

# Multiplying and Simplifying Radical Expressions Activity

Write the following radical expressions. When you hear the word times, only use a multiplication dot when specifically indicated. Also, number each problem.

1.  $\sqrt[3]{4} \sqrt[3]{2}$

the cube root of four end root times the cube root of two end root

Answer: 


2.  $\sqrt[3]{4} \cdot \sqrt[3]{2}$

the cube root of four end root times (multiplication dot) the cube root of two end root

Answer: 

3.  $\sqrt[3]{2} \sqrt[3]{7} = \sqrt[3]{2 \cdot 7} = \sqrt[3]{14}$

The cube root of two end root times the cube root of seven end root equals the cube root of two times (multiplication dot) seven end root equals the cube root of fourteen end root.

Answer: 

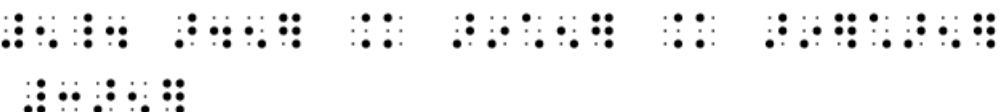
4.  $\sqrt{y+3}\sqrt{y-3} = \sqrt{(y+3)(y-3)} = \sqrt{y^2-9}$

The square root of y plus three end root times the square root of y minus three end root equals the square root of open parenthesis y plus three close parenthesis times open parenthesis y minus three close parenthesis end root equals the square root of y squared minus nine end root.

Answer: 

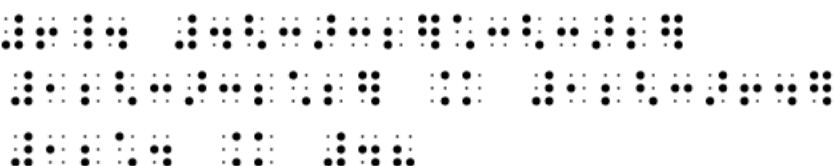
$$5. \sqrt{45} = \sqrt{9 \cdot 5} = \sqrt{9} \cdot \sqrt{5} = 3\sqrt{5}$$

The square root of forty-five end root equals the square root of nine times (multiplication dot) five end root equals the square root of nine end root times (multiplication dot) the square root of five end root equals three square root of five end root.

Answer: 

$$6. 4\sqrt[3]{32} \cdot 3\sqrt[3]{2} = 12\sqrt[3]{32 \cdot 2} = 12\sqrt[3]{64} = 12 \cdot 4 = 48$$

Four cube root of thirty-two end root times (multiplication dot) three cube root of two end root equals twelve cube root of thirty-two times (multiplication dot) two end root equals twelve cube root of sixty-four end root equals twelve times (multiplication dot) four equals forty-eight.

Answer: 


$$7. \sqrt[5]{9} \cdot \sqrt[5]{81} = \sqrt[5]{3^2} \cdot \sqrt[5]{3^4} = \sqrt[5]{3^2 \cdot 3^4}$$

The fifth root of nine end root times (multiplication dot) the fifth root of eighty-one end root equals the fifth root of three squared end root times (multiplication dot) the fifth root of three to the fourth power end root equals the fifth root of three squared times (multiplication dot) three to the fourth power end root.

Answer: 


8.  $\sqrt[5]{3^2 \cdot 3^4} = \sqrt[5]{3^6} = 3\sqrt[5]{3}$

The fifth root of three squared times (multiplication dot) three to the fourth power end root equals the fifth root of three to the sixth power end root equals three fifth root of three end root.

Answer: 

9.  $\sqrt[5]{z^2} \cdot \sqrt[5]{z^6} = \sqrt[5]{z^2 \cdot z^6} = \sqrt[5]{z^8} = z\sqrt[5]{z^3}$

The fifth root of  $z$  squared end root times (multiplication dot) the fifth root of  $z$  to the sixth power end root equals the fifth root of  $z$  squared times (multiplication dot)  $z$  to the sixth power end root equals the fifth root of  $z$  to the eighth power end root equals  $z$  fifth root of  $z$  cubed end root.

Answer: 

10.  $\sqrt{18x-9} = \sqrt{9(2x-1)} = \sqrt{3^2(2x-1)} = 3\sqrt{2x-1}$

The square root of eighteen x minus nine end root equals the square root of nine open parenthesis two x minus one close parenthesis end root equals the square root of three squared open parenthesis two x minus one close parenthesis end root equals three square root of two x minus one end root.

Answer: 