

Simplifying and Multiplying Radical Expressions

CLASS EXAMPLES - Simplify.

1) $\sqrt{108}$ *step 1: factor tree*
step 2: circle pairs

$\sqrt{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3}$
 $\sqrt{4 \cdot 9 \cdot 3}$
 $2 \cdot 3 \sqrt{3}$
 $6\sqrt{3}$

Simplify.

3) $\sqrt{252}$

2) $\sqrt{245}$

$\sqrt{5 \cdot 7 \cdot 7}$
 $\sqrt{5 \cdot 49}$
 $\sqrt{5} \cdot 7 \rightarrow 7\sqrt{5}$

4) $\sqrt{72}$

- ① is it on the list?
 $\sqrt{4} = 2$
 $\sqrt{9} = 3$
 $\sqrt{16} = 4$
 $\sqrt{25} = 5$
 $\sqrt{36} = 6$
 $\sqrt{49} = 7$
 $\sqrt{64} = 8$
 $\sqrt{81} = 9$
 $\sqrt{100} = 10$
 $\sqrt{121} = 11$
 $\sqrt{144} = 12$
 $\sqrt{169} = 13$
 $\sqrt{196} = 14$
 $\sqrt{225} = 15$
 $\sqrt{256} = 16$
- ② if not do a prime factor tree (go all the way till every number is prime)
- prime #s: 2, 3, 5, 7, 11, 13, 17...

5) $\sqrt{54}$

6) $\sqrt{64} = 8$

7) $\sqrt{196}$

8) $\sqrt{320}$

CLASS EXAMPLES - Simplify.

9) $6\sqrt{125}$

10) $-5\sqrt{448}$ *→ right away, do $\sqrt{448}$ first, don't worry about negative 5*

$-5\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 7}$
 $-5\sqrt{4 \cdot 4 \cdot 4 \cdot 7}$
 $-5 \cdot 2 \cdot 2 \cdot 2 \cdot \sqrt{7}$
 $-40\sqrt{7}$

11) $8\sqrt{320}$

12) $-\sqrt{200}$

Simplify.

$$13) 4\sqrt{32}$$

$$14) -7\sqrt{512}$$

CLASS EXAMPLES: Simplify.

$$15) \sqrt{12} \cdot \sqrt{3}$$

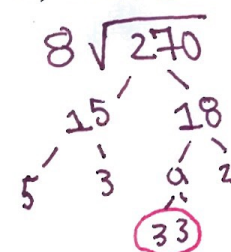
$$\sqrt{36}$$

$$6$$

$$16) \sqrt{3} \cdot -3\sqrt{6}$$

$$17) \sqrt{6} \cdot \sqrt{6}$$

$$18) 8\sqrt{15} \cdot \sqrt{18}$$



if there's no number can put a 1 automatically

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

$$8\sqrt{30} \cdot \sqrt{9}$$

$$8 \cdot \sqrt{30} \cdot 3$$

$$24\sqrt{30}$$

Simplify.

$$19) -2\sqrt{3} \cdot \sqrt{3}$$

$$20) 5\sqrt{6} \cdot \sqrt{8}$$

$$21) \sqrt{12} \cdot 2\sqrt{3}$$

$$22) -2\sqrt{15} \cdot \sqrt{15}$$

$$23) \sqrt{15} \cdot -5\sqrt{12}$$

$$24) \sqrt{15} \cdot \sqrt{20}$$