

Evaluating Expressions Example

Evaluate the following if: $a = 6$, $b = -3$ and $c = 7$

$$4a - (b + c) - a^2$$

$$4(6) - (-3 + 7) - (6)^2$$

↓ ↓ ↓

$$24 - (4) - 36$$

$$24 - 4 - 36$$

—————→

$$20 - 36 = \boxed{-16}$$

Evaluating Expressions ANSWERS

1. -51

WORK: $x = -3$ $y = 4$ $z = -5$

$$\begin{aligned} \textcircled{1} \quad & 5x + 4z - y^2 \\ & 5(-3) + 4(-5) - (4)^2 \\ & -15 + -20 - 16 \\ & \hline & -35 - 16 = \boxed{-51} \end{aligned}$$

2. 60

$$\begin{aligned} \textcircled{2} \quad & xyz = (-3) \cdot (4) \cdot (-5) \\ & \hline & -12 \cdot (-5) = 60 \end{aligned}$$

3. -53

$$\begin{aligned} \textcircled{3} \quad & 4z - 3(2y - x) \\ & 4(-5) - 3(2(4) - -3) \\ & -20 - 3(8 - -3) \\ & \quad \quad \quad \uparrow \\ & -20 - 3(8 + 3) \\ & \quad \quad \quad \downarrow \\ & -20 - 3(11) \\ & -20 - 33 = \boxed{-53} \end{aligned}$$

Writing Expressions Example

Courtney went ice skating with some friends. Let h represent the cost of a cup of hot chocolate and let s represent the cost to rent ice skates. Write an expression to represent the cost of Courtney's ice skating adventure if she rented 5 ice skates and 3 cups of hot chocolate.

Answer: $5s + 3h$

Writing Expressions ANSWERS

4. $6s + 2g$

5. $2s + 5p + 3c$



Distributive Property Example

$$12 - 8(2x - 9) + 5$$

$$12 - 8(2x - 9) + 5$$

$$12 - 16x + 72 + 5$$

$$12 + 72 + 5$$
$$\downarrow$$
$$84 + 5 = 89$$

ANSWER:

OR

$$89 - 16x$$
$$-16x + 89$$

Distributive Property ANSWERS

6. $15x - 10$

WORK:
⑥ $-5(-3x + 2)$
 $15x - 10$

7. $-6x + 12$

⑦ $-\frac{3}{4}(8x - 16) = -6x + 12$
 $-\frac{3}{4} \cdot 8 = -\frac{24}{4} = -6$ $-\frac{3}{4} \cdot -16 = \frac{48}{4} = 12$

8. $-12x + 30$
OR
 $30 - 12x$

⑧ $10(-3)(4x - 1) + 17$
 $10 - 12x + 3 + 17$
 $30 - 12x$ OR $-12x + 30$

Find the GCF (Greatest Common Factor) EXAMPLE

12x, 30xh

1. 12
2. 6
3. 4

1. 30
2. 15
3. 10
5. 6

GCF = $\boxed{6x}$

Find the GCF *ANSWERS*

9. 12cd

10. 2

11. 12m

Factor the expression EXAMPLE

$$30\underline{x} + 18\underline{xy}$$

$$1 \cdot 30$$

$$2 \cdot 15$$

$$3 \cdot 10$$

$$\underline{5 \cdot 6}$$

$$1 \cdot 18$$

$$2 \cdot 9$$

$$\underline{3 \cdot 6}$$

$$\text{GCF} = 6x$$

$$\text{Factored Expression: } \boxed{6x(5 + 3y)}$$

*Remember! You can check your answer
by Distributing!

$$\text{CHECK: } 6x(5 + 3y) \\ 30x + 18xy \checkmark$$

Factor each expression ANSWERS

12. $9g(1h - 7f)$

13. $24(1x + 2)$

14. $12x - 5y + 3m$ OR Cannot be factored

15. $9y(5x - 9)$

Simplify each expression (combine like terms)

EXAMPLE

$$12 - x + 6 + 5x$$

$12 - x + 6 + 5x$

$12 + 6$ $-x + 5x$

$$18 + 4x$$

ANSWER

OR

$$4x + 18$$

Simplify each expression (combine like terms)

ANSWERS

16. $10y$

17. $-1r + 20$ or $-r + 20$

18. $2r + 18$

19. $3y + 8x$

Add/Subtract Linear Expressions EXAMPLE

$$-2(3x - 5) - (-7x + 11)$$

$$\begin{array}{cc} -2(3x - 5) & -1(-7x + 11) \\ \hline -6x & +10 \\ +7x & -11 \end{array}$$

$$\begin{array}{c} -6x + 7x \\ \downarrow \\ \boxed{1x \quad -1} \\ \text{or } \boxed{x - 1} \end{array}$$

Add/Subtract Linear Expressions ANSWERS:

20. $2m + j$

WORK

(20) $(13m - 5j) - 1(-6j + 11m)$
 $\underline{13m - 5j} \quad \underline{+6j - 11m}$
 $\boxed{2m + 1j}$ or $2m + j$

21. $44y - 43$

(21) $3(4y - 5) + 4(-7 + 8y)$
 $\underline{12y - 15} \quad \underline{-28 + 32y}$
 $-43 + 44y$ or $44y - 43$

22. $-20y + 13$

(22) $3(4y - 5) - 4(-7 + 8y)$
 $\underline{12y - 15} \quad \underline{+28 - 32y}$
 $-20y + 13$ or $13 - 20y$

23. $3x - 5$

(23) $\frac{2}{3}(9x - 15) + \frac{1}{5}(-15x + 25)$

$\frac{2}{3} \div \frac{9}{1} = \frac{18}{3}$
 $\frac{2}{3} \div \frac{15}{1} = \frac{30}{3}$
 $\frac{1}{5} \div \frac{15}{1} = \frac{15}{5}$
 $\frac{1}{5} \div \frac{25}{1} = \frac{25}{5}$

$\underline{6x - 10} \quad \underline{-3x + 5}$
 $\boxed{3x - 5}$