

Essential Question How do you divide radicals?

The Quotient Property of Radicals states that _____.

If there is a radical in the denominator, you must _____.

Example: Simplify.

a. $\frac{\sqrt{4}}{\sqrt{9}}$

b. $\frac{\sqrt{16}}{3}$

c. $\frac{5}{\sqrt{18}}$

d. $\frac{2}{\sqrt{32}}$

e. $\frac{4}{\sqrt{8}}$

f. $\frac{\sqrt{6}}{\sqrt{12}}$

g. $\frac{2\sqrt{12}}{6\sqrt{8}}$

h. $\frac{8\sqrt{8}}{2\sqrt{24}}$

i. $\frac{\sqrt{18}}{6\sqrt{20}}$

Dividing Radicals

Simplify.

1) $\frac{4\sqrt{5}}{\sqrt{3}}$

2) $\frac{\sqrt{9}}{2\sqrt{6}}$

3) $\frac{3}{\sqrt{5}}$

4) $\frac{\sqrt{4}}{5\sqrt{12}}$

5) $\frac{\sqrt{4}}{\sqrt{5}}$

6) $\frac{4}{\sqrt{5}}$

7) $\frac{2\sqrt{15}}{\sqrt{10}}$

8) $\frac{\sqrt{3}}{2\sqrt{5}}$

9) $\frac{\sqrt{2}}{\sqrt{5}}$

10) $\frac{\sqrt{6}}{\sqrt{10}}$

Essential Question How do you divide radicals?

The Quotient Property of Radicals states that if \sqrt{a} and \sqrt{b} are real numbers, then $\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$

If there is a radical in the denominator, you must rationalize denominator.

Example: Simplify.

a. $\sqrt{\frac{4}{9}} = \frac{2}{3}$

b. $\sqrt{\frac{16}{3}} = \frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

c. $\frac{5}{\sqrt{18}} = \frac{5}{\sqrt{9 \cdot 2}} = \frac{5}{3\sqrt{2}}$

$\frac{4\sqrt{3}}{3}$

$\frac{5}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{6}$

d. $\frac{2}{\sqrt{32}} = \frac{2}{\sqrt{16 \cdot 2}}$

e. $\frac{4}{\sqrt{8}} = \frac{4}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

f. $\sqrt{\frac{6}{12}} = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$\frac{2}{4\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{4 \cdot 2}$

$\frac{4\sqrt{2}}{2 \cdot 2} = \frac{\cancel{4}\sqrt{2}}{4} = \sqrt{2}$

$= \frac{\sqrt{2}}{2}$

$\frac{2\sqrt{2}}{8} = \frac{\sqrt{2}}{4}$

g. $\frac{2\sqrt{12}}{6\sqrt{8}} = \frac{2}{6} \sqrt{\frac{3}{2}}$

h. $\frac{8\sqrt{8}}{2\sqrt{24}} = 4\sqrt{\frac{1}{3}}$

i. $\frac{\sqrt{18}}{6\sqrt{20}} = \frac{1}{6} \sqrt{\frac{9}{10}}$

$\frac{2}{6} \cdot \frac{\sqrt{3}}{\sqrt{2}} = \frac{1\sqrt{3}}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$\frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

$\frac{\sqrt{9}}{6\sqrt{10}} = \frac{3}{6\sqrt{10}} = \frac{1}{2\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$

$\frac{\sqrt{6}}{3 \cdot 2} = \frac{\sqrt{6}}{6}$

$\frac{\sqrt{10}}{2 \cdot 10} = \frac{\sqrt{10}}{20}$

* cannot cancel/reduce inside with outside

Geometry

Name _____

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Dividing Radicals

Simplify.

$$1) \frac{4\sqrt{5}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{4\sqrt{15}}{3}}$$

$$2) \frac{\sqrt{9}}{2\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{3\sqrt{6}}{2 \cdot 6} = \frac{3\sqrt{6}}{12}$$
$$\boxed{\frac{\sqrt{6}}{4}}$$

$$3) \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{3\sqrt{5}}{5}}$$

$$4) \frac{\sqrt{4}}{5\sqrt{12}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{15}}$$

$$5) \frac{\sqrt{4}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{2\sqrt{5}}{5}}$$

$$6) \frac{4}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{4\sqrt{5}}{5}}$$

$$7) \frac{2\sqrt{15}}{\sqrt{10}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{3} \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}}$$
$$\frac{2\sqrt{6}}{2} = \boxed{\sqrt{6}}$$

$$8) \frac{\sqrt{3}}{2\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{\sqrt{15}}{10}}$$

$$9) \frac{\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{\sqrt{10}}{5}}$$

$$10) \frac{\sqrt{6}}{\sqrt{10}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{\sqrt{15}}{5}}$$