

S-PA Pre-Algebra Session 15 7/25

1.) Place into scientific notation

a) 8230000
 6 5 4 3 2 1
 8.23×10^6

b) 0.000745
 1 2 3 4
 7.45×10^{-4}

2.) Write in standard form.

a) 9.102×10^5
 910200

b) 1.65×10^{-8}
 0.0000000165

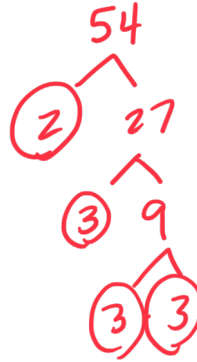
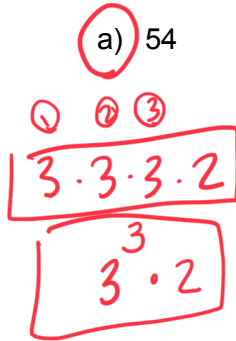
c) 9.83×10^{-4}
 0.000983

d) 3.14×10^9
 L R
 3140000000

e) $(8 \times 10^2)(3 \times 10^5)$
 $24 \times 10^{2+5}$
 $24 \times 10^{7+1}$
 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.



b) 96

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

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

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

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.

↓
PEMDAS

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

$(6 + 2^3)^2$
 $(6 + 8)^2$
 $(14)^2 = 196$

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: $2 \cdot 2 = 4$

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

smallest exponents!

x^4y^3

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



$18: 3 \cdot 3 \cdot 2$
 $24: 3 \cdot 2 \cdot 2 \cdot 2$

GCF: $3 \cdot 2 = 6a^2b$

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

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

b) $\frac{9h^5k}{12h^4k^3} = \frac{\overset{9}{\begin{matrix} \textcircled{3} & \textcircled{3} \\ \cdot & \cdot \\ 3 & \cdot 3 \end{matrix}} h^5 k}{\overset{12}{\begin{matrix} \textcircled{3} & 4 \\ \cdot & \cdot \\ 2 & \cdot 2 \end{matrix}} h^4 k^3} = \boxed{\frac{3h}{4k^2}}$

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

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

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 $y = 21$

Evaluate. Write in simplest terms.

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

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

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

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

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

$\frac{8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8}{8 \cdot 8 \cdot 8} = 8^3$

$\frac{7^{42}}{7^{26}} = 7^{42-26} = 7^{16}$

b) $(-5)^0$

$\frac{(-5) \cdot (-5) \cdot (-5)}{(-5) \cdot (-5) \cdot (-5)} = \frac{(-5)^3}{(-5)^3} = (-5)^{3-3} = (-5)^0$

$1 \cdot 1 \cdot 1 = 1$

$\frac{1}{1} = 1$

Anything raised to 0 power, is 1

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

$n^{-4} \neq n \cdot -4$

$n^{-4} = \frac{1}{n \cdot n \cdot n \cdot n}$

$(\text{scribble})^0 = 1$

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

a) $\begin{matrix} \downarrow \\ 7630000 \\ \underline{\underline{654321}} \end{matrix}$

$7.63 \cdot 10^6$

b) $\begin{matrix} \boxed{3} \\ 0.000624 \\ \underline{\underline{1234}} \end{matrix}$

$6.24 \cdot 10^{-4}$

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

$$10^5 * 10^3 = 10^{5+3} = 10^8$$

$$10^5 \neq 10.5$$

$$10^5 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$$

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

$$8 * 10^8$$

↑
single digit