

Section 3.2: Perfect Squares, Perfect Cubes, and Their Roots

Some useful definitions:

Term	Example	Definition	Geometric Interpretation
Perfect SQUARE			
SQUARE Root			
Perfect CUBE			
CUBE Root			

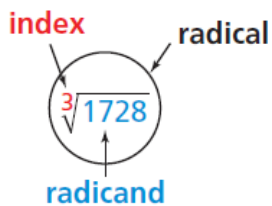


Example 1: Determine the following without the use of a calculator. Try to use a factor tree to help you out or to confirm that your answer is correct! (**Hint, can you arrange the factors into two equal groups?**)

a) $\sqrt{49}$

b) $\sqrt{400}$

c) $\sqrt{2916}$



Note: In example 1a, $\sqrt{2916}$ (the square root of 2916) has other names. The square root sign is also called the _____ and the number inside the square root is called the _____. The square root of 2916 can also be written as _____, with the _____ = 2. However, the index on a square root is implied, and often is not written to make life a little bit easier!

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Find the roots of the radicals below.

d) $\sqrt{5184}$

e) $\sqrt[3]{1728}$



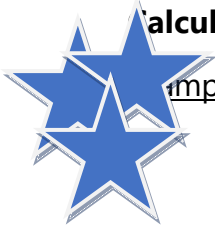
Example 2: Determine whether each is a perfect square, a perfect cube, both or neither. No calculators allowed. Show work.

a) 125

b) 196

c) 729

d) 4096

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Calculators are allowed for the remaining questions...

Example 4: A recycling department compresses cardboard into cubic bales. If each bale has a volume of 3375 in^3 , what is the surface area of the cubic bale?

Example 5: A manufacturer is designing an open, cube-shaped box to hold a volleyball with volume $288\pi \text{ cm}^3$.

a) What is the volume of the box?

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(4, 5 do at least 3 from each;

6, 7, 8 (do not use the square root or cube root function on your calculator)

10, 15, 17

All – Answer REFLECT question on page 147