

11.2 Practice A (Simplifying Radicals)

Date _____

Period _____

Simplify the radicals. No Calculator allowed.

OPTION 1 - Create a factor tree

1) $\sqrt{125}$ largest perfect sq

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

$$5\sqrt{5}$$

Factor tree for 125:

```

  125
   / \
  5   25
     / \
    5   5
  
```

Circle pairs of prime factors

$$5\sqrt{5}$$

2) $\sqrt{45}$

$$\sqrt{9} \sqrt{5} =$$

$$3\sqrt{5}$$

Factor tree for 45:

```

  45
   / \
  3   9
     / \
    3   3
  
```

Circle pairs of prime factors

$$3\sqrt{5}$$

3) $\sqrt{300}$

$$\sqrt{100} \sqrt{3}$$

$$10\sqrt{3}$$

Factor tree for 300:

```

  300
  /  \
 2    150
 /    \
2     75
 /      \
3     25
      / \
     5   5
  
```

Circle pairs of prime factors

$$10\sqrt{3}$$

4) $\sqrt{40}$

$$\sqrt{4} \sqrt{10}$$

$$2\sqrt{10}$$

Factor tree for 40:

```

  40
  /  \
 2    20
 /    \
2     10
     / \
    2   5
  
```

Circle pairs of prime factors

$$2\sqrt{10}$$

OPTION 2 -

Create a factor Ladder

5) $\sqrt{160}$

largest perfect square
 $16 \cdot 10 = 160$

$$\sqrt{16} \sqrt{10}$$

$$4\sqrt{10}$$

6) $\sqrt{72}$

$$\sqrt{36} \sqrt{2}$$

$$6\sqrt{2}$$

OPTION 3

FIND THE Largest Perfect SQUARE:

4, 9, 16, 25,
 36, 49, 64,
 81, 100, ...

7) $\sqrt{32}$

$$\sqrt{16} \sqrt{2}$$

$$4\sqrt{2}$$

8) $\sqrt{490}$

$$\sqrt{49} \sqrt{10}$$

$$7\sqrt{10}$$

9) $\sqrt{150}$

$$\sqrt{25} \sqrt{6}$$

$$5\sqrt{6}$$

10) $\sqrt{63}$

$$\sqrt{9} \sqrt{7}$$

$$3\sqrt{7}$$

No calculator: LEAVE ANSWERS AS SIMPLIFIED IMPROPER FRACTIONS !!!!

Simplify the fractions.

$$11) \frac{\sqrt{5}}{\sqrt{16}} = \boxed{\frac{\sqrt{5}}{4}}$$

$$12) \sqrt{\frac{225}{100}} \rightarrow \frac{\sqrt{225}}{\sqrt{100}} = \frac{15}{10} = \boxed{\frac{3}{2}}$$

$$13) \sqrt{\frac{100}{81}} \rightarrow \frac{\sqrt{100}}{\sqrt{81}} = \boxed{\frac{10}{9}}$$

$$14) \sqrt{\frac{50}{8}} \xrightarrow{\text{Reduce}} \sqrt{\frac{25}{4}} \rightarrow \frac{\sqrt{25}}{\sqrt{4}} = \boxed{\frac{5}{2}}$$

$$*15) \frac{\sqrt{12}}{\sqrt{4}} = \frac{\sqrt{4 \cdot 3}}{2} = \frac{2\sqrt{3}}{2} = \boxed{\sqrt{3}}$$

$$*16) \frac{\sqrt{20}}{\sqrt{36}} \rightarrow \frac{\sqrt{4 \cdot 5}}{6} = \frac{2\sqrt{5}}{6} = \boxed{\frac{\sqrt{5}}{3}}$$

$$*17) \frac{\sqrt{8}}{\sqrt{25}} = \frac{\sqrt{4 \cdot 2}}{5} = \frac{2\sqrt{2}}{5} = \boxed{\frac{2\sqrt{2}}{5}}$$

$$18) \frac{\sqrt{4}}{\sqrt{64}} = \frac{2}{8} = \boxed{\frac{1}{4}}$$

Simplify.

$$19) -5\sqrt{75} = -5 \cdot \sqrt{25} \cdot \sqrt{3} = -5 \cdot 5 \sqrt{3} = \boxed{-25\sqrt{3}}$$

$$20) 4\sqrt{32} = 4 \cdot \sqrt{16} \cdot \sqrt{2} = 4 \cdot 4 \sqrt{2} = \boxed{16\sqrt{2}}$$

$$21) -5\sqrt{48} = -5 \cdot \sqrt{16} \cdot \sqrt{3} = -5 \cdot 4 \sqrt{3} = \boxed{-20\sqrt{3}}$$

$$22) 4\sqrt{80} = 4 \cdot \sqrt{16} \cdot \sqrt{5} = 4 \cdot 4 \sqrt{5} = \boxed{16\sqrt{5}}$$

