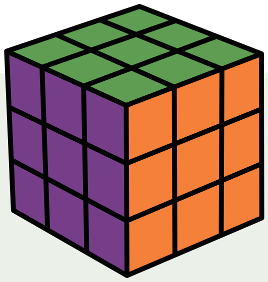
Name ____________________ Date Answer Key

Approximating Cube Roots



If you have a number that's not a perfect cube, you can approximate its cube root by finding the two whole numbers that the cube root falls between.

Try it! Approximate $\sqrt[3]{290}$.

Since 290 is not a perfect cube, approximate $\sqrt[3]{290}$ by first finding the two nearest perfect cubes. The perfect cube just below 290 is 216. The perfect cube just above 290 is 343.

$$216 < 290 < 343$$

Now, find the cube roots of the perfect cubes.

$$\sqrt[3]{216} < \sqrt[3]{290} < \sqrt[3]{343}$$

Since $\sqrt[3]{216} = 6$ and $\sqrt[3]{343} = 7$, $\sqrt[3]{290}$ must be **between 6 and 7**.

$$6 < \sqrt[3]{290} < 7$$

Approximate each cube root by finding the two whole numbers that it falls between.

1. $\sqrt[3]{16}$ is between 2 and 3.
2. $\sqrt[3]{5}$ is between 1 and 2.
3. $\sqrt[3]{59}$ is between 3 and 4.
4. $\sqrt[3]{325}$ is between 6 and 7.
5. $\sqrt[3]{380}$ is between 7 and 8.
6. $\sqrt[3]{110}$ is between 4 and 5.
7. $\sqrt[3]{134}$ is between 5 and 6.
8. $\sqrt[3]{460}$ is between 7 and 8.
9. $\sqrt[3]{553}$ is between 8 and 9.
10. $\sqrt[3]{902}$ is between 9 and 10.
11. $\sqrt[3]{793}$ is between 9 and 10.
12. $\sqrt[3]{699}$ is between 8 and 9.

Challenge yourself! Approximate $\sqrt[3]{212}$ by finding the two whole numbers that it falls between. Which number do you think $\sqrt[3]{212}$ is closer to? Explain your reasoning.

Sample answer: $\sqrt[3]{212}$ is between 5 and 6. Since 212 is closer to 216 than it is to 125, you would expect $\sqrt[3]{212}$ to be closer to $\sqrt[3]{216}$ or 6.