**Radicals Review**

**Solve each of the following problems. Make sure to show your work.**

1. Find the following product. $\left(\sqrt{18x^{5}y^{7}}\right)\left(\sqrt{6x^{6}y^{3}}\right)$
2. The formula $P=4\sqrt{A}$ relates the perimeter $P$, in units, of a square to its area $A$, in square units. What is the area of the square window shown to the right?
3. How do you know if you can multiply two radicals? Give an example of a situation where you can multiply two radicals and one where you can’t.
4. Rewrite the following in exponential form:
	1. $\sqrt[8]{x^{4}}$
	2. $\sqrt[9]{x^{3}}$
	3. $\sqrt[5]{r^{4}}$

Rewrite the following in radical form:

* 1. $x^{\frac{1}{8}}$
	2. $x^{\frac{3}{7}}$
	3. $x^{-\frac{2}{3}}$
1. Evaluate $\left(-27\right)^{\frac{1}{3}}$ and $-\left(27\right)^{\frac{1}{3}}$. What do you notice and why does this happen?
2. What is the area of a rectangle with length $\sqrt{175}in. $ and width $\sqrt{63}in.?$
3. The area of a triangle is $14 in^{2}$. The height is $\left(4+\sqrt{3}\right)in.$ What is the width?
4. The formula $\frac{πd^{2}v}{4}=Q$ models the diameter of a pipe where $Q$ is the maximum flow of water in a pipe, and $v$ is the velocity of water. What is the diameter of a pipe that allows a maximum flow of $30ft^{3}/min$ of water flowing at a velocity of $400ft/min$? Round your answer to the nearest tenth.
5. Add or subtract the following:
	1. $6x\sqrt{7}+\sqrt{112x^{2}}$
	2. $3\sqrt[4]{32}-2\sqrt[4]{162}$
	3. $\sqrt{125}-2\sqrt{20}$
	4. $3\sqrt[3]{81}-3\sqrt[3]{3}$



1. In the stained-glass window design, the side of each small square is $5 in$. Find the perimeter of the window to the nearest tenth of an inch.
2. Multiply the following. Remember to simplify.
	1. $\left(1+4\sqrt{10}\right)(2-\sqrt{10)}$
	2. $(3+\sqrt{11})(4-\sqrt{11})$
3. Solve the following remember to check for extraneous solutions.
	1. $3\left(x+1\right)^{\frac{2}{3}}=12$
	2. $\sqrt{5x-1}+3=x$
4. Add the following fractions.
	1. $\frac{5}{2-\sqrt{6}}+\frac{8}{2+\sqrt{6}}$
	2. $\frac{11}{\sqrt{7}+\sqrt{2}}+\frac{1}{\sqrt{7}-\sqrt{2}}$