Special Triangles 1 – Reviewing Rules of Radicals 8.01

Do you remember working with radicals? Remember $\sqrt{4} = 2$ because $2 \cdot 2 = 4$

Simplify the following:

1. $\sqrt{49}$ 2. $\sqrt{81}$ 3. $\sqrt{25}$ 4. $\sqrt{121}$

Now let's explore multiplying with radicals. Are the following equal? Justify your answers.

5. Does $\sqrt{9} \cdot \sqrt{100} = \sqrt{900}$?

6. Does $\sqrt{25} \cdot \sqrt{4} = \sqrt{100}$?

7. Does $\sqrt{5} \cdot \sqrt{3} = \sqrt{15}$?

8. Does $6\sqrt{2} \cdot \sqrt{5} = 6\sqrt{10}$?

9. Does $4\sqrt{7} \cdot 2\sqrt{3} = 8\sqrt{21}$?

State a rule in your own words:

Now using this rule, simplify the following:

10. $\sqrt{5} \cdot \sqrt{7} =$

11. $\sqrt{7} \cdot \sqrt{3} =$

12. $8 \cdot \sqrt{16} =$

13. $3\sqrt{2} \cdot 5\sqrt{3} =$

14. $5\sqrt{2} \cdot 7 =$

15. $(\sqrt{5})^2 =$

16. $(2\sqrt{3})^2 =$

17. $6\sqrt{7} \cdot 4\sqrt{3} =$

Now reverse the process to simplify a radical:

Examples: $\sqrt{12} = \sqrt{4} \cdot \sqrt{3}$, but since $\sqrt{4} = 2$, then $\sqrt{4} \cdot \sqrt{3} = 2 \cdot \sqrt{3} = 2\sqrt{3}$
$\sqrt{50} = \sqrt{25} \cdot \sqrt{2}$, but since $\sqrt{25} = 5$, then $\sqrt{25} \cdot \sqrt{2} = 5 \cdot \sqrt{2} = 5\sqrt{2}$

Using this reverse process, simplify the following:

18. $\sqrt{20} =$

19. $\sqrt{18} =$

20. $\sqrt{75} =$

21. $\sqrt{8} =$

22. $6\sqrt{27} =$

23. $2\sqrt{300} =$