**Name:** *Key*                                                                                      **Hour:**
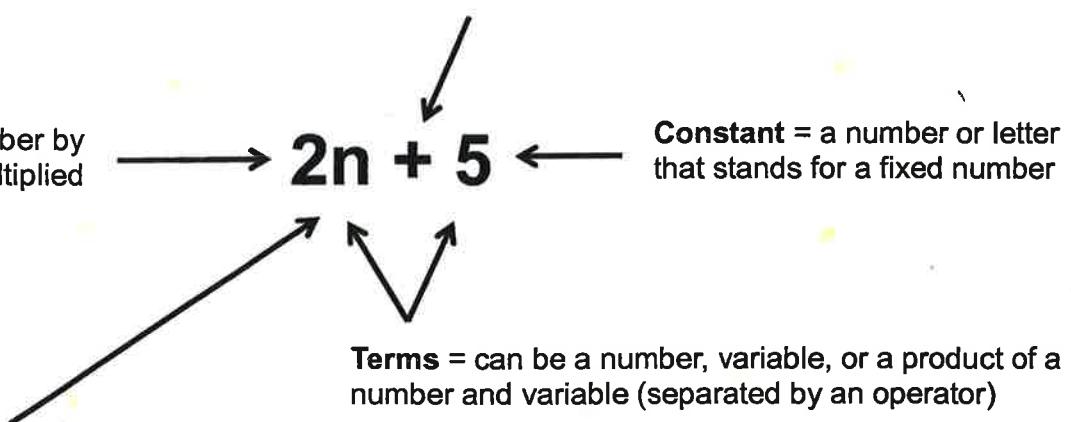
## CHAPTER 2 STUDY GUIDE (EXPRESSIONS)

Operator = $+$, $-$

**Coefficient** = a number by which a variable is multiplied   →   **2n + 5**   ←   **Constant** = a number or letter that stands for a fixed number

**Terms** = can be a number, variable, or a product of a number and variable (separated by an operator)

**Variable** = symbol that represents a value (can be any letter in the alphabet)

### 2.3 Distributive Property examples on pages 55-56 *(see Chapter 2.3 notes)*

➤ **Tips:** Distributive Property is used to multiply a single term outside the parentheses and two or more terms inside a set of parentheses.

1. 4(15)  $60$

2. 7(6x)  $42x$

3. 9(2x + 4)  $18x + 36$

4. 5(3x − 2)  $15x - 10$

5. 3(−9x + 5)  $-27x + 15$

6. −6(4y + 2)  $-24y - 12$

7. −4(7y − 3)  $-28y + 12$

8. −3(−8y + 6)  $24y - 18$

9. −8(−5y − 2)  $40y + 16$

10. 5(6x + 4y)  $30x + 20y$

### 2.4 Evaluating Expressions examples on pages 59-60 *(see Chapter 2.4 notes)*

➤ **Tips:** To evaluate an algebraic expression, replace the variable with a given number and solve the expression where a = 4, b = −2, c = 3, d = −5.

11. 8a   $8(4) = 32$

12. 7b + 8   $7(-2) + 8$
$-14 + 8$
$-6$

13. 6c + 12   $6(3) + 12$
$18 + 12$
$30$

14. 5d + (−25) − 10   $5(-5) - 25 - 10$
$-25 - 25 - 10$
$-60$

15. −3a − (−5)   $-3(4) - (-5)$
$-12 + 5$
$-7$

16. −16b −13   $-16(-2) - 13$
$32 - 13$
$19$

17. −4c − 9 − (− 14)   $-4(3) - 9 - (-14)$
$-12 - 9 + 14$
$-21 + 14$
$-7$

18. −2d − (−7) + 15   $-2(-5) - (-7) + 15$
$10 + 7 + 15$
$32$

## 2.5 Simplifying Expressions examples on pages 62-65 (see Chapter 2.5 notes)

➤ **Tips:** Like Terms = are terms that have the same variable(s) and same exponents.
➤ **Tips:** Combine all like terms.

19. $(a + 8) + 15$

$a + 8 + 15$

$\boxed{a + 23}$

20. $3(2b + 5) + 7$

$6b + 15 + 7$

$\boxed{6b + 22}$

21. $15c + 2(5c - 15) + 40$

$15c + 10c - 30 + 40$

$\boxed{25c + 10}$

22. $(-11d + 13) - 3d$

$-11d + 13 - 3d$

$\boxed{-14d + 13}$

23. $-5(3x - 5) - (-10p)$

$-15x + 25 + 10p$

$\boxed{-15x + 10p + 25}$

24. $-2y - (-7y + 6m) + 16m + 4$

$-2y + 7y - 6m + 16m + 4$

$\boxed{5y + 10m + 4}$

## 2.6 Translating Word Phrases examples on pages 69-71 (see Chapter 2.6 notes)

➤ **Tips:** Memorize the following chart.

| Addition Key Words | Subtraction Key Words | Multiplication Key Words | Division Key Words |
|---|---|---|---|
| added to | subtracted from | multiplied by | divided by |
| sum | difference | product | quotient |
| increased by | decreased by | times | ratio of |
| more than | less than | twice (× 2) | halved (÷ 2) |
| plus | minus | doubled (× 2) | |
| | less | | |

25. 7 times a number, increased by 4

$\boxed{7n + 4}$

26. the difference of p and 9 plus 7m

$\boxed{(p - 9) + 7m}$

27. 4 less than the product of 3 and x

$\boxed{3x - 4}$

28. 5 divided by the sum of 3 and 7

$\boxed{5 \div (3 + 7)}$

29. 2 multiplied by the sum of y and 6

$\boxed{2(y + 6)}$

30. the quotient of 21 and 7, minus 2

$\boxed{(21 \div 7) - 2}$

31. name all the addition & subtraction key terms

added to, sum, increased by, more than, plus, subtracted from, difference, decreased by, less than, minus, less

32. name all the multiplication & division key terms

multiplied by, product, times, twice, doubled, divided by, quotient, ratio of, halved

## 2.7 Estimating examples on pages 74-77 (see Chapter 2.7 notes)

➤ **Tips:** Highest Place Value = round the number to the far left
➤ **Tips:** Front-End Estimation = use the far left digit only and make all other numbers zero
➤ **Tips:** To estimate a product, round each number to its highest place value.
➤ **Tips:** To estimate a quotient, the goal is to obtain a whole number for the answer.

33. 18.283 + 1.829 (round to the nearest tenth)

$18.3 + 1.8 = \boxed{20.1}$

34. 3.084 − 2.924 (round to the nearest hundredth)

$3.08 - 2.92 = \boxed{0.16}$

35. 23 + 165 (round to the nearest ten)

$20 + 170 = \boxed{190}$

36. 7,877 + 1,501 (round to the nearest thousand)

$8000 + 2000 = \boxed{10,000}$

37. 239 × 47 (estimate the product)

$200 \times 50 = \boxed{10,000}$

38. 477 ÷ 12 (estimate the quotient)

$480 \div 12 = \boxed{40}$     $500 \div 10 = \boxed{50}$

39. 3,355 + 461 (use highest place value)

$3000 + 500 = \boxed{3,500}$

40. 231 + 398 + 857 (use front-end estimation)

$200 + 300 + 800 = \boxed{1,300}$