

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