TH-PA Pre-Algebra Week 20

1.) 8230000.

$\boxed{8.23 * 10^{6}}$

2.) 0.000745 $\quad \frac{7.45}{10000}$

3+1 $\quad$ 2/16

$\boxed{7.45 * 10^{-4}}$

3.) $9.\overbrace{102} * 10^{5}$ $\quad 5-3=2$

9.10200.

$\boxed{910,200}$

4.) $1.65 * 10^{-8}$ $\quad 8-1=7$

$\boxed{0.0000000165}$

5.) $9.83 * 10^{-4}$

$\boxed{0.000983}$

6.) $3.\overbrace{14} * 10^{9}$ $\quad 9-2=7$

$\boxed{3140000000}$

7.) $(8 * 10^{2})(3 * 10^{5})$

$10^{2+5}$

$24 * 10^{7+1}$

$\boxed{2.4 * 10^{8}}$

$24 * 10^{7}$

$2.4 * 10^{1} * 10^{7}$

$2.4 * 10^{8}$

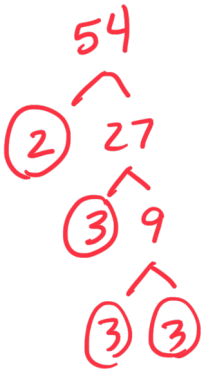
Pre-Algebra Chapter 4 Pre-Test

1.) (5 pts each, 10 pts total) (4-1) Use divisibility rules to create a prime factorization tree for each of the following numbers.

a) 54

$54 : 3 \cdot 3 \cdot 3 \cdot 2$

$54 : 3^3 \cdot 2$




b) 96

2.) (5 pts each, 10 pts total) (4-2) Write using exponents

a) $2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot a \cdot a \cdot a \cdot a \cdot b \cdot c \cdot c \cdot c$

$2^3 \cdot 3^2 \cdot a^4 \cdot b \cdot c^3$

$2^3 \cdot 3^2 \cdot a^4 b c^3$

b) $5 \cdot 5 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$

3.) (5 pts total) (4-2) Evaluate.

$(6 + h^3)^2$ for h = 2

$(6+(2)^3)^2$

$(6+8)^2$

$(14)^2 = 14 \cdot 14 = \boxed{196}$

4.) (5 pts each, 15 pts total) (4-3) Find the Great Common Factor (GCF) for each of the following.

a) 28 and 36

28: $7 \cdot 2 \cdot 2$

36: $3 \cdot 3 \cdot 2 \cdot 2$

GCF: $2 \cdot 2 = \boxed{4}$

28: 2, 14; 14: 7, 2

36: 18, 2; 18: 2, 9; 9: 3, 3

b) $x^4y^7$ and $x^6y^3$

c) $18a^3b^2$ and $24a^2bc$

18: 2, 9; 9: 3, 3

24: 3, 8; 8: 2, 4; 4: 2, 2

$18a^3b^2 = 3 \cdot 3 \cdot 2$

$24a^2bc = 3 \cdot 2 \cdot 2 \cdot 2$

$3 \cdot 2\, a^2 b$

$\boxed{6a^2b}$

5.) (5 pts each, 15 pts total) (4-4) Write in simplest form.

Reduce

a) $\frac{21}{28}$

b) $\frac{9h^5k}{12h^4k^3}$

9: 3 3

12: 2 6; 6: 3 2

$\frac{9h^5k}{12h^4k^3} = \frac{3 \cdot \cancel{3}h}{\cancel{3} \cdot 2 \cdot 2k^2} = \boxed{\frac{3h}{4k^2}}$

$\frac{h^5}{h^4} = h^{5-4} = h^1$ $\quad \frac{k^1}{k^3} = k^{1-3} = k^{-2}$

c) $\frac{42a^8b^6}{56a^3b^{11}}$

6.) (5 pts each, 15 pts total) Evaluate. Write in simplest form.

a) $\frac{x}{y}$ for x = 12 and y = 21

b) $\frac{z+2}{z^2-4}$ z = 6

$$\frac{6+2}{(6)^2-4} = \frac{6+2}{36-4} = \frac{8 \div 8}{32 \div 8} = \boxed{\frac{1}{4}}$$

c) $\frac{y^3-4y+6}{y^3}$ for y = -2

7.) (5 pts each, 15 pts total) (4-8) Simplify each expression.

a) $\frac{8^6}{8^3} = 8^{6-3} = \boxed{8^3}$

b) $(-5)^0 = 1$

c) $n^{-4} = \frac{1}{n^4}$

8.) (5 pts each, 10 pts total) (4-9) Write each of the following in scientific notation.

a) 7630000 = $\boxed{7.63 * 10^6}$

b) 0.000624 $\boxed{6.24 * 10^{-4}}$

9.) (5 pts total) (4-9) Multiply. Write your result in scientific notation.

$$(2 \times 10^5) \times (4 \times 10^3)$$

$8 * 10^{5+3}$

$\boxed{8 * 10^8}$