

radical operations

HW: finish

Date \_\_\_\_\_

Period \_\_\_\_\_

Simplify.

1)  $2\sqrt{8} \cdot \sqrt{15}$

$2\sqrt{4 \cdot 2} \cdot \sqrt{15}$   
 $4\sqrt{2} \cdot \sqrt{15}$   
 $4\sqrt{30}$

3)  $-5\sqrt{8} \cdot -4\sqrt{10}$

5)  $\sqrt{15} \cdot \sqrt{5}$

7)  $\sqrt{5}(2 + \sqrt{3})$

9)  $\sqrt{15}(-2\sqrt{6} + 5)$

$-2\sqrt{90} + 5\sqrt{15}$   
 $-2\sqrt{9 \cdot 10} + 5\sqrt{15}$   
 $-6\sqrt{10} + 5\sqrt{15}$

2)  $2\sqrt{6} \cdot \sqrt{10}$

$2\sqrt{60}$   
 $2\sqrt{15 \cdot 4}$   
 $4\sqrt{15}$

4)  $-2\sqrt{20} \cdot \sqrt{10}$

$-2\sqrt{5 \cdot 4} \cdot \sqrt{10}$   
 $-4\sqrt{5} \cdot \sqrt{10}$   
 $-4\sqrt{50}$   
 $-4\sqrt{25 \cdot 2}$   
 $-20\sqrt{2}$

6)  $4\sqrt{3}(3\sqrt{6} + \sqrt{5})$

$12\sqrt{18} + 4\sqrt{15}$   
 $12\sqrt{9 \cdot 2} + 4\sqrt{15}$   
 $36\sqrt{2} + 4\sqrt{15}$

8)  $\sqrt{2}(\sqrt{3} - 5\sqrt{5})$

10)  $2\sqrt{3}(2 - 4\sqrt{3})$

$4\sqrt{3} - 8\sqrt{9}$   
 $4\sqrt{3} - 8(3)$   
 $4\sqrt{3} - 24$

Simplifying

ex)  $\sqrt{8}$   
 $\sqrt{4 \cdot 2}$   
 $2\sqrt{2}$

ex)  $\sqrt{24}$   
 $\sqrt{6 \cdot 4}$   
 $2\sqrt{6}$

ex)  $\sqrt{75}$   
 $\sqrt{25 \cdot 3}$   
 $5\sqrt{3}$

Multiplying

$x\sqrt{y} \cdot x\sqrt{y}$   
 $x \cdot x \sqrt{y \cdot y}$

Adding

$5\sqrt{2} + 3\sqrt{2}$   
 $8\sqrt{2}$

have to be the same  
 $5\sqrt{2} + 3\sqrt{3}$   
 $5\sqrt{2} + 3\sqrt{3}$

You Try \*

$$11) (-4\sqrt{5} - 2)(-2\sqrt{5} - 5)$$

$$8\sqrt{25} + 20\sqrt{5} + 4\sqrt{5} + 10$$

$$40 + 24\sqrt{5} + 10$$

$$\boxed{50 + 24\sqrt{5}}$$

$$13) (-3 + \sqrt{3})(-4 + \sqrt{3})$$

$$15) (\sqrt{2} + 5)(\sqrt{2} - 5)$$

$$\sqrt{4} - 5\sqrt{2} + 5\sqrt{2} - 25$$

$$2 - 25$$

$$\boxed{-23}$$

$$17) \sqrt{3} + \sqrt{3} + \sqrt{2}$$

$$19) \sqrt{5} + \sqrt{18} + \sqrt{5}$$

$$2\sqrt{5} + \sqrt{18}$$

$$2\sqrt{5} + \sqrt{9 \cdot 2}$$

$$\boxed{2\sqrt{5} + 3\sqrt{2}}$$

$$21) \sqrt{3} + \sqrt{20} + \sqrt{20}$$

$$12) (4\sqrt{3} - 1)(-3\sqrt{3} - 2)$$

$$-12\sqrt{9} - 8\sqrt{3} + 3\sqrt{3} + 2$$

$$-36 - 5\sqrt{3} + 2$$

$$\boxed{-34 - 5\sqrt{3}}$$

$$14) (-4\sqrt{3} + 3)(\sqrt{3} - 1)$$

$$-4\sqrt{9} + 4\sqrt{3} + 3\sqrt{3} - 3$$

$$-4(3) + 7\sqrt{3} - 3$$

$$-12 + 7\sqrt{3} - 3$$

$$\boxed{-15 + 7\sqrt{3}}$$

$$16) \sqrt{3} + \sqrt{3} + \sqrt{5}$$

$$2\sqrt{3} + \sqrt{5}$$

$$18) \sqrt{5} + \sqrt{2} + \sqrt{5}$$

$$2\sqrt{5} + \sqrt{2}$$

$$20) \sqrt{3} + \sqrt{6} + \sqrt{12}$$

$$\sqrt{3} + \sqrt{6} + \sqrt{4 \cdot 3}$$

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

$$\boxed{3\sqrt{3} + \sqrt{6}}$$