MATH 103: Test 1
60 minutes [100 points]   Name_____

Show your work for all problems to acquire partial credit. Write your answer with correct units in the numbered area to the right of each problem. Each problem is 5 points and partial credit will be given for work shown.

Find the prime factorization of the composite number.

    1)   63   1) _____

Find the greatest common divisor of the numbers.

    2)   120 and 270   2) _____

Find the least common multiple of the numbers.

    3)   30 and 45   3) _____

Use properties of exponents to simplify the expression. Express answer without expoonents.

    4) $\dfrac{6^5}{6^3}$ 4) _____

    5) $(-3)^0$ 5) _____

    6) 5^{-2} 6) _____

    7) $(-3)^4$ 7) _____

Perform the indicated operation expressing each number in scientific notation.
Write answer in scientific notation.

8) $(250,000,000)(2,000,000,000)$ 8) _____

Solve the problem.

9) Two people are running around an oval track. They leave the starting   9) _____
point together. One completes the track every 28 minutes. The second
completes the track every 35 minutes. How long will it take for them to
both pass the starting point at the same time, if they both continue to run?

10) When making a long distance call from a certain pay phone, the first three   10) _____
minutes of a call cost $2.30. After that, each additional minute or portion
of a minute of that call costs $0.30. Use an inequality to find the maximum
number of minutes one can call long distance for $5.90.

11) Yearly homeowner property taxes are figured at a rate of $2.05 tax for   11) _____
every $100 of home value. Find the property taxes on a condominium
valued at $273,000.

Use the order of operations to find the value of the expression.

12) $6(3 - 1)^3 - 2(4 - 2)^3$ 12) _____

Perform the indicated operations. If possible, reduce the answer to its lowest terms.

13) $\dfrac{5}{6} \div \dfrac{1}{3} - \dfrac{1}{2}\left(\dfrac{2}{3}\right)$ 13) _____

Perform the indicated operation. Simplify the answer when possible.

14) $\sqrt{2} + 2\sqrt{98} - 4\sqrt{8}$ 14) _____

15) $\sqrt{2} \cdot \sqrt{6} + 6\sqrt{3}$ 15) _____

Evaluate the algebraic expression for the given value(s) of the variable(s).

16) $-2x^2 - 3xy - 3y^2$; $x = 3, y = -5$ 16) _____

Solve and check the equation.

17) $4(3x - 2) + 2(2x + 2) = 3x - 56$ 17) _____

Simplify the algebraic expression.

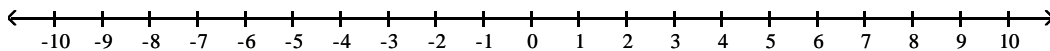18) $2 - 2[1 - (3x - 5)]$ 18) _____

Solve the formula for the specified variable.

19) $P = 2L + 2W$ for W 19) _____

Solve the inequality and graph the solution set.

20) $7x - 4 \geq 2x + 11$ 20) _____

1) $3^2 \times 7$
2) 30
3) 90
4) 6^2
5) 1
6) $\dfrac{1}{25}$
7) 81
8) 5×10^{17}
9) 140 minutes
10) at most 15 minutes
11) $5596.50
12) 32
13) $2\dfrac{1}{6}$
14) $7\sqrt{2}$
15) $8\sqrt{3}$
16) −48
17) {−4}
18) $6x - 10$
19) $W = \dfrac{P - 2L}{2}$
20) $\{x \mid x \geq 3\}$