

Off-Site Learning Packet Day 2

Property of Exponents Review

$1^2 =$	1	$2^2 =$	4
$3^2 =$	9	$4^2 =$	16
$5^2 =$	25	$6^2 =$	36
$7^2 =$	49	$8^2 =$	64
$9^2 =$	81	$10^2 =$	100
$11^2 =$	121	$12^2 =$	144

WORDS	NUMBERS	ALGEBRA
Product Property of Square Roots <i>The square root of a product is equal to the product of the square roots of the factors.</i>	$\sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3}$ $\sqrt{8} \cdot \sqrt{2} = \sqrt{16} = 4$	$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$ $\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$
Quotient Property of Square Roots <i>The square root of a quotient is equal to the quotient of the square roots of the dividend and the divisor.</i>	$\frac{\sqrt{25}}{\sqrt{16}} = \frac{\sqrt{25}}{\sqrt{16}} = \frac{5}{4}$ $\frac{\sqrt{18}}{\sqrt{2}} = \sqrt{\frac{18}{2}} = \sqrt{9} = 3$	$\frac{\sqrt{a}}{\sqrt{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ $\frac{\sqrt{a}}{\sqrt{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Rationalizing the Denominator –

A process of removing a radical from the denominator of a fraction.

Multiply both the numerator and denominator by a number that produces a perfect square under the radical sign of the denominator.

EXAMPLES:

1. Simplify each square root.

a) $\sqrt{50}$

$$\sqrt{25}\sqrt{2} = 5\sqrt{2}$$

c) $\sqrt{117}$

$$\sqrt{9}\sqrt{13} = 3\sqrt{13}$$

b) $\sqrt{216}$

$$\sqrt{36}\sqrt{6} = 6\sqrt{6}$$

d) $3\sqrt{152}$

$$3\sqrt{4}\sqrt{38} = 3 \cdot 2\sqrt{38} = 6\sqrt{38}$$

2. Simplify each expression

$$\begin{aligned} \text{a. } & -\sqrt{50} \\ & = -\sqrt{25} \cdot \sqrt{2} = -5\sqrt{2} \end{aligned}$$

$$\begin{aligned} \text{c. } & \sqrt{2} \cdot \sqrt{18} \\ & = \sqrt{2 \cdot 18} = \sqrt{36} = 6 \end{aligned}$$

$$\begin{aligned} \text{b. } & \sqrt{\frac{49}{81}} \\ & = \frac{\sqrt{49}}{\sqrt{81}} = \frac{7}{9} \end{aligned}$$

$$\begin{aligned} \text{d. } & \frac{\sqrt{96}}{\sqrt{6}} \\ & = \sqrt{\frac{96}{6}} = \sqrt{16} = 4 \end{aligned}$$

3. Simplify by rationalizing each denominator

$$\begin{aligned} \text{a. } & \frac{2\sqrt{2}}{\sqrt{3}} \\ & = \frac{2\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{6}}{\sqrt{9}} = \frac{2\sqrt{6}}{3} \end{aligned}$$

$$\begin{aligned} \text{c. } & \frac{3\sqrt{5}}{\sqrt{7}} \\ & = \frac{3\sqrt{5}}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{3\sqrt{35}}{\sqrt{49}} = \frac{3\sqrt{35}}{7} \end{aligned}$$

$$\begin{aligned} \text{b. } & \frac{\sqrt{8}}{\sqrt{18}} \\ & = \frac{\sqrt{4 \cdot 2}}{\sqrt{9 \cdot 2}} = \frac{2}{3} \end{aligned}$$

$$\begin{aligned} \text{d. } & \frac{5}{\sqrt{10}} \\ & = \frac{5}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{5\sqrt{10}}{\sqrt{100}} = \frac{5\sqrt{10}}{10} = \frac{\sqrt{10}}{2} \end{aligned}$$

Name: _____

Date: _____

Period: _____

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Simplify Square Roots

1. $\sqrt{48}$ 1. _____

2. $-\sqrt{576}$ 2. _____

3. $\sqrt{45}$ 3. _____

4. $\sqrt{200}$ 4. _____

5. $5\sqrt{128}$ 5. _____

6. $\sqrt{162}$ 6. _____

7. $-\sqrt{\frac{1}{121}}$

7. _____

8. $-2\sqrt{10} \cdot \sqrt{8}$

8. _____

9. $\frac{\sqrt{288}}{\sqrt{8}}$

9. _____

10. $\frac{2}{\sqrt{3}}$

10. _____

11. $\frac{3\sqrt{27}}{2\sqrt{6}}$

11. _____

12. $\frac{\sqrt{20}}{\sqrt{120}}$

12. _____