PTHS Keystone Algebra I Review

A1.1.1.1

Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents.

1.) Order the following numbers from greatest to least.

$$8.\bar{4}, \frac{25}{3}, \sqrt{72}, \frac{35}{4}$$

A.) $\sqrt{72}, \frac{25}{3}, \frac{35}{4}, 8.\bar{4}$

B.) $\frac{25}{3}, \sqrt{72}, \frac{35}{4}, 8.\bar{4}$

C.) $\frac{35}{4}, \sqrt{72}, 8.\bar{4}, \frac{25}{3}$

D.) $\frac{35}{4}, \frac{25}{3}, 8.\bar{4}, \sqrt{72}$

2.) Complete the comparison below.

$$-0.75 \_\_\_\_ -\frac{3}{4}$$

A.) $<$

B.) $>$

C.) $=$

D.) $\neq$

3.) Choose the correct comparison for the numbers below.

$$0.46, 104\%, \frac{5}{14}$$

A.) $0.46 < \frac{5}{14} < 104\%$

B.) $104\% > \frac{5}{14} > 0.46$

C.) $104\% > 0.46 > \frac{5}{14}$

D.) $\frac{5}{14} > 104\% > 0.46$

4.) Which list of numbers is in order from least to greatest?

A.) $2, \sqrt{5}, \sqrt{32}, 3$

B.) $\sqrt{32}, 3, \sqrt{5}, 2$

C.) $2, \sqrt{5}, 3, \sqrt{32}$

D.) $2, 3, \sqrt{5}, \sqrt{32}$

5.) Complete the comparison below.

$$\frac{16}{17} \_\_\_\_ 99.8\%$$

A.) $>$

B.) $=$

C.) $<$

D.) $\geq$

6.) Simplify: $\sqrt{243}$

A.) 9
B.) $81\sqrt{2}$
C.) 81
D.) $9\sqrt{3}$

7.) Simplify: $\sqrt{162}$

A. 54
B. $81\sqrt{2}$
C.) $9\sqrt{2}$
D.) 6

8.) Simplify: $\sqrt{640}$

A.) $8\sqrt{10}$
B.) $160\sqrt{2}$
C.)
C.) $20\sqrt{2}$
D.) $64\sqrt{10}$

9.) Which value of x makes the expression $3\sqrt{53x}$ equivalent to $21\sqrt{53}$?

A.) 147
B.) 441
C.) 7
D.) 49

10.) The expression $\sqrt{85x}$ should be further simplified for which value of x?

A.) 59
B.) 94
C.) 3
D.) 235

A1.1.1.2

Apply number theory concepts to show relationships between real numbers in problem-solving settings.

11.) What is the greatest common factor of the monomial: $78x^2y^2z^4$, $12x^2yz^2$

A.) $156x^4y^3z^6$
B.) $156x^2y^2z^4$
C.) $6x^2y^2z^4$
D.) $6x^2yz^2$

12.) What is the greatest common factor of the monomials: $21xy^4z^2$, $77x^3y^2$

A.) $231x^4y^6z^2$
B.) $7x^3y^4z^2$
C.) $7xy^2$
D.) $231x^3y^4z^2$

13.) What is the least common multiple of the monomials: $9xy^4$, $5x^2y^2$

A.) $45x^3y^6$
B.) xy^2
C.) x^3y^6
D.) $45x^2y^4$

14.) What is the least common multiple of the monomials: $18u^4vw^4$, $30u^4v^3w^3$

A.) $90u^4v^3w^4$
B.) $90u^8v^4w^7$
C.) $6u^8v^4w^7$
D.) $6u^4vw^3$

15.) What is the least common multiple of the monomials:
$9x^3y^3z^4$, $15x^3y^4z^4$, $5x^2y^3z^3$

A.) $3x^3y^3$
B.) $45x^6y^7z^8$
C.) $3x^3y^3z^4$
D.) $45x^3y^4z^4$

A1.1.1.3

Use exponents, roots, and/or absolute values to solve problems.

16.) Evaluate $-2|n+5|$ when n = -11.

A.) -8
B.) 12
C.) 0
D.) -12

17.) Simplify: $2(13 - |-11+2|) - |10-7|^2$

A.) -10
B.) 8
C.) -1
D.) -9

18.) Simplify: $\frac{7\sqrt{12}+6\sqrt{108}}{\sqrt{2}}$

A.) $25\sqrt{3}$
B.) $25\sqrt{6}$
C.) $50\sqrt{3}$
D.) $10\sqrt{6}$

A1.1.1.4

Use estimation strategies in problem-solving situations.

19. George's car can travel about 28 miles per gallon of gas. If the car has used 10 gallons of gas, approximately how far has George driven?

A.) 2.8
B.) 38
C.) 18
D.) 280

20. It costs a shoe company $20.67 to produce one pair of running shoes. The company sells each pair of shoes for $75.07 in stores. If the company sells 145 pairs of running shoes in the month of March, what is the company's approximate profit from running shoes in March?

A.) $7,830.00
B.) $13,920.00
C.) $10,875.00
D.) &7,975.00

21. A fast food restaurant sells between 164 and 328 hamburgers per day. If the company profits $82.00 per 82 hamburgers sold, approximately how much does the company profit in one year from hamburgers?

A.) &89,790.00
B.) $179,580.00
C.) $7,362,780.00
D.) $29,930.00

A1.1.1.5

Simplify expressions involving polynomials.

22. Simplify: $(8x^2 - 4x - 8) + (3x^2 - 7x - 3)$

A.) $11x^2 - 11x - 11$
B.) $11x^2 - 3x + 11$
C.) $5x^2 - 11x - 5$
D.) $11x^2 - 3x - 11$

23. Simplify: $(6x^3 + 3x^2 - 5) + (4x^3 - 4x - 3)$

A.) $10x^3 + 3x^2 - 4x - 8$
B.) $2x^3 + 3x^2 - 4x - 2$
C.) $10x^3 - 4x + 8$
D.) $10x^3 + 3x^2 - 4x + 8$

24. Simplify: $(9x^2 + 6x + 4) - (3x^2 + 2x + 6)$

A.) $6x^2 + 4x - 2$
B.) $12x^2 + 4x - 10$
C.) $6x^2 + 8x - 2$
D.) $12x^2 + 4x - 2$

25. Factor the following expression completely: $x^4 - 1$

A.) $(x^2 - 1)(x^2 + 1)$
B.) $(x - 1)(x + 1)(x^2 + 1)$
C.) $(x - 1)(x^3 + 1)$
D.) $(x - 1)(x + 1)(x - 1)(x + 1)$

26. Factor the following expression completely: $4x^2 - 4$

A.) $4(x - 1)^2$
B.) $4(x + 1)(x - 1)$
C.) $(4x + 1)(x - 1)$
D.) $4(x^2 - 1)$

27. Factor the polynomial expression: $x^2 - 10x + 25$

A.) $2x^2 - 25$
B.) $x^2 - 25$
C.) $(x - 10)^2$
D.) $(x - 5)^2$

28. Simplify the following expression: $\dfrac{3x^3 + 18x^2 - 15x}{3x}$

A.) $3x^3 + 18x^2 - 5$
B.) $19x^2 + 5x$
C.) $x^2 + 6x - 5$
D.) $x^2 + 15x - 12$

29. Simplify the following expression: $\dfrac{x^{14} - 16}{x^7 + 4}$

A.) $x^7 - 12$
B.) $x^{14} - 12$
C.) $x^7 - 4$
D.) $x^7 + 4$

30. Simplify the following expression: $\dfrac{-x - 6}{x^2 - x - 42}$

A.) $\dfrac{1}{x - 7}$
B.) $\dfrac{1}{x + 6}$
C.) $\dfrac{-1}{x - 6}$
D.) $\dfrac{-1}{x - 7}$