

Nov. 15 **6.1 and 6.2 Multiplying and Dividing Monomials** $\begin{matrix} 7x \\ -8xy \end{matrix}$

Identify the coefficient, variables and exponent in the following

$$7x^2$$

$$-5x^3y^2$$

Coefficient: 7

-5

Variable: x

x, y

exponent: 2

3, 2

Example #1: Lacrosse balls are made of dense rubbercoated with a thin layer of sealant. The diameter of a lacrosse ball is 9 cm.

a) What volume of rubber is needed to make one lacrosse ball?

$$V = \frac{4}{3}\pi r^3$$

$$V = \frac{4}{3}\pi(4.5)^3$$

$$381.70 \text{ cm}^3$$

b) What is the area of sealant on one lacrosse ball?

$$SA = 4\pi r^2$$

$$4 \times \pi \times (4.5)^2$$

$$254.47 \text{ cm}^2$$

Example #2: A weather balloon is spherical with a diameter of 3.0 m. suppose 5 m³ of air is released from the balloon. what will be the new volume, diameter and surface area?

$$\begin{aligned}\text{Original volume: } & \frac{4}{3}\pi r^3 \\ & = \frac{4}{3}\pi (1.5)^3 \\ & = 14.14 \text{ m}^3\end{aligned}$$

$$\text{New Volume: } 14.14 - 5 = 9.14 \text{ m}^3$$

$$\begin{aligned}V &= \frac{4}{3}\pi r^3 \\ 9.14 &= \frac{4}{3}\pi (r)^3 \\ 27.42 &= \frac{4\pi r^3}{4\pi}\end{aligned}$$

$$\begin{aligned}2.18 &= r^3 \\ \sqrt[3]{2.18} &= \sqrt[3]{r^3}\end{aligned}$$

$$1.3 \text{ m} = r$$

$$\begin{aligned}\text{Diameter} &= 1.3 \times 2 \\ &= 2.6 \text{ m}\end{aligned}$$

$$\begin{aligned}SA &= 4\pi r^2 \\ &= 4\pi (1.3)^2 \\ &= 21.24 \text{ m}^2\end{aligned}$$

Exponent Laws

Multiplication: $a^x \cdot a^y = a^{x+y}$

Division: $\frac{a^x}{a^y} = a^{x-y}$

Powers: $(a^b)^c = a^{b \cdot c}$

Examples:

$$a) (3a^4b^1) \cdot (6a^3b^2)$$

$$\underline{18a^7b^3}$$

$$b) (-4j^3k^2)(5j^2k^2)^3$$

$$(-4j^3k^2)(125j^6k^6)$$

$$\underline{-500j^9k^8}$$

$$c) \frac{(3a^3b^3)(-4a^3b^2)}{(2a^2b)^2}$$

$$= \frac{-12a^6b^5}{4a^4b^2}$$

$$= -3a^2b^3$$

Pg. 328 2, 5, 6

Pg. 335 4, 9, 11, 17 all odds