Name _____ Date _____ Class _____

Cumulative Test 1A

1. (3) A burst of electromagnetic radiation has a frequency of 1 exahertz. One exahertz equals 10^{12} megahertz. Each megahertz is equal to 10^6 hertz. What was the frequency of the burst of radiation in hertz?

2. (2) Identify the factors and coefficients in the expression below.

$$\frac{m}{2}$$

3. (4) A rectangular carpet is 9 feet wide by 12 feet long. Its area is $(9 \cdot 12)$ square feet. A circular carpet has a radius of 4 feet. Its area is $3.14 \cdot (4)^2$ square feet. How much larger is the rectangular carpet than the circular carpet?

4. (2) Identify the terms in the expression below.

$$3ab + 7c + \frac{9b}{2a}$$

Simplify the expressions in problems 5–10.

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

6. (4) $(2 \cdot 7) + 4 \cdot (3 + 4)$

7. (5) $-|9 - 7|$

8. (3) $a^2 \cdot a^3 \cdot a^4 \cdot b^5 \cdot b^3$

9. (4) $\frac{(2 \cdot 4 - 5)^3}{9}$

10. (3) $(0.2)^5$

11. (2) A babysitting service uses the expression below to determine the amount charged for a single session.

$9.0h + 15.95$

How many terms are in the expression? Identify the constants. Identify the variables.

12. (1) Identify the subsets of real numbers to which the number $2\sqrt{7}$ belongs.

In problems 13–14, identify the set of numbers that best describes each situation. Explain your choice.

13. (1) The amount of a bill, including tip, at a restaurant

14. (1) The area of a circular skating rink when the radius is a rational number

15. (5) Add $(4.1) + (-6.3)$.

16. (5) The temperature at 6:00 A.M. was –2°F. The temperature rose 10°F by noon. Use addition to find the temperature at noon.

17. (4) Compare the expressions below. Use <, >, or =.

$$(2.5 + 4) \div 5 \div 2^3 \bigcirc \frac{(16 + 12)}{2} - 6 \div 2$$

18. (2) Identify the constants and variables in the expression below.

$3ab + 2x$

Determine whether each statement is true or false in problems 19–20. If the statement is false, give a counterexample.

19. (5) The set of natural numbers is closed under addition.

20. (1) The set of whole numbers is closed under division.

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1. $10^{12} \cdot 10^{6} = 10^{18}$ hertz

12 + 6

2. $\frac{m}{2} = \frac{1}{2}m$ Coeff = $\frac{1}{2}$ factors = m & $\frac{1}{2}$

3. $(9 \cdot 12) = 108\ ft^2$ Rect.

$3.14 \cdot 4^2 = 50.24\ ft^2$ Circle

$108 - 50.24 = 57.76\ ft^2$

4. terms: $\{3ab, 7c, \frac{9b}{2a}\}$

5. $\left(\frac{1}{11}\right)^2 = \frac{1}{11} \cdot \frac{1}{11} = \frac{1}{121}$

6. $(2 \cdot 7) + 4 \cdot (3+4)$

$14 + 4 \cdot (7)$

$14 + 28 = 42$

7. $-|9-7|$

$-|2|$

-2

8. $a^2 \cdot a^3 \cdot a^4 \cdot b^5 \cdot b^3$

$2+3+4$ $5+3$

$a^9 b^8$

9. $\frac{(2.4-5)^3}{9} = \frac{(-3)^3}{9} = \frac{-3^3}{9} = \frac{-27}{9} = -3$

10. $.2^5 = .2 \times .2 \times .2 \times .2 \times .2$

$.2^5 = .00032$

11. $9.0h + 15.95$

Terms = 2

Constants = 9 & 15.95

Variable = h

12. $2\sqrt{7}$ is a non-repeating & non-terminating decimal.

It's Irrational & a Real #

13. Rational #, because it will likely have a decimal that ends after two places.

14. Irrational #, because π is involved, and π is irrational.

15. $4.1 + (-6.3)$

-2.2

16. $-2°F + 10°F = 8°F$

17. $(2.5+4) \div 5 + 2^3$ ○ $\frac{(16+12)}{2} - 6 \div 2$

$6.5 \div 5 + 8$ $14 - 6 \div 2$

$1.3 + 8$ $14 - 3$

9.3 < 11

18. $3ab + 2x$

Constants: 3, 2

Variables: a, b, x

19. TRUE, adding two counting #'s always gives another counting #.

20. FALSE, if you divide a whole # by zero, which is also a whole #, there is no solution.