

Day 1 – Simplifying Radicals – Practice

1. Simplify the following radicals (Pick 4):

a. $\sqrt{45}$ 45
 $\sqrt{3 \cdot 3 \cdot 5}$ 9 $\hat{3}$ 5
 $\boxed{3\sqrt{5}}$ 3 3

b. $\sqrt{125}$ 125
 $\sqrt{5 \cdot 5 \cdot 5}$ 25 $\hat{5}$
 $\boxed{5\sqrt{5}}$ 5 5

c. $\sqrt{80}$ 80
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$ 16 $\hat{5}$
 $2 \cdot 2 \sqrt{5}$ 4 4
 $\boxed{4\sqrt{5}}$ 2 2 2 2

d. $\sqrt{18}$ 18
 $\sqrt{2 \cdot 3 \cdot 3}$ 6 $\hat{3}$
 $\boxed{3\sqrt{2}}$ 2 $\hat{3}$

e. $\sqrt{54}$ 54
 $\sqrt{2 \cdot 3 \cdot 3 \cdot 3}$ 9 $\hat{6}$
 $\boxed{3\sqrt{6}}$ 3 3 2 3

f. $\sqrt{44}$ 44
 $\sqrt{2 \cdot 2 \cdot 11}$ 4 $\hat{11}$
 $\boxed{2\sqrt{11}}$ 2 2

2. Simplify the following radicals (Pick 4):

a. $4\sqrt{36}$
 $4 \cdot 6$
 $\boxed{24}$

b. $-7\sqrt{20}$ 20
 $-7\sqrt{2 \cdot 2 \cdot 5}$ 5 $\hat{4}$
 $-7 \cdot 2\sqrt{5}$ 2 2
 $\boxed{-14\sqrt{5}}$

c. $6\sqrt{75}$ 75
 $6\sqrt{3 \cdot 5 \cdot 5}$ 25 $\hat{3}$
 $6 \cdot 5\sqrt{3}$ 5 $\hat{5}$
 $\boxed{30\sqrt{3}}$

d. $8\sqrt{24}$ 24
 $8\sqrt{2 \cdot 2 \cdot 2 \cdot 3}$ 6 $\hat{4}$
 $8 \cdot 2\sqrt{6}$ 2 $\hat{3}$ 2 $\hat{2}$
 $\boxed{16\sqrt{6}}$

e. $3\sqrt{50}$ 50
 $3\sqrt{2 \cdot 5 \cdot 5}$ 25 $\hat{2}$
 $3 \cdot 5\sqrt{2}$ 5 $\hat{5}$
 $\boxed{15\sqrt{2}}$

f. $-5\sqrt{54}$ 54
 $-5\sqrt{2 \cdot 3 \cdot 3 \cdot 3}$ 9 $\hat{6}$
 $-5 \cdot 3\sqrt{6}$ 3 $\hat{3}$ 2 $\hat{3}$
 $\boxed{-15\sqrt{6}}$

3. Simplify the following radicals (Pick 4):

$$\begin{aligned} \text{a. } \sqrt{5} \cdot -4\sqrt{20} &= -4\sqrt{100} \\ &= -4 \cdot 10 \\ &= \boxed{-40} \end{aligned}$$

$$\begin{aligned} \text{b. } 3\sqrt{5} \cdot -2\sqrt{5} &= -6\sqrt{25} \\ &= -6 \cdot 5 \\ &= \boxed{-30} \end{aligned}$$

$$\begin{aligned} \text{c. } 5\sqrt{15} \cdot -2\sqrt{5} &= -10\sqrt{75} \\ &= -10\sqrt{3 \cdot 5 \cdot 5} \\ &= -10 \cdot 5\sqrt{3} \\ &= \boxed{-50\sqrt{3}} \end{aligned}$$

$$\begin{aligned} \text{d. } -3\sqrt{7} \cdot 6\sqrt{12} &= -18\sqrt{84} \\ &= -18 \cdot 2 \cdot 3 \cdot 7 \\ &= -18 \cdot 2\sqrt{21} \\ &= \boxed{-36\sqrt{21}} \end{aligned}$$

$$\begin{aligned} \text{e. } 3\sqrt{12} \cdot \sqrt{6} &= 3\sqrt{72} \\ &= 3\sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3} \\ &= 3 \cdot 2 \cdot 3\sqrt{2} \\ &= \boxed{18\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \text{f. } -4\sqrt{15} \cdot \sqrt{3} &= -4\sqrt{45} \\ &= -4\sqrt{3 \cdot 3 \cdot 5} \\ &= -4 \cdot 3\sqrt{5} \\ &= \boxed{-12\sqrt{5}} \end{aligned}$$