

**Chapter 1.1 – 1.4 study guide (no calculators)**

Write an algebraic expression or equation (look for keywords like ‘equal’ or ‘equivalent’) for each phrase.

1. The sum of 3 and a number  $n$ , times 5.
2. 10 more than the quotient of 12 and a number  $p$
3. 2 less than  $3n$  is equal to 10
4. 12 times the quantity 15 minus a number  $d$
5. Two more than the difference of  $n$  and three is equivalent to five less than a number  $x$ .
6. Write a phrase for the algebraic expression.  $d - (9 + 2x)$

**Simplify each expression.**

7.  $10 - (4^2 - 5^2)$

8.  $\sqrt{144}$

9.  $(4^3 - 70)^2$

10.  $-5 + (-3)(-2^3)$

11.  $\left(-\frac{1}{2}\right)^3$

12.  $2(3^2) \div 4$

13. EXPLAIN: Why is  $-4^2 = -16$ ? I thought that when you square a negative you’ll produce a positive answer.

**Evaluate each expression for the given values of the variables.**

12.  $3x^2 - y^3 + 2y^4$ ;  $x = 2$  and  $y = 4$

13.  $(6m)^2 - (5n - 3m)^3$ ;  $m = -3$  and  $n = 1$

14.  $v + 2u^3 - 5uv$ ;  $u = -1$  and  $v = -3$

15.  $\frac{(4c)^2 - c^d}{96}$ ;  $c = -2$  and  $d = 5$

16. Name the most specific set of the real numbers to which each number belongs.

1. 1 is a member of the \_\_\_\_\_ set because \_\_\_\_\_.

$\frac{-10}{2}$  is a member of the \_\_\_\_\_ set because \_\_\_\_\_.

$-\sqrt{9}$  is a member of the \_\_\_\_\_ set because \_\_\_\_\_.

$\sqrt{3.5}$  is a member of the \_\_\_\_\_ set because \_\_\_\_\_.

17. Estimate  $\sqrt{120}$  to the nearest tenth.

18. Estimate  $\sqrt{16.989876}$  to the nearest tenth.

19. Use the word bank to the right to write the matching property for each statement.

_____	$2 + 5 + 3 = 5 + 2 + 3$	Inverse Property of Addition
_____	$6(2.5 + 6x) = 15 + 36x$	Inverse Property of Multiplication
_____	$(5 \cdot 3) \cdot 4 = 4 \cdot (5 \cdot 3)$	Commutative Property of Multiplication
_____	$5 \cdot 1 = 5$	Commutative Property of Addition
_____	$13 + (-13) = 0$	Identity Property of Addition
_____	$(9 + x) + y = 9 + (x + y)$	Identity Property of Multiplication
_____	$2 \cdot \frac{1}{2} = 1$	Associative Property of Multiplication
_____	$a + 0 = a$	Associative Property of Addition
_____	$3 \cdot b = b \cdot 3$	Distributive Property

20. Are the following expressions equivalent? Explain.

$$\frac{8mn}{2}$$

21. Is the ordered pair  $(-2, -9)$  a solution to the equation  $2x + 19 = 2 - y$ ? Show your work.

22. Is the ordered pair  $(4, -3)$  a solution to the equation  $10x + 20 = -20y$ ? Show your work.

23. Order the numbers  $\frac{2}{3}, -1\frac{1}{4}, \frac{-5}{3}, \frac{1}{3}$  from least to greatest.

24. Find the value of  $40 \div 2 + 8 - 3^2 + 10$ . Then change one operation sign and add one set of grouping symbols so that the value of the expression is 23.

Old value \_\_\_\_\_ New expression \_\_\_\_\_ New value 23

25. Describe the difference between the set of integers and the set of natural numbers.