

4.OA.A.3 Substitution and Evaluation of Expressions

4.OA.A.3: Solve multistep word problems posed with whole numbers using the four operations.

1. Use the table to answer the questions.

- Vin gave away some of his coloring materials. Write an expression to show the total number of coloring materials he has now.
- Vin's mother gave some more watercolor to Vin. Use a variable to write an expression to show the total number of coloring materials. If the value of the variable is 7, how many coloring materials does Vin have now?

Vin's Coloring Kit

Coloring Materials	Number
Color Pencils	12
Crayons	8
Oil Pastels	16

Solution:

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2. Find the value of each expression. What will you do first?

- $40 - (16 + 3)$
- $12 + (b + 8)$ if $b = 5$
- $(13 + c) - (15 - d)$ if $c = 4$ and $d = 9$
- $(e + f) - 3$ if $e = 5$ and $f = 6$
- $(g - 2) - (2 + h)$ if $g = 21$ and $h = 15$
- $i - (9 - j)$ if $i = 12$ and $j = 4$

Solution:

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3. Write an expression using a variable k . What does k represent? If $k = 2$, evaluate the expression

- Ellen had \$15. Her aunt gave her some more money. She bought a gallon of ice cream for \$12.
- Jenny watched 3 movies yesterday. She just watched some more movies today.
- Ben took out some paper from his bag to give to his classmate. He put 2 papers back in his bag.

Solution:

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4. Which is the value of the expression below if $m = 7$ and $n = 5$.

$$18 - n + (m - n)$$

- 15
- 14
- 16
- 17

Solution:

5. $(p + q) - q + (p - q) = 16$. If $p = 12$, what is the value of q ?

- 9
- 12
- 10
- 8

Solution:

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Answer Key

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1. Use the table to answer the questions.

- Vin gave away some of his coloring materials. Write an expression to show the total number of coloring materials he has now.
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Vin's Coloring Kit

Coloring Materials	Number
Color Pencils	12
Crayons	8
Oil Pastels	16

Solution:

a.

$$12 + 8 + 16 - s$$

b.

$$12 + 8 + 16 + m$$

$$12 + 8 + 16 + 7 = 43$$

Answer: 43 coloring materials

2. Find the value of each expression. What will you do first?

- $40 - (16 + 3)$
- $12 + (b + 8)$ if $b = 5$
- $(13 + c) - (15 - d)$ if $c = 4$ and $d = 9$
- $(e + f) - 3$ if $e = 5$ and $f = 6$
- $(g - 2) - (2 + h)$ if $g = 21$ and $h = 15$
- $i - (9 - j)$ if $i = 12$ and $j = 4$

Solution:

a. $40 - 19 = 21$

b. $12 + 13 = 25$

c. $17 - 6 = 11$

d. $11 - 3 = 8$

e. $19 - 17 = 2$

f. $12 - 5 = 7$

3. Write an expression using a variable k . What does k represent? If $k = 2$, evaluate the expression

- Ellen had \$15. Her aunt gave her some more money. She bought a gallon of ice cream for \$12.
- Jenny watched 3 movies yesterday. She just watched some more movies today.
- Ben took out some paper from his bag to give to his classmate. He put 2 papers back in his bag.

Solution:

a. $15 + k - 12$; $k = \text{money from Aunt}$
 $15 + 2 - 12 = 5$; Answer: \$5

b. $3 + k$; $k = \text{movies watched today}$
 $3 + 2 = 5$; Answer: 5 movies

c. $k + 2$; $k = \text{papers he took out from his bag}$
 $2 + 2 = 4$; Answer: 4 papers

4. Which is the value of the expression below if $m = 7$ and $n = 5$.

$$18 - n + (m - n)$$

A. 15

C. 16

B. 14

D. 17

Solution:

A. 15

5. $(p + q) - q + (p - q) = 16$. If $p = 12$, what is the value of q ?

A. 9

C. 10

B. 12

D. 8

Solution:

D. 8