

## 8/4 RADICAL Review

most common RADICAL:  $\sqrt{\quad}$   
square root

$\sqrt[3]{\quad}$   
cube root

### Simplifying Radical

$\sqrt{\#}$   $\Rightarrow$  Rational or irrational  
(fraction) (cannot be fraction)

$$\sqrt{16} = 4$$

↘  
Perfect squares

$\sqrt{24} \Rightarrow$  Trick to simplify non perfect squares is to take out the perfect square factors

Perfect Square  $\rightarrow$

1, 4, 9, 16, 25, 36, 49, 64, 81, 100  
 $1 \times 1$   $2 \times 2$   $3^2$   $4^2$   $5^2$

$$\sqrt{24} = 2\sqrt{6}$$

Diagram: A number line or tree diagram showing 24 being split into 4 and 6. The 4 is circled, and an arrow points from it to the coefficient 2 in the simplified radical.

$$\sqrt{48}$$

Diagram: 48 is split into 16 and 3. The 16 is circled. Below, the simplified radical  $4\sqrt{3}$  is circled.

$$\sqrt{48}$$

Diagram: 48 is split into 4 and 12. The 4 is circled. Below, 12 is split into 4 and 3. The 4 is circled. Below that,  $2 \cdot 2\sqrt{3}$  is written, and the final result  $4\sqrt{3}$  is circled.

$$\sqrt{48}$$

Diagram: A tree diagram showing 48 being split into 2 and 24. 24 is split into 2 and 12. 12 is split into 2 and 6. 6 is split into 2 and 3. The final result  $2 \cdot 2\sqrt{3}$  is written, and the final result  $4\sqrt{3}$  is circled.

multiplying radicals

$$4\sqrt{3} \cdot 2\sqrt{15}$$

Diagram: Arrows indicate the multiplication of the coefficients (4 and 2) and the radicands (3 and 15).

$$8\sqrt{45}$$

Diagram: 45 is split into 5 and 9. The 9 is circled.

$$8 \cdot 3\sqrt{5} = 24\sqrt{5}$$

Diagram: The final result  $24\sqrt{5}$  is circled.

## Dividing with Radicals

$\frac{\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$  cannot divide  
by an irrational #

$$\frac{\sqrt{10}}{5}$$

Rationalizing

$$\frac{2\sqrt{3}}{\sqrt{12}} \cdot \frac{\sqrt{12}}{\sqrt{12}} = \frac{2\sqrt{36}}{12} = \frac{2 \cdot 6}{12} = 1$$

$$\frac{2\sqrt{3}}{\sqrt{12}} = \frac{2\sqrt{3}}{2\sqrt{3}} = 1$$

$$\frac{2\sqrt{3}}{\sqrt{12}} = \frac{2}{\sqrt{4}} = \frac{2}{2} = 1$$