Name: ____ **Unit 7 Class Work**

GENERAL RULE: $x^{m/n} =$

$\sqrt[N]{x^m}$

EXAMPLE E:

$125^{\frac{2}{3}}$

$\sqrt[3]{125}^{\,2} = (5)^2$

$= \boxed{25}$

EXAMPLE F:

$(8p^{12}q^7)^{2/3}$

$8^{2/3} p^{24/3} q^{14/3}$

$(\sqrt[3]{8})^2 p^8 q^{12/3} q^{2/3} = 4p^8 q^4 \cdot \sqrt[3]{}$

EXAMPLE G:

$\frac{2^{-\frac{2}{5}}}{1} = \frac{1}{2^{2/5}}$

$= \frac{1}{\sqrt[5]{2^2}} = \boxed{\frac{1}{\sqrt[5]{4}}}$

EXAMPLE H:

$\left((b^3c^5)^{\frac{2}{3}}\right)^{-\frac{1}{2}} = \frac{(b^{6/3}c^{10/3})^{-1/2}}{1}$

$= \frac{1}{(b^2c^{10/3})^{1/2}}$

$= \frac{1}{bc^{10/6}} = \frac{1}{bc^{5/3}}$

$= \boxed{\frac{1}{b\cdot\sqrt[3]{}}}$

PRACTICE! SIMPLIFY EXPRESSION USING RADICALS AS MUCH AS POSSIBLE. (NO FRACTIONAL EXPONENTS IN FINAL ANSWERS)

7. $8^{-\frac{2}{3}}$

$\frac{8^{-\frac{2}{3}}}{1} = \frac{1}{8^{2/3}}$

$= \frac{1}{\sqrt[3]{8}^{\,2}}$

$= \frac{1}{2^2} = \boxed{\frac{1}{4}}$

8. $4^{1/2} * 64^{2/3}$

$\sqrt{4} \quad \sqrt[3]{64}^{\,2}$

$2 \cdot 4^2$

$2 \cdot 16$

$\boxed{32}$

9.

$(-27m^{30}N^4p^{10})^{2/3}$

$-27^{2/3} M^{60/3} N^{8/3} P^{20/3}$

$\sqrt[3]{-27}^{\,2} M^{20} N^{6/3} N^{2/3} P^{18/3} P^{2/3}$

$(-3)^2 m^{20} N^2 \cdot \sqrt[3]{N^2}\, P^6 \cdot \sqrt[3]{P^2}$

$\boxed{9m^{20}N^2P^6 \cdot \sqrt[3]{N^2P^2}}$

10. $100^{\frac{3}{2}}$

$(\sqrt{100})^3$

$10^3 = 1000$

11. $(-64y^{12})^{\frac{5}{3}}$

$-64^{5/3} y^{60/3}$

$\sqrt[3]{-64}^{\,5} y^{20}$

$(-4)^5 y^{20}$

$\boxed{-1024y^{20}}$

12. $\frac{(8z)}{(8z)^{\frac{3}{2}}}$

$(8z)^{1-\frac{3}{2}}$

$= (8z)^{\frac{2}{2}-\frac{3}{2}}$

$= \frac{(8z)^{-\frac{1}{2}}}{1} = \frac{1}{(8z)^{1/2}}$

$= \boxed{\frac{1}{\sqrt{8z}}}$

13. $(27b^6c^{11})^{2/3}$

$9b^4c^7 \cdot \sqrt[3]{c}$

14. $t^{-\frac{9}{8}} * t^{\frac{1}{4}}$

$\frac{1}{\sqrt[8]{t^7}}$

15. $(32q^{20}r^{23}s^{13})^{2/5}$

$4q^8r^9s^5 \cdot \sqrt[5]{rs}$

16. $\left(\frac{2w^{\frac{3}{4}}y^{\frac{1}{2}}}{w^{\frac{1}{2}}}\right)^{-2}$

$\frac{1}{2y \cdot \sqrt{w}}$

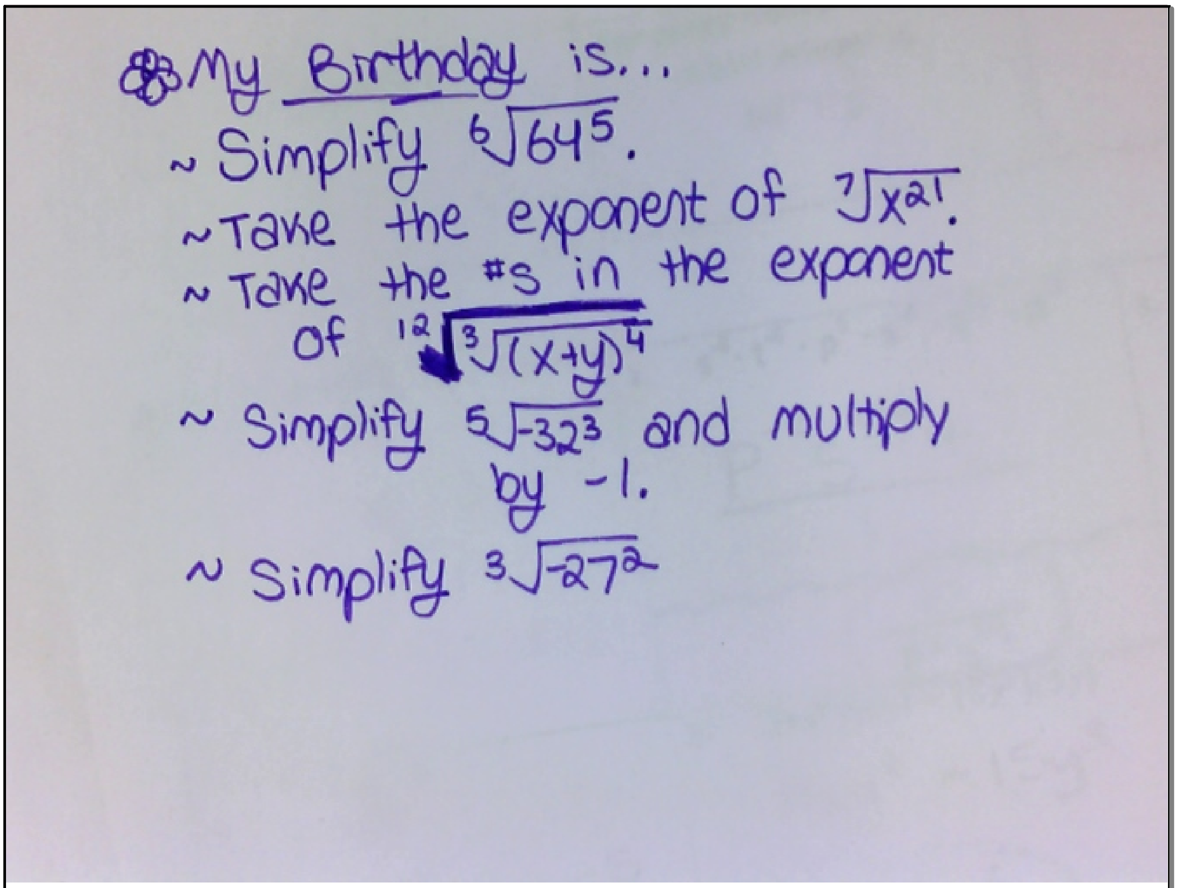
17. $(16g^{15}h^3)^{\frac{1}{4}}$

$2g^3 \cdot \sqrt[4]{gh}$

18. $\left(\frac{27r^3s}{r^6s^{\frac{1}{5}}}\right)^{-1/3}$

$\frac{r}{3 \cdot \sqrt[15]{s^2}}$

WRITE ANY IMPORTANT HINTS, TIPS, REMINDERS, ETC. FOR CONVERTING BETWEEN RADICAL AND EXPONENTIAL FORM BELOW ☺



My Birthday is...

- ~ Simplify $\sqrt[6]{64^5}$.
- ~ Take the exponent of $\sqrt[7]{x^{21}}$.
- ~ Take the #s in the exponent of $\sqrt[12]{\sqrt[3]{(x+y)^4}}$
- ~ Simplify $\sqrt[5]{-32^3}$ and multiply by -1.
- ~ Simplify $\sqrt[3]{-27^2}$

Mar 20-2:08 PM