Name _____

Algebra • Numerical Expressions

Write words to match the expression.

$$6 \times (12 - 4)$$

Think: Many word problems involve finding the cost of a store purchase.

Step 1 Examine the expression.

• What operations are in the expression? multiplication and subtraction

Step 2 Describe what each part of the expression can represent when finding the cost of a store purchase.

• What can multiplying by 6 represent? buying 6 of the same item

Step 3 Write the words.

• Joe buys 6 DVDs. Each DVD costs $12. If Joe receives a $4 discount on each DVD, what is the total amount of money Joe spends?

1. What is multiplied and what is subtracted?

_____

2. What part of the expression is the price of the item?

_____

3. What can subtracting 4 from 12 represent?

_____

Write words to match the expression.

4. $4 \times (10 - 2)$

_____

_____

_____

_____

5. $3 \times (6 - 1)$

_____

_____

_____

_____

Algebra • Evaluate Numerical Expressions

A **numerical expression** is a mathematical phrase that includes only numbers and operation symbols.

You **evaluate** the expression when you perform all the computations to find its value.

Order of Operations
1. Parentheses
2. Multiply and Divide
3. Add and Subtract

To evaluate an expression, use the **order of operations.**

Evaluate the expression $(10 + 6 \times 6) - 4 \times 10$.

Step 1 Start with computations inside the parentheses.

$10 + 6 \times 6$

Step 2 Perform the order of operations inside the *parentheses*.

Multiply and divide from left to right.

$10 + 6 \times 6 = 10 + \underline{36}$

Add and subtract from left to right.

$10 + 36 = \underline{46}$

Step 3 Rewrite the expression with the parentheses evaluated.

$46 - 4 \times 10$

Step 4 *Multiply and divide* from left to right.

$46 - 4 \times 10 = 46 - \underline{40}$

Step 5 *Add and subtract* from left to right.

$46 - 40 = \underline{6}$

So, $(10 + 6 \times 6) - 4 \times 10 = 6$.

Evaluate the numerical expression.

1. $8 - (7 \times 1)$ _____

2. $5 - 2 + 12 \div 4$ _____

3. $8 \times (16 \div 2)$ _____

4. $4 \times (28 - 20 \div 2)$ _____

5. $(30 - 9 \div 3) \div 9$ _____

6. $(6 \times 6 - 9) - 9 \div 3$ _____

7. $11 \div (8 + 9 \div 3)$ _____

8. $13 \times 4 - 65 \div 13$ _____

9. $9 + 4 \times 6 - 65 \div 13$ _____

Name _____

Algebra • Grouping Symbols

Parentheses ( ), *brackets* [ ], and *braces* { }, are different grouping symbols used in expressions. To evaluate an expression with different grouping symbols, perform the operation in the innermost set of grouping symbols first. Then evaluate the expression from the inside out.

Evaluate the expression $2 \times [(9 \times 4) - (17 - 6)]$.

Step 1 Perform the operations in the *parentheses* first.

$2 \times [(9 \times 4) - (17 - 6)]$

$2 \times [\ 36 \ - \ 11\ ]$

Step 2 Next perform the operations in the *brackets*.

$2 \times [\ 36 - 11\ ]$

$2 \times \ 25$

Step 3 Then multiply.

$2 \times 25 = 50$

So, $2 \times [(9 \times 4) - (17 - 6)] = 50$

Evaluate the numerical expression.

1. $4 \times [(15 - 6) \times (7 - 3)]$

$4 \times [9 \times$ _____ $]$

$4 \times [$ _____ $]$

_____

2. $40 - [(8 \times 7) - (5 \times 6)]$

_____

3. $60 \div [(20 - 6) + (14 - 8)]$

_____

4. $5 + [(10 - 2) + (4 - 1)]$

_____

5. $3 \times [(9 + 4) - (2 \times 6)]$

_____

6. $32 \div [(7 \times 2) - (2 \times 5)]$

_____