Math 1333 Chapter 7 Unit Test 2

Name: _____ **Section:**_____

Be sure to show all your work and circle your answer.

Evaluate the following. Round off to the appropriate number of significant digits:

1) $P = \frac{NR(T + 273.0)}{V}$ for N = 0.823, R = 23.121, T = 45.25, and V = 66.

2) $h = \sqrt{c^2 - 0.25a^2}$ for a = 8.20 and c = 12.5.

Simplify the following. Write your answers using positive exponents:

3) $3x - 4 + 5(2x - 7)$

4) $-5(3x - 4x^2) + 2(3x - 9)$

5) $\frac{20a^{13}b^7a^{-5}}{25a^6b^5b^4}$

6) $2p^2q(3pq^2 - 6q)$

7) $\frac{9x^3 - 12x^2 + 3x}{3x}$

Convert the following:

8a) Convert – 273,000 into scientific notation.

8b) Convert 7.5×10^{-4} into standard notation

Simplify the following. Write your answer in scientific notation. Round off to the appropriate number of significant digits:

9) $\frac{(8.3 \times 10^{-4})(4.5 \times 10^{11})}{-3.00 \times 10^{-5}}$

Solve the following:

10) $\frac{d}{1.8} = 4.2$

11) $-15 + T = -7$

12) $1.9x + 5.2 = 15.84$

13) $6y - 8 = 2y + 9$

14) $8x - 2(4x - 5) = 7 + 6(3x + 7)$

15) $A = \frac{1}{2}bh$ for h

16) $I = \frac{E + V}{R}$ for E

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Translate into an equation and then solve. Round off to the appropriate number of significant digits:

17) The diameter of the crankshaft gear is equal to the sum of twice the height of the teeth above the pitch diameter of the small gear and the pitch diameter of the small gear. If the diameter of the crankshaft is 16.0 in and the diameter of the pitch gear is 14.4 in, find the height of the teeth.

18) The total capacitance of two capacitors in series is the same as the product of the capacitance of the two capacitors divided by the total of the capacitance of the two capacitors. If the capacitance of the two capacitors is 518 μF and 630 μF respectively, find the total capacitance.

19) To make their world famous punch, Katz's Katering Service mixes 3 parts 7-up, 2 parts rainbow sherbet, and 1 part orange juice. How much of each ingredient should they order to make 120 gallons of punch?

20) If a plumber is paid $28 per hour. If she works overtime (more than 40 hours), she is paid time and a half for each hour she works overtime. In one week, she earned $1186.50 after 25% of her pay was withheld for taxes. How many hours did she work that week?

Answers:

1) $P \approx 92$ 2) $h \approx 11.8$ 3) $13x - 39$ 4) $20x^2 - 9x - 18$ 5) $\frac{4a^2}{5b^2}$ 6) $6p^3q^3 - 12p^2q^2$

7) $3x^2 - 4x + 1$ 8a) -2.73×10^5 8b) 0.00075 9) -1.2×10^{13} 10) $d = 7.56$

11) $T = 8$ 12) $x = 5.6$ 13) $y = 4.25$ 14) $x = -\frac{13}{6}$ 15) $h = \frac{2A}{b}$ 16) $E = IR - V$

17) The height of the teeth is 0.8 in 18) The total capacitance is 280 μF

19) They will need 60 gallons of 7-up, 40 gallons of sherbet, and 20 gallons of orange juice.

20) She worked 51 hours.