 + 4 = 72 \div 3 - 16 + 4 = 24 - 16 + 4 = 8 + 4 = 12$

STEP 3 Compare results

As you can see, in parts (a) and (b) you get two different answers to the same problem while in parts (c) and (d) the answers are the same. Everyone needs to get the same answer, so the rule is to perform the operations in the same way it was done in Step 2.

Use your observations to complete these exercises

Evaluate the expression by first multiplying and dividing and then adding and subtracting. Then evaluate the expression from left to right and tell which expressions have incorrect answers.

1. $9 \times 3 - 14 + 8$ 2. $42 \div 7 - 2 \times 4$ 3. $72 \div 9 \times 4 - 10$
 4. $5 \times 8 + 48 \div 4$ 5. $15 + 5 \times 2 - 7$ 6. $36 - 12 \div 3 + 21$