Name: _____ Date: _____

Simplifying Radicals

Many radicals can be changed to an equivalent form that is easier to use in solving problems. Changing a radical to this new form is called simplifying.

Step 1: To simplify $\sqrt{18}$, think $\sqrt{18} = \sqrt{2 \cdot 9}$
Step 2: $\sqrt{2 \cdot 9}$ can be written as $\sqrt{2} \cdot \sqrt{9}$
Step 3: Find the $\sqrt{9} = 3$ and rewrite as $3 \cdot \sqrt{2}$ or $3\sqrt{2}$
So $\sqrt{18} = \sqrt{9 \cdot 2} = \sqrt{9} \cdot \sqrt{2} = 3 \cdot \sqrt{2} = 3\sqrt{2}$

Simplify the following.

1. $\sqrt{12} = \sqrt{4 \cdot \_\_} = \sqrt{4} \cdot \sqrt{\_\_} = 2 \cdot \sqrt{\_\_} = 2\sqrt{\_\_}$
2. $\sqrt{18} = \sqrt{9 \cdot \_\_} = \sqrt{9} \cdot \sqrt{\_\_} = 3 \cdot \sqrt{\_\_} = \_\_\sqrt{\_\_}$
3. $\sqrt{20} = \sqrt{\_\_ \cdot \_\_} = \sqrt{\_\_} \cdot \sqrt{\_\_} = \_\_ \cdot \sqrt{\_\_} = \_\_\sqrt{\_\_}$
4. $\sqrt{27} = \sqrt{\_\_ \cdot \_\_} = \sqrt{\_\_} \cdot \sqrt{\_\_} = \_\_ \cdot \sqrt{\_\_} = \_\_\sqrt{\_\_}$
5. $\sqrt{8} = \sqrt{\_\_ \cdot \_\_} = \sqrt{\_\_} \cdot \sqrt{\_\_} = \_\_ \cdot \sqrt{\_\_} = \_\_\sqrt{\_\_}$
6. $\sqrt{24} = \sqrt{4 \cdot \_\_} = \sqrt{\_\_} \cdot \sqrt{\_\_} = \_\_ \cdot \sqrt{\_\_} = \_\_\sqrt{\_\_}$
7. $\sqrt{32} = \sqrt{4 \cdot \_\_} =$ _____ = _____ = _____
8. $\sqrt{50} = \sqrt{\_\_ \cdot 2} =$ _____ = _____ = _____
9. $\sqrt{48} = \sqrt{\_\_ \cdot 3} =$ _____ = _____ = _____
10. $\sqrt{45} = \sqrt{9 \cdot \_\_} =$ _____ = _____ = _____

Review. Write the square root of each of the following.

11. 16 = _____
12. 49 = _____
13. 36 = _____
14. 25 = _____
15. 9 = _____
16. 100 = _____
17. 144 = _____
18. 64 = _____