Simplify each.

1. $\sqrt{180}$

$= \sqrt{36 \cdot 5}$

$= 6\sqrt{5}$

Perfect Squares:
4
9
16
25
36
49
64
81
100...

2. $\sqrt{147}$

$= \sqrt{49 \cdot 3}$

$= 7\sqrt{3}$

Simplify each.

3. $\sqrt[3]{648}$

$= \sqrt[3]{216 \cdot 3}$

$= 6\sqrt[3]{3}$

Perfect Cubes:
8, 27, 64, 125, 216, 343,..

4. $\sqrt[4]{567}$

$= \sqrt[4]{81 \cdot 7}$

$= 3\sqrt[4]{7}$

Perfect 4th powers:
16, 81, 256, 625, ...

$\sqrt{\ }$ This symbol is called a radical

it indicates finding a root.

The number in this spot is called the Index.

It tells what root you are to find.

If there is no index it means Square Root.

$\sqrt[n]{a}$

This quantity is called the Radicand

4^3	64
4^2	16
4^1	4
$4^{\frac{1}{2}}$	2
4^0	1

$a^{\frac{1}{n}} = \sqrt[n]{a}$ "the nth root of a"

Rational Exponents represent radicals (roots)

$a^{\frac{m}{n}} = \sqrt[n]{a^m}$ or $(\sqrt[n]{a})^m$

Write in radical form.

This is Radical Form: $\sqrt[8]{g^5}$

1. $W^{\frac{1}{5}}$

$\sqrt[5]{W}$

2. $B^{-\frac{4}{3}} = \frac{1}{B^{\frac{4}{3}}}$

$= \frac{1}{\sqrt[3]{B^4}}$

There are several other ways to write this answer, this is one of the more common ways.

3. $C^{\frac{2}{9}}$

$\sqrt[9]{C^2}$

4. $P^{2.8} = P^{\frac{28}{10}} = P^{\frac{14}{5}}$

$= \sqrt[5]{P^{14}}$

Write in exponential form:

This is Exponential Form: $a^{\frac{6}{7}}$

a. $\sqrt[3]{G^5}$

$= G^{\frac{5}{3}}$

b. $\sqrt[6]{R}$

$= R^{\frac{1}{6}}$

c. $\sqrt{B^7}$

$= B^{\frac{7}{2}}$