4.1 Numeric Expressions

MATH 7

Numeric Expression =

ORDER OF OPERTIONS

G –

E –

MD –

AS –

$6 + 3(5)$	$4 - 3^2 + 1$	$\dfrac{4 + 6}{2}$	$(12 \div 6) - 2(-3)$

Translating Expressions

Addition	Subtraction	Multiplication	Division
The sum of 4 and 8	9 decreased by 3	4 times bigger than 3	The quotient of 8 and 2

Writing Expressions

A large soda is $4 and a small soda is $2. You buy 3 large sodas and 5 small sodas. How much did you spend?	You have 6 solo wins in Fortnite. You get 2 solo wins every day. How many solo wins will you have in 10 days?

SUMMARY:

4.1 Numeric Expressions

Evaluate each expression.

1. $4 + 3(6)$

2. $(4 - 6) + 7 + 1$

3. $3^2 - 2(-3)$

4. $\dfrac{3+7}{6-1}$

5. $\dfrac{4^2}{10-2}$

6. $24 \div 3(6 - 4)$

7. $-2(5) - 4$

8. $12 - (6 + 3)$

9. $4 \cdot 2 + (1 - 3)$

10. $5^2 \div 5 + 2$

11. $\dfrac{2(6)}{4}$

12. $\dfrac{4^2 + 2}{3} - 5$

Translate to a numeric expression and then evaluate.

13. The quotient of 20 and 4

14. The total of 5 and 8

15. The difference of 6 and 10

16. The product of 4 and 6

17. The sum of 2 and 7

18. 9 increased by 3

Write a numeric expression for each situation. Answer the question.

19. CD's cost $9 and DVD's cost $15. Karla buys 6 CD's and 3 DVD's. How much money does Karla spend?

    Expression: Answer:

20. The temperature was 12° outside. The temperature increased 2° per hour for six hours. What is the temperature outside now?

    Expression: Answer:

21. Mikayla makes four 3 point baskets and five 2 point baskets. How many points did she score?

    Expression: Answer:

22. Xavier has 20 dollars. He gives three friends 5 dollars each. How much money does he have left?

    Expression: Answer:

23. Anthony can read 3 books in a week. He has already read 6 books. How many books will he have read in 5 weeks?

    Expression: Answer:

24. Movie tickets for adults are 5 dollars and children's tickets are 3 dollars. Teri buys 4 adult tickets and 3 children tickets. How much does she spend on moving tickets?

    Expression: Answer:

25. It costs 18 dollars to get into an all you can Sushi restaurant. You then pay 4 dollars for every hour you stay. Sue stays at the Sushi restaurant for 3 hours. How much does she owe?

    Expression: Answer:

1. Evaluate the expression.

$$\frac{4^2 + 4}{2}$$

2. Translate to a numeric expression.

12 decreased by 7

3. Decide whether the following expressions are equal. Support your answer!

A) $-4(6) + 2 = -4 + 3(-6)$

B) $3 + (2 + 5) = (3 + 2) + 5$

C) $5 - 9 = 9 - 5$

EXIT TICKET –

Which of the following expressions correctly models the situation? Select ALL that apply.

Ray has 8 dollars. He buys 6 candy bars that cost $0.75 each. How much money does Ray have left?

(A) $8 + 6(0.75)$

(B) $8 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75 + 0.75$

(C) $8 - 6(0.75)$

(D) $8(0.75) - 6(0.75)$

(E) $8 - 0.75 + 0.75 + 0.75 + 0.75 + 0.75$

(F) $8 - 0.75 - 0.75 - 0.75 - 0.75 - 0.75 - 0.75$

(G) $8(0.75) + 6(0.75)$

4.2 Algebraic Expressions

Write your questions here!

Algebraic Expression =

Variables =

Combine Like Terms

$6 + 3x + 5x$	$2y + 7 + 3y$	$4t + 3 + 5t + 2$
$8 + 2x - 6x$	$8d - 5 + d + 3$	$4x - 3y + 5x - 2y$

Translating Expressions

The sum of a number n and three.	Twice a number decreased by four.	The quotient of a number t and two increased by five.

Writing Expressions

A large bucket of popcorn costs $4. You buy b buckets of popcorn plus $6 in candy. How much did you spend?	You have $20 and buy 3 notebooks that each cost x dollars. How much money do you have left?

SUMMARY:

Now, summarize your notes here!

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Simplify each expression.

1. $6y + 8 + 2y + 5$

2. $9 + 5a - 2 + 3a$

3. $6r + 2r + 4$

4. $3m + 5m - 10 + 7$

5. $5w + 4 - 3w - 2$

6. $5 - 4p + 6p$

7. $3a + 2b + 5a - 7b$

8. $3x - 5x + 4y + y$

9. $5d + 8 - 8d$

10. $3t + 2h - 5 + 7h$

11. $6d + 2 - 4d + 10 + 2d$

12. $5g - 9 - g$

Translate to an algebraic expression.

13. The quotient of a number d and four	14. The total of 5 and a number n	15. The difference of a number and ten
16. Twice a number increased by six	17. Eight decreased by a number h	18. The product of a number and two increased by that number

Write an algebraic expression for each situation.

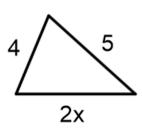| 19. You buy four candy bars at a cost of p dollars per candy bar. What is the total cost?	20. Donuts cost 2 dollars. You buy d amount of donuts. What is the total cost?
21. There are p people in a Google Meet. Seven people leave. How many people are in the Google Meet?	22. Bob has 5 pies. He bakes 2 pies every hour. How many pies does he have after h hours?
23. Deidra has 20 friendship bracelets. She gives b bracelets away to friends. How many bracelets does she have left?	24. Anthony has a dog walking business. He has 12 good reviews and gets 4 more every day. How many good reviews does he have after d days?

1. Simplify the expression.

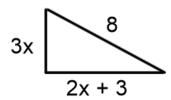$$10b - 8 + 2b + 3$$

2. Translate to an algebraic expression.

12 decreased by a number

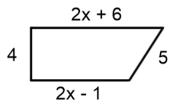3. Write an algebraic expression to represent the perimeter of the following.

A)

4 5 2x

B)

3x 8 2x + 3

C)

2x + 6 4 5 2x - 1

EXIT TICKET –

Which of the following expressions correctly models the situation?

Ray has 8 dollars. He buys c candy bars that cost $0.75 each. How much money does Ray have left?

(A) $8 + 0.75c$

(B) $8c + 0.75$

(C) $8 - 0.75c$

(D) $8c - 0.75$

4.3 Distributive Property

MATH 7

Distributive Property:

Order of Operations	Distributive Property
$3(5 + 2)$	$3(5 + 2)$

Distribute

$6(2x + 5)$	$2(x - 3)$	$-3(2x + 7)$

Distribute and Combine Like Terms

$6(2x + 5) + 3$	$4 + 3(2x - 1)$	$-2(2x + 5) - 3x$

BE CAREFUL!!!!

$8 - 3(x + 4)$	$8 - (2x - 7)$

Fractions are cool

$$\frac{1}{3}(6x + 15)$$

SUMMARY:

Simplify each expression by using the distributive property.

1. $4(2x + 3)$

2. $5(m + 5)$

3. $-4(3p - 2)$

4. $5(2r - 3)$

5. $6(v + 1)$

6. $-2(3 + x)$

7. $-(5x + 2)$

8. $\frac{1}{2}(4b - 8)$

9. $\frac{2}{3}(6 + 3x)$

Simplify each expression by using the distributive property combining like terms.

10. $6y + 2(y + 1)$

11. $2(4a - 1) + a$

12. $6r - 2(r + 4)$

13. $3(m + 5) - 10$

14. $2(3w - 5) + 3w$

15. $5 - 2(4x + 3)$

Simplify each expression by using the distributive property combining like terms.

16. $y + 3(2y + 1)$

17. $5 + 2(4x - 1)$

18. $8 - 2(x - 4)$

Mr. Brust simplified the following expressions incorrectly. Help a math teacher out! Circle his mistake and show the correct answer.

19. $8 + 2(3p + 1)$

$$10(3p + 1)$$
$$30p + 10$$

20. $3d - 2(d - 4)$

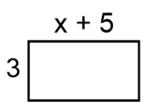$$3d - 2d - 8$$
$$1d - 8$$

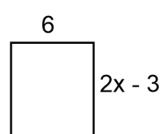# 4.3 Distributive Property

Simplify

1. $-3(2m - 5)$

2. $3 + 2(b - 4)$

3. Which expression is equivalent to $2m - (8 - 4m) + 5$?   (SHOW YOUR WORK!)

    (A) $6m + 13$

    (B) $-2m - 3$

    (C) $6m - 3$

    (D) $-2m + 13$

4. Write an algebraic expression to represent the area of the following given $Area = bh$.

A)

x + 5

3

B)

6

2x - 3

EXIT TICKET –

Select ALL of the following expressions correctly model the situation?

Twice the sum of a number and six increased by four.

    (A) $2n + 6 + 4$

    (B) $2(n + 6) + 4$

    (C) $2n + 10$

    (D) $2n + 16$

4.4 Evaluate Expressions

Evaluate =

$2x - 5$ when $x = 2$

$4x + 7y$ when $x = 5$ and $y = 2$

$\frac{9}{y} + 2$ when $y = -3$

$4m + 1 + 4m + 6$ when $m = 4$

Write and Evaluate Expressions

A large bucket of popcorn costs $4. You buy b buckets of popcorn plus $6 in candy. How much did you spend?

a.   How much would spend if you bought 3 buckets?

b.   How much would spend if you bought 5 buckets?

c.   How much would spend if you bought 10 buckets?

Equivalent

Which value of x makes $4x - 5 = 11$ a true statement?

(A) $x = 2$

(B) $x = 3$

(C) $x = 4$

(D) $x = 5$

SUMMARY:

Evaluate the following.

1. $8 + 2x$ when $x = 4$

2. $4(2x + 3)$ when $x = -2$

3. $x^2 - 3$ when $x = 5$

4. $5 + (n - 2)$ when $n = 4$

5. $3a + 2b - 1$ when $a = 3$ and $b = -2$

6. $-2(3 + x) + 3y$ when $x = 4$ and $y = 2$

7. $4h + 5 - 2h$ when $h = 6$

8. $3w + (w + g)$ when $w = 3$ and $g = -2$

9. $\frac{2n+4}{n}$ when $n = 4$

Write an algebraic expression for each situation. Evaluate the expression for the given values.

10. Bob has 6 pies. He bakes 2 pies every hour. How many pies does he have after h hours?

   a. How many pies will he have in 4 hours?

   b. How many pies will he have in 5 hours?

   c. How many pies will he have in 10 hours?

Write an algebraic expression for each situation. Evaluate the expression for the given values.

11. The temperature at noon is 18°. The temperature raises 3 degrees every hour.   What is the temperature after h hours?

    a. What is the temperature after 1 hours?

    b. What is the temperature after 2 hours?

    c. What is the temperature after 3.5 hours?

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12. Museum tickets for adults cost \$5. Tickets for children cost \$3. What is the total cost if you buy a adult tickets and c children tickets?

    a. How much would you spend if you buy 3 adult tickets and 4 children tickets?

    b. How much would you spend if you buy 4 adult tickets and 5 children tickets?

Multiple Choice

13. Which value of x makes $3x + 4 = 16$ a true statement?

    (A) $x = 3$

    (B) $x = 4$

    (C) $x = 5$

    (D) $x = 6$

14. Which value of y makes $2(y - 5) = 8$ a true statement?

    (A) $y = 7$

    (B) $y = 8$

    (C) $y = 9$

    (D) $y = 10$

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15. Which value of x makes $-7 = 2x + 3$ a true statement?

    (A) $x = -2$

    (B) $x = -3$

    (C) $x = -4$

    (D) $x = -5$

16. Which value of n makes $-3n - 4 = -19$ a true statement?

    (A) $n = 5$

    (B) $n = 6$

    (C) $n = -5$

    (D) $n = -6$

1. Evaluate $3(m - 4) + 3m$ when $m = 4$

2. Which value of x makes $9 - 3x = 3$ a true statement?

   (A) $x = 0$

   (B) $x = 1$

   (C) $x = 2$

   (D) $x = 3$

3. Mr. Sullivan is selling Boo Gram to raise money for boo-tiful Halloween decorations for the school dance. He has 100 Hershey Kisses to use for Boo Grams. Each Boo Gram uses 3 Hershey Kisses and will sell for $1.50 each.

   Part A

   Which expression models the number of Hershey Kisses Mr. Sullivan has left given the number of Boo Grams b made.

   (A) $100 + 3b$

   (B) $3b + 1.50$

   (C) $3b - 1.50$

   (D) $100 - 3b$

   Part B
   Mr. Sullivan makes 21 Boo Grams. Use your equation from Part A to determine how many Hershey Kisses he has left?

   Part C
   How many Boo Grams can Mr. Sullivan make before he runs out of Hershey Kisses?

EXIT TICKET – Evaluate the following.

A)
$$x^2 - 5x + 1 \text{ when } x = -2$$

B)
$$6(2x + 1) \text{ when } x = \frac{1}{4}$$

Unit 4 Expressions

NAME:_____

Review

DATE:_____

Simplify the following numerical expressions.

1. $9 - 3(5 + 1)$

2. $4^2 + 6(2) - 1$

3. $\dfrac{3-17}{3^2-2}$

Simplify the following algebraic expressions.

4. $9x - 5x + 7$

5. $4(3x - 5)$

6. $3t + 2(3t - 5)$

7. $9h + 8 + 3h - 2$

8. $-3(3p - 5) - 5$
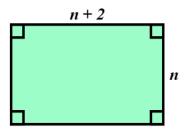
9. $6 - 2(3n + 5)$

Evaluate the following expressions.

10. $2x - 5$ when $x = -4$

11. $5a + 2b - 1$ when $a = 3$ and $b = -2$

12. $4(2n + 3) + n$ when $n = 5$
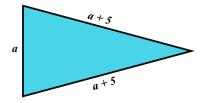
Write an expression to model the following.

13. The sum of twice number and six.

14. Bob has h amount of hot wheels. Sara has 15 more hot wheels than Bob. How many hot wheels does Sara have?

15. What is the perimeter?

$n + 2$

n

Write an expression to model the following. Then evaluate.

16. The product of a number n and three.

   a. Write an expression.

   b. Evaluate when $n = -4$

17. Bob has 25 dollars saved up. He makes 10 dollars per hour babysitting.

   a. Write an expression to show Bob's money after work h hours.

   b. How much money will Bob after 8 hours of work?

18. Given the triangle below.

$a + 5$

a

$a + 5$

   a. Write an expression to show the perimeter of the triangle.

   b. Find the perimeter if $a = 5$

Multiple Choice

19. Which value of x makes $3x - 5 = 10$ a true statement?

   (A) $x = 3$

   (B) $x = 4$

   (C) $x = 5$

   (D) $x = 6$

20. Which value of y makes $8 - 3y = -22$ a true statement?

   (A) $y = 7$

   (B) $y = 8$

   (C) $y = 9$

   (D) $y = 10$