

BINOMIAL  
APPROXIMATIONS

STARTER      NO CALCULATOR

18/3/16

HENCE  
FIND THE APPROXIMATE  
VALUE OF

1.  $\sqrt{\frac{13}{9}} \approx 1.202$

$\sqrt{13} \approx$

2.  $\sqrt{\frac{17}{16}} \approx 1.031$

$\sqrt{17} \approx$

3.  $\sqrt{\frac{27}{25}} \approx 1.039$

$\sqrt{27} \approx$

4.  $\sqrt[3]{\frac{31}{27}} \approx 1.047$

$\sqrt[3]{31} \approx$

5.  $\sqrt[3]{\frac{78}{64}} \approx 1.068$

$\sqrt[3]{78} \approx$

6.  $\sqrt{1.08} \approx 1.039$

$\sqrt{108} \approx$

7.  $\sqrt[3]{0.999} \approx 0.9997$

$\sqrt[3]{999} \approx$

\* 8.  $\sqrt[3]{1.04} \approx 1.013$

$\sqrt[3]{130} \approx$

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FIND THE APPROXIMATE  
VALUE OF

1.  $\sqrt{\frac{13}{9}} \approx 1.202$

$$\begin{aligned}\sqrt{13} &\approx 1.202 \times \sqrt{9} \\ &= 1.202 \times 3 \\ &= 3.606\end{aligned}$$

2.  $\sqrt{\frac{17}{16}} \approx 1.031$

$$\begin{aligned}\sqrt{17} &\approx 1.031 \times \sqrt{16} \\ &= 1.031 \times 4 \\ &= 4.124\end{aligned}$$

3.  $\sqrt{\frac{27}{25}} \approx 1.039$

$$\begin{aligned}\sqrt{27} &\approx 1.039 \times 5 \\ &= 5.195\end{aligned}$$

4.  $\sqrt[3]{\frac{31}{27}} \approx 1.047$

$$\sqrt[3]{31} \approx 3.141$$

5.  $\sqrt[3]{\frac{78}{64}} \approx 1.068$

$$\begin{aligned}\sqrt[3]{78} &\approx 1.068 \times 4 \\ &= 4.272\end{aligned}$$

6.  $\sqrt{1.08} \approx 1.039$

$$\begin{aligned}\sqrt{108} &\approx \sqrt{100 \times \frac{108}{100}} \\ &= 10 \times \sqrt{1.08} \\ &= 10.39\end{aligned}$$

7.  $\sqrt[3]{0.999} \approx 0.9997$

$$\begin{aligned}\sqrt[3]{999} &\approx \sqrt[3]{1000 \times \frac{999}{1000}} \\ &= 10 \times \sqrt[3]{0.999} = 9.997\end{aligned}$$

8.  $\sqrt[3]{1.04} \approx 1.013$

$$\begin{aligned}\sqrt[3]{130} &\approx \sqrt[3]{125 \times 1.04} \\ &= 5 \times \sqrt[3]{1.04}\end{aligned}$$

$$1.04 \times x = 130$$

$$x = 125$$

$$5 \times 1.013$$

$$5.065$$