

1 A Bit of Review Worksheet

Concepts:

- Square roots and principal square roots.
- Negation.
- Scientific notation.
- Absolute Value.

(Section 1.1)

1. TRUE or FALSE

- (a) _____ 11 is the only square root of 121.
- (b) _____ $\sqrt{121} = \pm 11$
- (c) _____ $\sqrt{3^2 + 4^2} = \sqrt{3 + 4}$

2. Simplify.

- (a) $\sqrt{75}\sqrt{12}$
- (b) $\frac{\sqrt{567}}{\sqrt{45}}$
- (c) $\sqrt{2535} - \sqrt{135}$.

3. Given real numbers b, c, d such that $b < 0, c > 0$, and $d < 0$. Determine which of the expressions are positive?

- (a) $b - c$
- (b) $bc - bd$
- (c) $b^2c - c^2d$

4. Find the exact value of the expression. You may not use parentheses in your answer. Which of the expressions are positive?

- (a) $-(\sqrt{245} - 13)$
- (b) $-(x - 6)$ if $x > 6$
- (c) $-(x - 6)$ if $x < 6$
- (d) $-\left((\pi - 3) - 1\right)$

5. Express the given statement in symbols.

- (a) x is nonnegative.
- (b) d is not greater than 7.

6. For each arithmetic statement, write a corresponding geometric statement.
- (a) $a \geq b$
 - (b) $a + 5 = b$
 - (c) $a + c > b, (c > 0)$
7. For each geometric statement, write a corresponding arithmetic statement.
- (a) a lies 6 units to the right of b on a horizontal number line.
 - (b) a lies at least 4 units below b on a vertical number line.
8. Express the number in normal decimal notation.
- (a) There are 6.02×10^{23} molecules in each mole.
 - (b) The mass of an electron is $9.10938188 \times 10^{-31}$ kg.
9. 1 mile = _____ inches. Write your answer in scientific notation. (**HINT:** There are 5280 feet in one mile.)
10. 1 year = _____ seconds. Write your answer in scientific notation. (Assume that there are 365 days in a year.)
11. 1 second = _____ years. Write your answer in normal decimal notation.
12. Simplify, and write the given number without using absolute values.
- (a) $3 - |2 - 5|$
 - (b) $|\sqrt{2} - 2|$
 - (c) $|3 - \pi| + 3$
13. Write the given number without using absolute values.
- (a) $|a - 5|$ if $a < 5$
 - (b) $|c - d|$ if $c \geq d$
14. Translate the given algebraic statement into a geometric statement about distance.
- (a) $|x - 3| < 2$
 - (b) $|x + 7| \leq 3$
15. Draw a graph representing each of the following algebraic statements.
- (a) $|x - 17| > 7$
 - (b) $|x - 17| \leq 7$
16. Use a geometric approach to solve the given equation or inequality.
- (a) $|x - 2| = 1$
 - (b) $|x + 2| \geq 3$