**CHECK YOUR UNDERSTANDING QUESTIONS**

*Before you start, circle 3 questions that you think are most important for helping your learning. The answer key is on Mrs. Tennant’s website.*

1. Which numbers are perfect cube numbers? Use prime factorization to support your answer. If a number is a perfect cube, what is it’s cube root?

| 1. 216

/ \   **2** x 108 / \  **2** x 54  / \ **2** x 27  / \ **3** x 9  / \  **3**x**3**2 x 2 x 2 x 3 x 3 x 3 (2x3) x (2x3) x (2x3)6 x 6 x 6= $6^{3}$ $\sqrt[3]{216}$ = $\sqrt[3]{6x6x6} = \sqrt[3]{6^{3}} $ = 6 216 is a perfect cube number because it can be split into three equal groups of prime factors. Each group has a product of 6. Therefore, the cube root of 216 is 6.   | 1. 25

/ \ **5** x **5**25 is not a perfect cube number because it’s prime factors cannot form three equal groupings.  | 1. 27

/ \ **3** x 9 / \  **3** x **3** 3 x 3 x 3 = $3^{3}$ $\sqrt[3]{27}$ = $\sqrt[3]{3x3x3} = \sqrt[3]{3^{3}} $ = 327 is a perfect cube number because it can be sorted into three equal groups of prime factors. Each group equals 3. Therefore, the cube root of 27 is 3.  |
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1. In the blank space between each pair of numbers, write whether the first number is equal to (=), greater than (>) or less than (<) the second number. Circle any perfect cube numbers.

| 43 > 16 | 53 = 125  | 73 > 82  |
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1. Find the following cube roots, show your work and explain the strategy that you used:

| 1. 64

/ \ **2** x 32 / \ **2** x 16 / \  **2** x 8 / \ **2** x 4 / \ **2** x **2**2 x 2 x 2 x 2 x 2 x 2(2 x 2) x (2 x 2) x (2 x 2)4 x 4 x 4$4^{3}$= 64 $\sqrt[3]{64}$ = $\sqrt[3]{4 x 4 x 4}$ = $\sqrt[3]{4^{3}}$= 4I know that the cube root of 64 is 4 because I used prime factorization and saw that the prime factors of 64 can be split into three equal groups. The product of each group is 4. Therefore 4 multiplied by itself twice equals 64.  | 1. 343

 / \  **7** x 49 / \  **7** x **7**7 x 7 x 7 = $7^{3}$$\sqrt[3]{343}$ = 7I know that the cube root of 343 is 7 because when I used prime factorization, I saw that I could sort the prime factors of 343 into 3 equal groups. Each group is equal to 7.  | 1. $9^{3}$

$\sqrt[3]{9^{3}}$ = 9 I know that if I cubed 9 and then found the cube root I would end up back at 9 because cubing and finding the cube root are inverse operations.  |
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