Square Roots and Cube Roots Word Problems

1. A chessboard has 32 black squares and 32 white squares arranged in a square. How many squares are along each side of the chessboard?
2. A cubic aquarium holds 27 cubic feet of water. What is the length of each edge of the cube?
3. The foyer of Blake’s house is a square with an area of 36 square feet. What is the length of each side of the foyer?
4. Jazmine stores her school supplies in a cube-shaped box with a volume of 512 cubic inches. She sees that each face of the box is a square. What is the length of each edge of the top of the box?
5. A box of tile contains 12 square tiles. If you tile the largest possible square area using whole tiles, how many tiles will you have left from the box?
6. The owner of a gift shop wants to order boxes that have a volume of 729 cubic inches. If she selects a cube-shaped box, what will the dimensions of the box be?

Reasoning

1. How can you check your answer when you find the square root(s) of a number?
2. Can you arrange 12 small squares to make a larger square? Can you arrange 20 small cubes to make a larger cube? Explain how this relates to perfect squares and perfect cubes?

Answers

1. 8
2. 3 cubic feet
3. 6 square feet
4. 8 cubic inches
5. 3
6. 9 by 9 by 9 dimensions
7. Square your answer. For example, $\sqrt{16}=4 so 4^{2}=16$
8. I cannot make a large square using 12 small squares because 12 is not a perfect square. I cannot make a large cube using 20 small cubes because 20 is not a perfect cube.