Skills Review Addition & Subtraction of Real Numbers Algebra 1

Objectives: Goal 1. Students will be able to add and subtract real numbers.
Goal 2: Students will be able to use addition and subtraction of real numbers to solve real life problems.

Rules:

Step 1: Rewrite the problem eliminating any **DOUBLE SIGNS**
Step 2: Look at the signs directly in front of each number:
• If the signs are the **SAME**, find the **SUM**
• If the signs are **DIFFERENT**, find the **DIFFERENCE**
Step 3: Always keep the **SIGN** of the **bigger number** for your answer.

Examples:

a) $-2 + (+9)$	b) $2 + (-9)$
c) $-2 + (-9)$	d) $2 + (+9)$
e) $-2 - (+9)$	f) $2 - (+9)$
g) $-2 - (-9)$	h) $2 - (-9)$
i) $-3 + 4 + (-1) + (-4)$	j) $5 + (-3) + (-2)$
k) $1 + (-2) + 3 - (-5)$	l) $3 - (-4) - 2 + 8$

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Practice Problems:

1. $4 + 3$	2. $-3 + (-5)$	3. $-9 + 2$
4. $0 + (-10)$	5. $-15 + (-18)$	6. $23 + (-4)$
7. $5 + (-7) + (-12)$	8. $-8 + 19 + (-3)$	9. $21 + (-16) + 30$
10. $12 - 5 - 11$	11. $13 - 15 - (-9)$	12. $-18 - 25 - 16$
13. $-8 + 14 - 12$	14. $-28 - (-12) + 7$	15. $33 - (-6) - 42$
16. $7 - 13 + (-18) - 24$	17. $-17 - 8 - (-29) + 16$	18. $-10 + (-14) + (-16)$
19. $-\frac{3}{4} + \frac{1}{2}$	20. $6 - \left(-\frac{2}{3}\right) - \frac{4}{3}$	21. $-\frac{3}{2} + \frac{9}{4} - \left(-\frac{1}{8}\right)$

LEARNING GOAL:
Evaluate algebraic expressions and use exponents.

Vocabulary
A **variable** is a letter used to represent one or more numbers.
An **algebraic expression,** or variable expression, consists of numbers, variables, and operations.
To **evaluate an expression**, substitute a number for the variable, perform the operation(s), and simplify the result if necessary.
A **power** is an expression that represents repeated multiplication of the same factor.
A **power** can be written in a form using two numbers, a base and an exponent. The **exponent** represents the number of times the base is used as a factor.

EXAMPLE 1
Evaluate algebraic expressions

Evaluate the expression when $x = 5$

a. $7x$	b. $12 + x$	c. $-4x$	d. $\frac{8}{x}$

Exercises for Example 1

Evaluate the expression for the given value of the variable

1. $15 - a$ when $a = 3$	**2.** $3b$ when $b = 7$	**3.** $11 + c$ when $c = 10$

Homework: Text Pages 5-6; #4-38 even. Show work.

4. $\frac{28}{d}$ when $d = 4$	**5.** $\frac{1}{2}n$ when $n = 18$	**6.** $0.4f$ when $f = 8$
7. $6y$ *when* $y = 2$	**8.** $11 - y$ *when* $y = -1$	**9.** $z + 4$ *when* $z = -3$

EXAMPLE 2

Evaluate an expression

The cost of filling a car's gas tank can be represented by the expression xy where x is the price per gallon of gasoline and y is the number of gallons purchased. You purchase 10 gallons of gasoline when the price per gallon is $2.35. Find the total cost

Exercises for Example 2

1. You purchase 5 gallons of gasoline when the price of gasoline is $2.26 per gallon. Find the total cost.	2. You purchase 8 gallons of gasoline when the price of gasoline is $2.20 per gallon. Find the total cost.

Homework: Text Pages 5-6; #4-38 even. Show work.

EXAMPLE 3

Read and write powers

Write the power in words and as a product.

a. 8^3	b. m^6	c. 7^1
d. 5^2	e. $(\frac{1}{2})^3$	f. z^5

Exercises for Example 3

Write the power in words and as a product.

1. 4^8	**2.** $\frac{1}{3}^4$	**3.** x^2
4. 9^5	**5.** 2^8	**6.** n^4
7. $\left(\frac{1}{5}\right)^1$	**8.** 3^4	**9.** p^3

Homework: Text Pages 5-6; #4-38 even. Show work.

EXAMPLE 4

Evaluate Powers

Evaluate the expression.

a. x^4 when x=2	b. n^3 when n=1.5	c. d^4 when d = 1/3

Exercises for Example 4

Evaluate the expression.

10. x^3 when x = 8	**11.** k^2 when k = 2.5	**12.** n^5 when n = 3
13. d^2 when $\boldsymbol{d} = \frac{2}{5}$	**14.** $V = s^3$ when s = 5	**15.** $A = s^2$ *when* $s = 7$

Homework: Text Pages 5-6; #4-38 even. Show work.

1.1 Practice A

Algebra 1

Name the operation indicated by the expression.

1. $19x$	**2.** $5 - b$	**3.** $14 \div m$	**4.** $a + 24$

Evaluate the expression.

5. $y + 7$ when $y = 5$	**6.** $13 - x$ when $x = 2$	**7.** $4a$ when $a = 2.1$
8. $9 + m$ when $m = 8.2$	**9.** $h + 6$ when $h = 1.7$	**10.** $42 \div g$ when $g = 2$
11. $\frac{x}{5}$ when $x = 100$	**12.** $\frac{52}{d}$ when $d = 13$	**13.** $\frac{2}{3}$ t when $t = 6$
14. $r(8.3)$ when $r = 10$	**15.** $w + \frac{1}{4}$ when $w = \frac{3}{4}$	**16.** $\frac{n}{14}$ when $n = 28$

Write the power in words and as a product.

17. 7^2	**18.** 4^5	**19.** 2^8

Write the power represented by the words or product.

20. $5 \cdot 5 \cdot 5$	**21.** six squared	**22.** $x \cdot x \cdot x \cdot x$

Evaluate the power.

23. 3^2	**24.** 2^4	**25.** 1^5

Evaluate the expression.

26. x^2 when $x = 5$	**27.** y^3 when $y = 3$	**28.** m^8 when $m = 1$

29. Window Treatments You are ordering custom blinds for your bedroom windows.The ordering instructions are to measure the width of the window in inches and add a half-inch to this measurement. So, the blind width you order is given by the expression $w + 0.5$ where w is the width of your window.

a. One of your windows measures 27 inches wide. What width blind should you order?

b. The other window measures 28.5 inches wide. What width blind should you order?

30. Skateboarding A skate park charges \$10 per person for an all-day admission to the park. The total cost for n people to go to the park all day is $10n$. Eight friends go to the park on Saturday. What is the total cost of admission?

31. Geometry The area of a square with a side length of s is given by the expression s^2. What is the area of the square shown?