

Remember: ① coefficient  $\rightarrow 4\sqrt{2}$  ← Radicand  
 Multiplying Radicals Notes

To multiply radicals:

1. Multiply the coefficient. (Outside times outside)
  2. Multiply the radicands. (Inside times inside)
  3. Simplify.
- ②  $4\sqrt{2}$  is the same as  $4 \cdot \sqrt{2}$

Simplify the radicals.

1)  $4\sqrt{12} \cdot 2\sqrt{7}$

$8\sqrt{84}$

$16\sqrt{21}$

3)  $2\sqrt{15} \cdot 6\sqrt{2}$

$12\sqrt{30}$

$12\sqrt{30}$

5)  $(3\sqrt{8}) \cdot (3\sqrt{8})$

$9\sqrt{64}$   
 $9 \cdot 8$

$72$

7)  $\sqrt{6}(3 - \sqrt{2})$

$3\sqrt{6} - \sqrt{12}$

$3\sqrt{6} - 2\sqrt{3}$

2)  $-2\sqrt{20} \cdot 3\sqrt{5}$

$-6\sqrt{100}$   
 $-6 \cdot 10$

$-60$

4)  $(7\sqrt{2}) \cdot (7\sqrt{2})$

$49\sqrt{4}$   
 $49 \cdot 2$

$98$

6)  $\sqrt{\frac{7}{2}} \cdot \sqrt{\frac{7}{18}}$

$\sqrt{\frac{49}{36}}$

$= \frac{\sqrt{49}}{\sqrt{36}}$

$= \frac{7}{6}$

8)  $3\sqrt{2}(3\sqrt{5} + 5\sqrt{50})$



$9\sqrt{10} + 15\sqrt{100}$


$15 \cdot 10$

$9\sqrt{10} + 150$

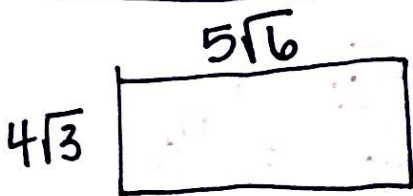
11)  $11\sqrt{12} * 3\sqrt{21}$

Area: Amount of space INSIDE the figure.

To find area: Multiply two the sides  or 

If given the area: take the Square Root of the area to find the Side length (of a )

12) The length of one side of a rectangle is  $5\sqrt{6}$  and the width of the other side is  $4\sqrt{3}$ . Find the area of the rectangle.



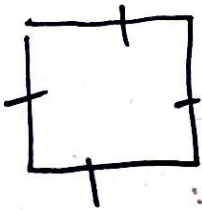
$$A = 4\sqrt{3} \cdot 5\sqrt{6}$$

$$= 20\sqrt{18}$$

$\uparrow$   
 $3 \cdot 3$

$A = 60\sqrt{2} \text{ units}^2$

13) If the area of a square is 100 units<sup>2</sup>, what is the length of the side of the square.



$$A = \sqrt{100}$$

$$S = 10 \text{ units}$$

\* All sides of a square are the same.

\* What number times itself would give you 100? 10!

\* How does 10 relate to 100?  $\sqrt{100} = 10$

14) If the area of a square is 150 units<sup>2</sup>, what is the length of the side of the square.

$$A = \sqrt{150}$$

$\uparrow$   
 15 10  
 $\uparrow$   $\uparrow$   
 3 5 5 2

$5\sqrt{6} \text{ side}$

\* Since we can't find a whole # times itself to get 150, you can take the  $\sqrt{150}$  & simplify to get the side length.