



# Teaching and Learning of the Nemeth Braille Code

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## ■ Radicals

- Simple Radicals
- Index of Radical
- Contractions in Radicals
- Spatial Arrangement of a Square Root Problem
- Nested Radicals

## ■ Synthetic Division

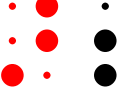






# Simple Radicals

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- Most common is the square root.
- Write the radical symbol  $\sqrt{\quad}$ , then the quantity or radicand, then the termination indicator  $\sqrt{\quad}$ .

# Examples

- $\sqrt{81}$ 

- $\sqrt{m+n}$ 

- $\sqrt{\frac{3}{5} - \frac{2}{9}}$ 

- $\sqrt{a^2 - b^2}$ 

- $\sqrt{x^2} + \sqrt{y^2}$ 




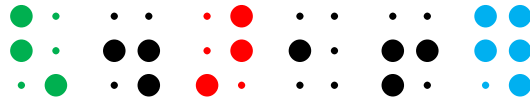
# Index of Radical

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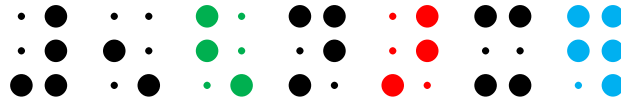
- If the radical has an index, begin with the index of radical indicator  $\sqrt{\quad}$ , then the index numeral, then the radical symbol  $\sqrt{\quad}$ , then the quantity or radicand, then the termination indicator  $\sqrt{\quad}$

# Examples

$$\sqrt[4]{16}$$



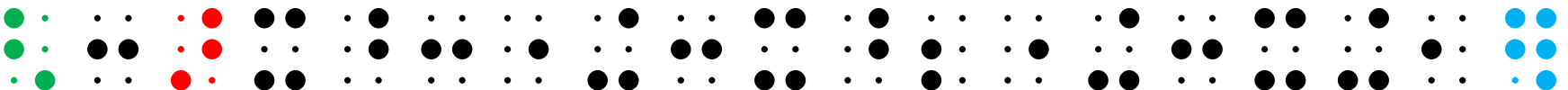
$$5^n \sqrt{x}$$



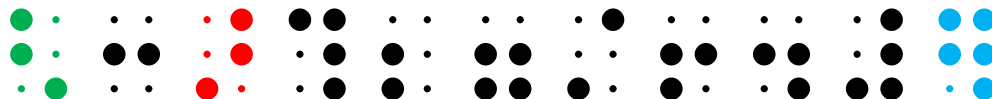
$$c^d \sqrt{a-b}$$



$$\sqrt[3]{x^3 + 3x^2 + 3x + 1}$$



$$\sqrt[3]{\frac{27}{64}}$$



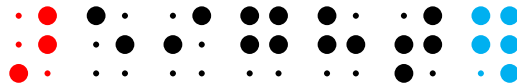


# Contractions in Radicals

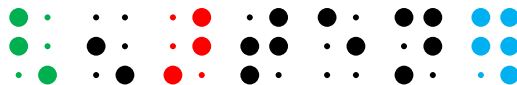
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- Contractions may not be used in a word or abbreviation that is in contact with the radical symbol.
- Examples

■  $\sqrt{\text{eight}}$



■  $\sqrt[5]{\text{ten}}$





# Spatial Arrangement of a Square Root Problem

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- This process of calculating a square root is no longer normally covered in the classroom and is therefore not going to be covered in this class.



# Nested Radicals

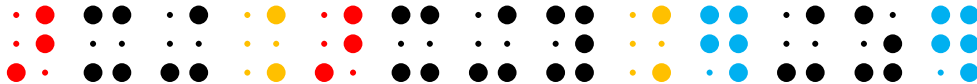
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- The order of radical indicator  $\sqrt{\quad}$  must be repeated before both the radical symbol and its associated termination indicator as many times as it is necessary to indicate the depth of the radical.
- If it has an index, the order of radical indicator is placed before the index of radical indicator.

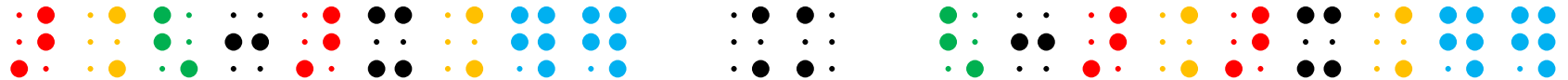


# Examples

$$\sqrt{x + \sqrt{x + y + z}}$$



$$\sqrt{\sqrt[3]{x}} = \sqrt[3]{\sqrt{x}}$$



$$\sqrt{x + \sqrt{y + \sqrt{z}}}$$





# Synthetic Division

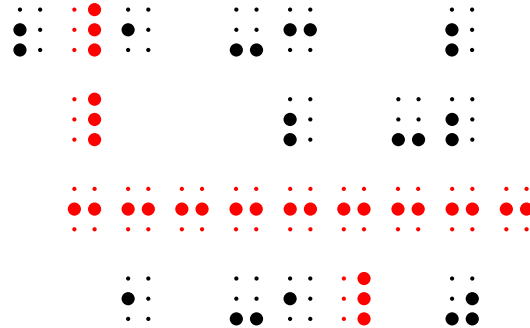
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- A vertical line must be used, unspaced from the divisor, to the left or to the right of the synthetic division arrangement according to where it is in print.
- The separation line must begin directly under the vertical line at one end and terminate one cell beyond the other end.
- There must be at least one column of blank cells between adjacent columns.
- When a vertical line is used by the remainder in print, it must be placed in the column of blank cells as shown in print.
- Numeric symbols are lined up according to place value and the symbols of operation are also aligned.

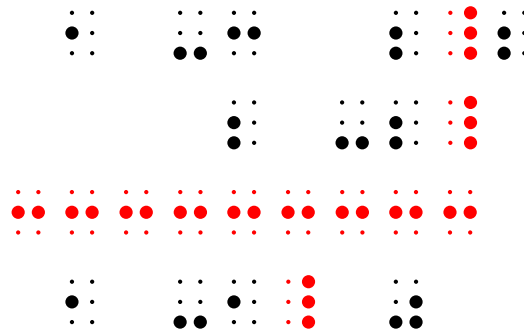
# Examples



$$2 \left| \begin{array}{ccc} 1 & -3 & 2 \\ & 2 & -2 \end{array} \right| \\ \hline 1 \quad -1 \quad | \quad 0$$

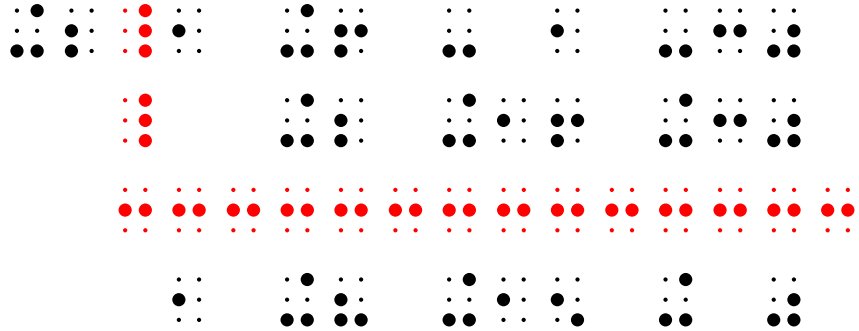


$$\begin{array}{ccc|c} 1 & -3 & 2 & 2 \\ & 2 & -2 & \\ \hline 1 & -1 & & 0 \end{array}$$

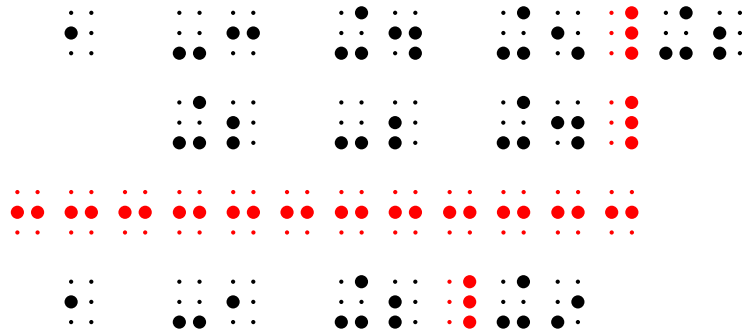


# Examples

$$\begin{array}{r}
 \underline{+2} \quad 1 \quad +6 \quad -1 \quad -30 \\
 \quad \quad +2 \quad +16 \quad +30 \\
 \hline
 1 \quad +8 \quad +15 \quad +0
 \end{array}$$



$$\begin{array}{r}
 1 \quad -3 \quad +4 \quad +5 \quad \underline{+2} \\
 \quad +2 \quad -2 \quad +4 \\
 \hline
 1 \quad -1 \quad +2 \quad | \quad +9
 \end{array}$$





# Assignment

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- p.78 all and the Quadratic Formula  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

- Transcribe the following Nested Radical Problem

$$\sqrt{x + \sqrt[3]{y + \sqrt[4]{z}}}$$

- Transcribe the following Synthetic Division Problem

$$\begin{array}{r|rrrr} 5 & -2 & 4 & 27 & 15 \\ & & -10 & -30 & -15 \\ \hline & -2 & -6 & -3 & 0 \end{array}$$