W-PA Pre-Algebra Week 20 2/15

1.) 8230000.

$8.23 * 10^{6}$

2.) 0.000745

$7.45 * 10^{-4}$

3.) $9.102 * 10^{5}$ $9.10200.$

910200

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

0.00000000165

1 2 3 4 5 6 7

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

0.000983

6.) $3.14 * 10^{9}$

3140000000

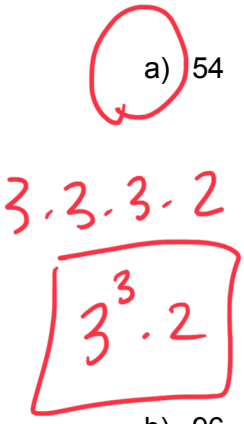
7.) $(8 * 10^{2})(3 * 10^{5})$

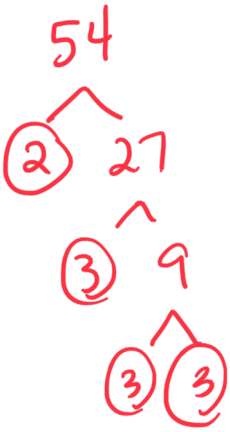
$24 * 10^{2+5} = 24 * 10^{7} = 2.4 * 10^{8}$ $^{+1}$

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

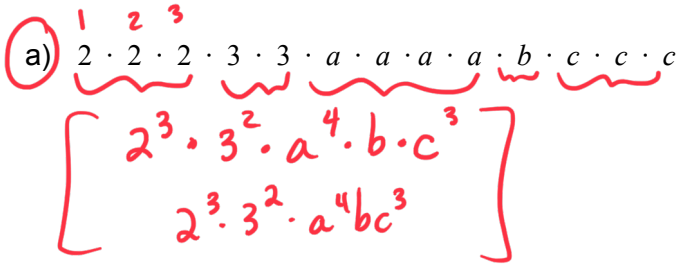




b) 96

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

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



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

$28: 7 \cdot 2 \cdot 2$

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

$3^2 \cdot 2^2$

28 → 2, 14 → 2, 7

36 → 2, 18 → 2, 9 → 3, 3

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

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

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

$18: 3 \cdot 3 \cdot 2$

$24: 3 \cdot 2 \cdot 2 \cdot 2$

$a^3 b^2$

$a^2 bc$

18 → 9, 2 → 3, 3

24 → 2, 12 → 2, 6 → 3, 2

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

$\boxed{6a^2b}$

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

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

$21: 3 \cdot 7$

$28: 2 \cdot 2 \cdot 7$

$= \boxed{\frac{3}{4}}$

21 → 3 · 7

28 → 4 · 7 → 2 · 2

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

$9: 3 \cdot 3$

$3 \cdot 2 \cdot 2$

$h^5 k$

$h^4 k^3$

9 → 3 · 3

12 → 4 · 3 → 2 · 2

$\frac{3 \cdot h}{2 \cdot 2 \cdot k^2} = \boxed{\frac{3h}{4k^2}}$

$\frac{h^5}{h^4} = h^{5-4} = h^1$

$\frac{k}{k^3} = k^{1-3} = k^{-2}$

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

$\frac{42}{56} = \frac{7 \cdot 3 \cdot 2}{7 \cdot 2 \cdot 2 \cdot 2}$

42 → 2 · 21 → 3 · 7

56 → 8 · 7 → 2 · 4 → 2 · 2

$\frac{7 \cdot 3 \cdot 2 \; a^8 \; b^6}{7 \cdot 2 \cdot 2 \cdot 2 \; a^3 \; b^{11}} = \boxed{\frac{3a^5}{4b^5}}$

$\frac{a^8}{a^3} = a^{8-3} = a^5$

$\frac{b^6}{b^{11}} = b^{6-11} = b^{-5}$

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

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

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

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

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

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

$7.63 * 10^6$

b) 0.000624

$6.24 * 10^{-4}$

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

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

$8 * 10^{5+3}$

$8 * 10^8$