

### Example 1 Identify Perfect Squares and Perfect Cubes

State whether each of the following numbers is a perfect square, a perfect cube, both, or neither. Method 1 - Prime Factorization

a) 121



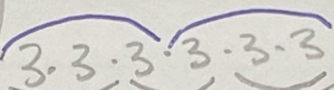
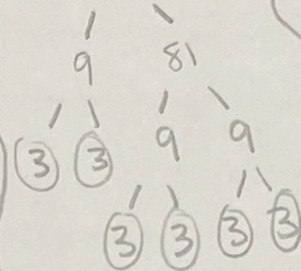
$$11 \cdot 11$$

Pairs  $\rightarrow 11 \rightarrow \sqrt{121} = 11$

Cube Roots

Trios  $\rightarrow$  No  
not perfect  
cube.

b) 729



Perfect Square

Pairs  $\rightarrow 3 \cdot 3 \cdot 3 \rightarrow 27^2$

Perfect Cube

Trios  $\rightarrow 3 \cdot 3 \rightarrow 9^3$

c) 356

$$\sqrt[3]{356} = 18.86$$

$\rightarrow$  Not a whole number  
356 is not a perfect  
square.

$$\sqrt[3]{356} = 7.08$$

-Not a whole #,  
not a perfect  
cube.

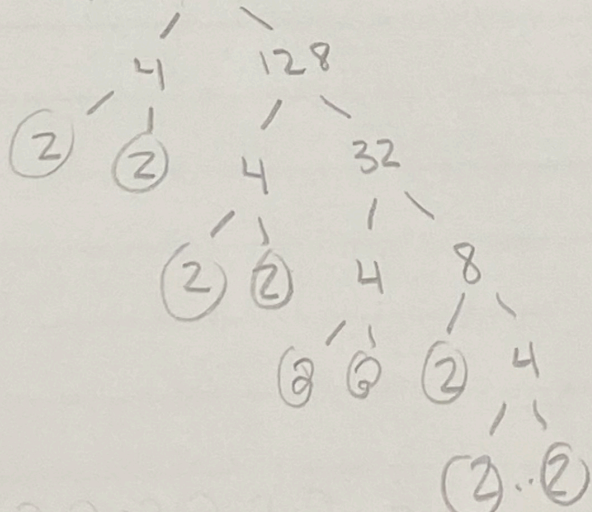
Method 2 -  
calculator

### Example 2 Solve Problems Involving Square Roots and Cube Roots

The uranium that Saskatchewan produces in a year has a volume of about  $512 \text{ m}^3$ . If this volume were made into a single cube, what would be the dimensions of the cube?

$$V = 512 \text{ m}^3$$

$$l = w = h$$



$$2 \cdot 2 \cdot 2 = 8^3$$

Cube Root  
 $= 8$

$$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$

