Name:_____ Date:_____

HW Pre-Calculus 11 Ch 3 Lesson 2: Multiplying Dividing and Rationalizing with Radicals

1. Multiply each of the following radicals:

a) $\sqrt{24}\times\sqrt{6}$	b) $3\sqrt{12}\times5\sqrt{8}$	c) $5\sqrt[3]{50}\times3\sqrt[3]{60}$
d) $-4\sqrt[3]{-100}\times2\sqrt[3]{54}$	e) $\sqrt[3]{a^2bc^3}\times\sqrt[3]{a^5b^4c^2}$	f) $\sqrt[4]{32x^3y}\times\sqrt[4]{64x^2y^7}$
g) $2\sqrt{3}\left(4\sqrt{21}+5\sqrt{15}\right)$	h) $4\sqrt{5}\left(6\sqrt{40}+3\sqrt{50}-2\sqrt{90}\right)$	i) $5\sqrt{6}\left(4\sqrt{24}-3\sqrt{48}-5\sqrt{54}\right)$
j) $\left(3\sqrt{2}+4\sqrt{3}\right)\left(5\sqrt{3}-\sqrt{8}\right)$	k) $\left(\sqrt{6}-\sqrt{8}\right)\left(\sqrt{2}+\sqrt{5}+4\right)$	
L) $\left(3\sqrt[3]{8x^2}+\sqrt[3]{4x^2}\right)\left(\sqrt[3]{2x^2}-6\sqrt[3]{8x^2}\right)$	m) $\left(8a-6\sqrt[3]{3r}\right)\left(2\sqrt[3]{18r^2}+4\sqrt[3]{45r}\right)$	

2. Divide and Rationalize each of the following radicals:

$a)\ \frac{\sqrt{24}}{\sqrt{3}}$	$b)\ \frac{3\sqrt{20}}{2\sqrt{10}}$	$c)\ \frac{3\sqrt{18}}{5\sqrt{24}}$
$d)\ \frac{1}{\sqrt{5}}-\frac{1}{\sqrt{3}}$	$e)\ \frac{1}{\sqrt{3}}+\frac{2}{\sqrt{6}}$	$f)\ \frac{5}{\sqrt{5}}-\frac{8}{\sqrt{2}}$
$g)\ \frac{3\sqrt{48}}{2\sqrt{75}}-\frac{2\sqrt{24}}{\sqrt{96}}$	$h)\ \frac{3\sqrt{5}}{\sqrt{20}}+\frac{4\sqrt{3}}{\sqrt{27}}$	$i)\ \frac{2\sqrt{3}}{\sqrt{9}}-\frac{3\sqrt{5}}{\sqrt{125}}$
j) $\frac{1}{\sqrt{2}-\sqrt{3}}$	k) $\frac{2}{2\sqrt{3}+5}$	L) $\frac{\sqrt{2}}{2\sqrt{3}+\sqrt{5}}$
m) $\frac{\sqrt{2}+\sqrt{3}}{\sqrt{3}-\sqrt{2}}$	n) $\frac{5\sqrt{3}}{2\sqrt{2}-3\sqrt{3}}$	p) $\frac{x^4+x^2}{\sqrt{x^3}}$

Q) $\frac{5}{\sqrt[3]{x^2}}$	R) $\frac{\sqrt[3]{3}+4\sqrt[3]{3}}{\sqrt[3]{3^2}}$	s) $\frac{\sqrt[4]{6}-3\sqrt[4]{6}}{\sqrt[4]{216}}$

3. Is the following statement true or false? Explain: $\sqrt{-3}\times\sqrt{-27}=9$

4. The following student rationalized the expression with the steps shown. Indicate any errors that you see:

$$\frac{5-\sqrt{a}}{\sqrt{a}-4}=\frac{5-\sqrt{a}}{\sqrt{a}-4}\times\left(\sqrt{a}+4\right)$$

$$=\frac{5\sqrt{a}-a+20}{a-4}$$

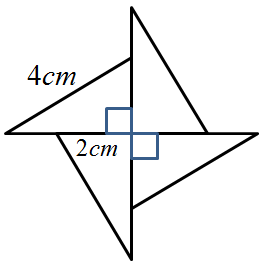
$$=\frac{5\sqrt{a}+20}{-4}$$

5. Find the unknown value "K" in each of the following expressions:

a) $K\times 3\sqrt{24}=2\sqrt{3}\times 6\sqrt{10}$ b) $8\sqrt{3}=\frac{4\sqrt{48}}{\sqrt{K}}$

6. Find the volume of a box given the dimensions: Height: $3\sqrt{2}+4$, Width: $4\sqrt{5}-2\sqrt{3}$, Length: $4\sqrt{5}+2\sqrt{3}$

7. Each right triangle in the figure shown has a hypotenuse 4cm and the shortest side 2 cm. Find the perimeter of the figure:



8. Challenge: Find the sum of the expression without a calculator:

$$\frac{1}{3+2\sqrt{2}}+\frac{1}{2\sqrt{2}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{5}}+\frac{1}{\sqrt{5}+2}+\frac{1}{2+\sqrt{3}}$$