Name: Key Hour: _____ Date: _____

Radical & Rational Exponent Forms Notes

$$\sqrt[n]{x^m} = x^{\frac{m}{n}}$$

If the n is not given, it's a 2!

Radical → Rational Exponent	Rational Exponent → Radical
$(\sqrt{3k})^3 = (3k)^{3/2}$ $m=3$ $n=2$	$(10r)^{\frac{2}{3}} = \sqrt[3]{(10r)^2}$ $m=2$ $n=3$
$(\sqrt[3]{7x})^4 = (7x)^{\frac{4}{3}}$ $m=3$ $n=2$	$(6b)^{\frac{5}{2}} = \sqrt{(6b)^5}$ $m=5$ $n=2$

Simplify!

$9^{\frac{1}{2}}$

$= \sqrt{9}$

$= \boxed{\pm 3}$

$64^{\frac{2}{3}}$

$= \sqrt[3]{64^2}$

$= 0$

$= 4^2$

$= \boxed{16}$

$8^{\frac{1}{3}}$

$= \sqrt[3]{8}$

$= \boxed{2}$

More Examples!

Writing in Exponential or Radical Form
Notes

Name:

Write each exponential in a radical form.

1) $7^{\frac{1}{2}} = \sqrt{7}$

$m=1$
$n=2$

2) $4^{\frac{4}{3}} = \sqrt[3]{4^4}$

$m=4$
$n=3$

3) $2^{\frac{5}{3}} = \sqrt[3]{2^5}$

$m=5$
$n=3$

4) $7^{\frac{4}{3}} = \sqrt[3]{7^4}$

$m=4$
$n=3$

5) $6^{\frac{3}{2}} = \sqrt{6^3}$

$m=3$
$n=2$

6) $2^{\frac{1}{6}} = \sqrt[6]{2}$

$m=1$
$n=6$

Write each radical in an exponential form.

7) $(\sqrt{10})^3$

$m=3$
$n=2$ $\quad 10^{\frac{3}{2}}$

8) $\sqrt[6]{2}$

$m=1$
$n=6$ $\quad 2^{1/6}$

9) $(\sqrt[4]{2})^5$

$m=5$
$n=4$ $\quad 2^{5/4}$

11) $\sqrt[3]{2}$

$m=1$
$n=3$ $\quad 2^{1/3}$

12) $\sqrt[6]{10}$ $\quad 10^{1/6}$

$m=1$
$n=6$