Unit 1: Radicals Lesson 1.3

Coach's Corner – VI

1. Solve $\sqrt{21x+51}+7=19$. State any restrictions on the variable and verify the solution.

$$21x+51 \geq 0$$
$$21x+51-51 \geq 0-51$$
$$\frac{21}{21}x \geq \frac{-51}{21}$$
$$x \geq \frac{-51}{21},\ x \in \mathrm{R}$$

$$\sqrt{21x+51}+7=19$$
$$\sqrt{21x+51}+7-7=19-7$$
$$\sqrt{21x+51}=12$$
$$(\sqrt{21x+51})^2=(12)^2$$
$$21x+51=144$$
$$21x+51-51=144-51$$
$$21x=93$$
$$\frac{21}{21}x=\frac{93}{21}$$
$$x=\frac{31}{7}$$

$\sqrt{21x+51}+7$	19
$=\sqrt{21\left(\frac{31}{7}\right)+51}+7$	19
$=\sqrt{93+51}+7$	
$=\sqrt{144}+7$	
$=12+7$	
$=19$	19

Left side = Right side

2. Rearrange the formula for the volume of a sphere to solve for the radius r.
Volume of a sphere $= \frac{4}{3}\pi r^3$

$$V = \frac{4}{3}\pi r^3$$
$$\frac{3}{4}V = \frac{4}{3}\pi r^3 \times \frac{3}{4}$$
$$\frac{3}{4}V = \pi r^3$$
$$\frac{3}{4}V \div \pi = \frac{\pi}{\pi}r^3$$
$$\frac{3}{4\pi}V = r^3$$
$$\sqrt[3]{\frac{3}{4\pi}V} = \sqrt[3]{r^3}$$
$$\sqrt[3]{\frac{3}{4\pi}V} = r$$

3. Given the volume of 105 inches^3 for an 8 pound bowling ball. Find the radius of the bowling ball to the nearest hundredth of an inch.

$$\sqrt[3]{\frac{3}{4\pi}V} = r$$
$$\sqrt[3]{\frac{3}{4\pi}(105)} = r$$
$$\sqrt[3]{\frac{315}{4\pi}} = r$$
$$2.93 \text{ inches} \doteq r$$

The bowling ball has a radius of approximately 2.93 inches.

Please complete *Lesson 1.3 Game On!, Unit 1 Time Out!*, *Final Review Assignment*, and *Check Point* located in *Workbook 1B*.