Name: _____ Date: _____

Combining Square Roots Using Addition and Subtraction
Algebra 1 Homework

Skills

Use addition or subtraction to combine the following square roots that have the same radicands.

1. $3\sqrt{10} - 9\sqrt{10}$

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

3. $14\sqrt{7} - 7\sqrt{7}$

For problems 4 through 12, combine each of the following expressions by first simplifying the square roots and then combining like radicands. Express each answer in *simplest radical form*.

4. $\sqrt{8} - 5\sqrt{2}$

5. $3\sqrt{18} + 4\sqrt{2}$

6. $3\sqrt{20} + 2\sqrt{45}$

7. $\sqrt{28} - 5\sqrt{7}$

8. $2\sqrt{54} + 7\sqrt{24}$

9. $\sqrt{50} - \sqrt{200}$

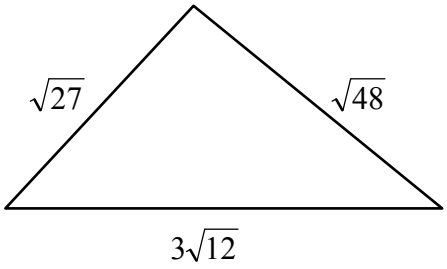
10. $7\sqrt{45} - \sqrt{80}$

11. $\sqrt{48} - \sqrt{27}$

12. $\sqrt{200} + 2\sqrt{18}$

Applications

13. The sides of a triangle are given below. Find the *perimeter* of the triangle in simplest radical form.



Reasoning

14. The sum of $\sqrt{50}$ and $x\sqrt{2}$ is $8\sqrt{2}$. Find the value of x. Show the work that leads to your answer.

15. The sum of $\sqrt{48}$ and $x\sqrt{3}$ is $9\sqrt{3}$. Find the value of x. Show the work that leads to your answer.

16. Which of the following statements is false? Explain your choice.

(1) $\sqrt{5}\cdot\sqrt{8}=2\sqrt{10}$ (3) $\sqrt{5}+\sqrt{8}=\sqrt{13}$

(2) $\dfrac{\sqrt{8}}{\sqrt{2}}=2$ (4) $\sqrt{8}-\sqrt{2}=\sqrt{2}$

17. Melanie performed the following square root addition problem incorrectly. Explain the mistake she made and show the correct solution.

$$\sqrt{8}+\sqrt{32}=\sqrt{40}$$
$$=\sqrt{4}\cdot\sqrt{10}$$
$$=2\sqrt{10}$$