	Topic/Objective: AGS 2 Module 3.3	**Name:**
	Rational Exponents	**Period:**
		Date:

Essential Question: What does a fraction exponent mean?

Questions:	
	<u>Rule</u>: $\sqrt[b]{x} = x^{\frac{1}{b}}$
	Write in radical form: $2^{\frac{1}{3}} =$
	Write in exponential form: $\sqrt[4]{5} =$
	<u>Rule</u>: $\sqrt[b]{x^a} = \left(\sqrt[b]{x}\right)^a = x^{\frac{a}{b}}$
	Write in radical form: $2^{\frac{3}{4}} =$
	Write in exponential form: $\left(\sqrt[3]{5}\right)^2 =$
	Write in radical form.
	1. $4^{\frac{1}{2}} =$ 2. $x^{\frac{4}{5}} =$
	3. $3 \cdot y^{\frac{1}{4}} =$ 4. $(3y)^{\frac{1}{4}} =$
	Write in exponential form.
	5. $\sqrt[5]{x} =$ 6. $\left(\sqrt[3]{y}\right)^4 =$
	7. $\left(\sqrt[4]{2}\right)^6 =$

Rule: $x^{-\frac{a}{b}} = \dfrac{1}{\left(\sqrt[b]{x}\right)^a}$ Negative exponents can create fractions!

Write in radical form.

8. $4^{-\frac{1}{2}} =$

9. $y^{-\frac{2}{3}} =$

10. $(3x)^{-\frac{1}{5}} =$

Write in exponential form.

11. $\dfrac{1}{\sqrt{m}} =$

12. $\dfrac{1}{\sqrt[5]{x^2}} =$

13. $\dfrac{3}{\left(\sqrt[4]{m}\right)^2} =$

Simplify.

14. $49^{\frac{3}{2}} =$

15. $(8x^9)^{\frac{1}{3}} =$

16. $(81x^4)^{-\frac{1}{2}} =$

17. $(10000)^{\frac{1}{4}} =$

18. $2x^{\frac{1}{2}} \cdot x^{\frac{1}{3}} =$

19. $\left(x^{\frac{3}{2}}\right)^{\frac{1}{2}} =$

Summary: What does a fraction exponent mean?