

## AA PREP: OPERATIONS WITH RADICALS (ADDING &amp; SUBTRACTING)—WORKSHEET #1

Perform the operation. Simplify.

$$1) \sqrt{3} + \sqrt{3} \quad (1+1)\sqrt{3}$$

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

$$2) \sqrt{11} - \sqrt{11} \quad (1-1)\sqrt{11}$$

$$\boxed{0}$$

$$3) 2\sqrt{5} - 10\sqrt{5} \quad (2-10)\sqrt{5}$$

$$\boxed{-8\sqrt{5}}$$

$$4) 8\sqrt{2} + \sqrt{2} \quad (8+1)\sqrt{2}$$

$$\boxed{9\sqrt{2}}$$

$$5) 12\sqrt{7} - \sqrt{7} \quad (12-1)\sqrt{7}$$

$$\boxed{11\sqrt{7}}$$

$$6) 9\sqrt{10} + \sqrt{40}$$

$$\begin{array}{l} 4 \hat{=} 10 \\ 2 \hat{=} 2 \\ 9\sqrt{10} + 2\sqrt{10} \\ (9+2)\sqrt{10} \\ \boxed{11\sqrt{10}} \end{array}$$

$$7) \sqrt{15} + \sqrt{5}$$

$$\boxed{\sqrt{15} + \sqrt{5}}$$

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

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

$$9) \sqrt{12} + 5\sqrt{27}$$

$$\begin{array}{l} 4 \hat{=} 12 \\ 2 \hat{=} 2 \\ 9 \hat{=} 27 \\ 3 \hat{=} 3 \\ 2\sqrt{3} + 5 \cdot 3\sqrt{3} \\ 2\sqrt{3} + 15\sqrt{3} \\ (2+15)\sqrt{3} \\ \boxed{17\sqrt{3}} \end{array}$$

$$10) \sqrt{75} - \sqrt{108}$$

$$\begin{array}{l} 25 \hat{=} 75 \\ 5 \hat{=} 5 \\ 36 \hat{=} 108 \\ 6 \hat{=} 6 \\ 5\sqrt{3} - 6\sqrt{3} \\ (5-6)\sqrt{3} \\ -1\sqrt{3} \\ \boxed{-\sqrt{3}} \end{array}$$

$$11) \sqrt{100} - 3\sqrt{50} + \sqrt{32}$$

$$\begin{array}{l} 10 \hat{=} 100 \\ 5 \hat{=} 5 \\ 25 \hat{=} 50 \\ 2 \hat{=} 2 \\ 16 \hat{=} 32 \\ 4 \hat{=} 4 \\ 10 - 3 \cdot 5\sqrt{2} + 4\sqrt{2} \\ 10 - 15\sqrt{2} + 4\sqrt{2} \\ 10 + (-15+4)\sqrt{2} \\ \boxed{10 - 11\sqrt{2}} \end{array}$$

$$12) \sqrt{7} + 3\sqrt{98} - \sqrt{84}$$

$$\begin{array}{l} 49 \hat{=} 98 \\ 7 \hat{=} 7 \\ 16 \hat{=} 64 \\ 4 \hat{=} 4 \\ 21 \hat{=} 84 \\ 2 \hat{=} 2 \\ \sqrt{7} + 3 \cdot 7\sqrt{2} - 2\sqrt{21} \\ \boxed{\sqrt{7} + 21\sqrt{2} - 2\sqrt{21}} \end{array}$$