

Operations with radicals

Date _____ Period _____

Simplify.

1) $-\sqrt{3} - 2\sqrt{3}$

2) $3\sqrt{7} + 2\sqrt{7}$

3) $-3\sqrt{10} + 2\sqrt{10}$

4) $-3\sqrt{2} - \sqrt{2}$

5) $-3\sqrt{8} - 2\sqrt{27} + 3\sqrt{27}$

6) $-2\sqrt{27} - 3\sqrt{6} - \sqrt{27}$

7) $-2\sqrt{24} - 2\sqrt{54} - \sqrt{54}$

8) $3\sqrt{12} - \sqrt{27} + 3\sqrt{5}$

9) $\sqrt{2} \cdot -2\sqrt{8}$

10) $3\sqrt{15} \cdot 5\sqrt{3}$

11) $\sqrt{15} \cdot \sqrt{10}$

12) $2\sqrt{10} \cdot \sqrt{20}$

13) $\sqrt{3}(\sqrt{10} + 2)$

14) $-\sqrt{5}(\sqrt{10} + 5)$

15) $\frac{3\sqrt{8}}{\sqrt{9}}$

16) $\frac{\sqrt{3}}{\sqrt{12}}$

17) $\frac{\sqrt{16}}{2\sqrt{9}}$

18) $\frac{\sqrt{15}}{4\sqrt{16}}$

19) $\frac{4\sqrt{4}}{\sqrt{64}}$

20) $\frac{\sqrt{3}}{5\sqrt{27}}$

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Simplify.

$$1) -\sqrt{3} - 2\sqrt{3}$$
$$-3\sqrt{3}$$

$$2) 3\sqrt{7} + 2\sqrt{7}$$
$$5\sqrt{7}$$

$$3) -3\sqrt{10} + 2\sqrt{10}$$
$$-\sqrt{10}$$

$$4) -3\sqrt{2} - \sqrt{2}$$
$$-4\sqrt{2}$$

$$5) -3\sqrt{8} - 2\sqrt{27} + 3\sqrt{27}$$
$$-6\sqrt{2} + 3\sqrt{3}$$

$$6) -2\sqrt{27} - 3\sqrt{6} - \sqrt{27}$$
$$-9\sqrt{3} - 3\sqrt{6}$$

$$7) -2\sqrt{24} - 2\sqrt{54} - \sqrt{54}$$
$$-13\sqrt{6}$$

$$8) 3\sqrt{12} - \sqrt{27} + 3\sqrt{5}$$
$$3\sqrt{3} + 3\sqrt{5}$$

$$9) \sqrt{2} \cdot -2\sqrt{8}$$
$$-8$$

$$10) 3\sqrt{15} \cdot 5\sqrt{3}$$
$$45\sqrt{5}$$

$$11) \sqrt{15} \cdot \sqrt{10}$$
$$5\sqrt{6}$$

$$12) 2\sqrt{10} \cdot \sqrt{20}$$
$$20\sqrt{2}$$

$$13) \sqrt{3}(\sqrt{10} + 2)$$
$$\sqrt{30} + 2\sqrt{3}$$

$$14) -\sqrt{5}(\sqrt{10} + 5)$$
$$-5\sqrt{2} - 5\sqrt{5}$$

$$15) \frac{3\sqrt{8}}{\sqrt{9}}$$
$$2\sqrt{2}$$

$$16) \frac{\sqrt{3}}{\sqrt{12}}$$
$$\frac{1}{2}$$

$$17) \frac{\sqrt{16}}{2\sqrt{9}}$$
$$\frac{2}{3}$$

$$18) \frac{\sqrt{15}}{4\sqrt{16}}$$
$$\frac{\sqrt{15}}{16}$$

$$19) \frac{4\sqrt{4}}{\sqrt{64}}$$
$$1$$

$$20) \frac{\sqrt{3}}{5\sqrt{27}}$$
$$\frac{1}{15}$$