

Practice 11.2

Simplify by adding and subtracting.

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

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

SAME DIFF

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

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

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

$$\boxed{-3\sqrt{3}}$$

DIFF SAME

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

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

5) $2\sqrt{54} - \sqrt{6}$

$2\sqrt{9\sqrt{6}} - \sqrt{6}$

$2 \cdot 3\sqrt{6} - \sqrt{6}$

$6\sqrt{6} - \sqrt{6}$

$$\boxed{= 5\sqrt{6}}$$

6) $3\sqrt{20} + 3\sqrt{20}$

$3\sqrt{4\sqrt{5}} + 3\sqrt{4\sqrt{5}}$

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

$= 6\sqrt{5} + 6\sqrt{5}$

$$\boxed{= 12\sqrt{5}}$$

OR

$$3\sqrt{20} \times 2$$

$$= 6\sqrt{20}$$

$$= 6\sqrt{4\sqrt{5}}$$

$$\boxed{= 12\sqrt{5}}$$

Simplify by multiplying.

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

$= \sqrt{75} = \sqrt{25\sqrt{3}}$

$$\boxed{= 5\sqrt{3}}$$

8) $\sqrt{2} \cdot \sqrt{10}$

$= \sqrt{20}$

$= \sqrt{4\sqrt{5}}$

$$\boxed{= 2\sqrt{5}}$$

$$9) 5\sqrt{2} \cdot 5\sqrt{5}$$

$$= \boxed{25\sqrt{10}}$$

$$10) 4\sqrt{10} \cdot -3\sqrt{15}$$

$$= -12\sqrt{150}$$

$$= -12\sqrt{25 \cdot 6}$$

$$= -12 \cdot 5\sqrt{6}$$

$$= \boxed{-60\sqrt{6}}$$

$$11) \sqrt{2(\sqrt{2}+5)}$$

$$\sqrt{4 + 5\sqrt{2}}$$

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

$$12) 5\sqrt{5(2-5\sqrt{6})}$$

$$\boxed{10\sqrt{5} - 25\sqrt{30}}$$

Simplify by multiplying. (Hint: DOUBLE DISTRIBUTE!)

$$13) (5-4\sqrt{5})(5+3\sqrt{5})$$

$$25 + 15\sqrt{5} - 20\sqrt{5} - 12 \cdot 5$$

$$= 25 - 5\sqrt{5} - 60$$

$$= \boxed{-35 - 5\sqrt{5}}$$

$$14) (-5\sqrt{5}+4)(-2\sqrt{5}-4)$$

$$= 10\sqrt{25} + 20\sqrt{5} - 8\sqrt{5} - 16$$

$$= 10(5) + 12\sqrt{5} - 16$$

$$= 50 + 12\sqrt{5} - 16$$

$$= \boxed{34 + 12\sqrt{5}}$$

Simplify.

$$15) \sqrt{\frac{5}{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{\sqrt{10}}{2}}$$

$$16) \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \frac{4\sqrt{2}}{\cancel{2}} = \boxed{2\sqrt{2}}$$

$$17) \sqrt{\frac{6}{3}} = \frac{\sqrt{6}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$= \frac{\sqrt{18}}{3} = \frac{\sqrt{9 \cdot 2}}{3} = \frac{3\sqrt{2}}{3}$$

$$= \boxed{\sqrt{2}}$$

$$18) \frac{3\sqrt{3}}{5\sqrt{75}} \cdot \frac{\sqrt{75}}{\sqrt{75}} = \frac{3\sqrt{225}}{5 \cdot 75}$$

$$= \frac{3 \cdot 15}{5 \cdot 75} = \boxed{\frac{3}{25}}$$