

Rationalize the denominator and Simplify radicals

Name _____

[HSN-RN.A.2]

Reasoning: a radical number is an infinite number; since you can't divide something to infinite, we like to have a finite number as a denominator, the process of eliminating an infinite number as a denominator is called: **rationalizing**

Issue: $\frac{5}{\sqrt{3}} = \frac{5}{1.73...}$

Solution: $\frac{5}{\sqrt{3}} = \frac{5}{\sqrt{3}} * \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}}{\sqrt{3}*\sqrt{3}} =$
 $= \frac{5\sqrt{3}}{3}$

You do:

1. $\frac{5\sqrt{7}}{\sqrt{3}} = \frac{5\sqrt{7}}{\sqrt{3}} * \frac{\sqrt{\quad}}{\sqrt{\quad}} = = \frac{5\sqrt{\quad}}{\quad}$

2. $\frac{8\sqrt{5}}{\sqrt{2}} = \frac{8\sqrt{5}}{\sqrt{2}} * \frac{\sqrt{\quad}}{\sqrt{\quad}} = = \frac{8\sqrt{\quad}}{\quad}$

3. $\frac{4\sqrt{8}}{\sqrt{5}} = \frac{4\sqrt{8}}{\sqrt{5}} * \frac{\sqrt{\quad}}{\sqrt{\quad}} = = \frac{4\sqrt{\quad}}{\quad}$

4. $\frac{6\sqrt{6}}{\sqrt{7}} = \frac{6\sqrt{6}}{\sqrt{7}} * \frac{\sqrt{\quad}}{\sqrt{\quad}} = = \frac{6\sqrt{\quad}}{\quad}$

$$\sqrt{1} = 1$$

$$\sqrt{6} = 2.449...$$

$$\sqrt{2} = 1.414...$$

$$\sqrt{7} = 2.646...$$

$$\sqrt{3} = 1.732...$$

$$\sqrt{8} = 2.828...$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{5} = 2.236...$$

$$\sqrt{10} = 3.162...$$

Simplify radicals:

Issue: (not a prime number) $\sqrt{45}$

Solution: $\sqrt{45} = \sqrt{9 * 5} =$

$$\sqrt{9} * \sqrt{5} = 3 * \sqrt{5} = 3\sqrt{5}$$

5. $\sqrt{18} = \sqrt{\quad * \quad} =$
 $= \sqrt{\quad} * \sqrt{\quad} = * \sqrt{\quad} =$
 $\sqrt{\quad}$

6. $\sqrt{75} = \sqrt{\quad * \quad} =$
 $= \sqrt{\quad} * \sqrt{\quad} = * \sqrt{\quad} =$
 $\sqrt{\quad}$

7. $\sqrt{20} = \sqrt{\quad * \quad} =$
 $= \sqrt{\quad} * \sqrt{\quad} = * \sqrt{\quad} =$
 $\sqrt{\quad}$