

Cubes And Cube Roots

Ex. 6.2

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Ex. 6.2

1. $\sqrt[3]{7^3} = 7$

2. $\sqrt[3]{(-13)^3} = -13$

3. $\sqrt[3]{-125} = \sqrt[3]{(-5)^3} = -5$

4. $\sqrt[3]{27000} = \sqrt[3]{(30)^3} = 30$

5.
$$\begin{array}{r|l} 2 & 216 \\ \hline 2 & 108 \\ \hline 2 & 54 \\ \hline 3 & 27 \\ \hline 3 & 9 \\ \hline & 3 \end{array}$$

$$\begin{aligned} \sqrt[3]{216} &= \sqrt[3]{\underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3}} \\ &= 2 \times 3 \\ &= 6 \end{aligned}$$

6.
$$\begin{array}{r|l} 3 & 9261 \\ \hline 3 & 3087 \\ \hline 3 & 1029 \\ \hline 7 & 343 \\ \hline 7 & 49 \\ \hline & 7 \end{array}$$

$$\begin{aligned} \sqrt[3]{-9261} &= -\sqrt[3]{9261} \\ &= -\sqrt[3]{\underline{3 \times 3 \times 3} \times \underline{7 \times 7 \times 7}} \\ &= -(3 \times 7) \\ &= -21 \end{aligned}$$

7.

$$2 \overline{) 5832}$$

$$2 \overline{) 2916}$$

$$2 \overline{) 1458}$$

$$3 \overline{) 729}$$

$$3 \overline{) 243}$$

$$3 \overline{) 81}$$

$$3 \overline{) 27}$$

$$3 \overline{) 9}$$

3

$$\begin{aligned} \sqrt[3]{5832} &= \sqrt[3]{\underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times \underline{3 \times 3 \times 3}} \\ &= 2 \times 3 \times 3 \\ &= 18 \end{aligned}$$

8

$$2 \overline{) 64000}$$

$$2 \overline{) 32000}$$

$$2 \overline{) 16000}$$

$$2 \overline{) 8000}$$

$$2 \overline{) 4000}$$

$$2 \overline{) 2000}$$

$$2 \overline{) 1000}$$

$$2 \overline{) 500}$$

$$2 \overline{) 250}$$

$$5 \overline{) 125}$$

$$5 \overline{) 25}$$

5

$$\begin{aligned} \sqrt[3]{-64000} &= -\sqrt[3]{64000} \\ &= -\sqrt[3]{\underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{5 \times 5 \times 5}} \\ &= -(2 \times 2 \times 2 \times 5) \\ &= -40 \end{aligned}$$

9.

2	13824
2	6912
2	3456
2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9

$$\begin{aligned} \sqrt[3]{13824} &= \sqrt[3]{\underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3}} \\ &= 2 \times 2 \times 2 \times 3 \\ &= 24 \end{aligned}$$

10.

2	74088
2	37044
2	18522
3	9261
3	3087
3	1029
7	343
7	49

$$\begin{aligned} \sqrt[3]{74088} &= \sqrt[3]{\underline{2 \times 2 \times 2} \times \underline{3 \times 3 \times 3} \times \underline{7 \times 7 \times 7}} \\ &= 2 \times 3 \times 7 \\ &= 42 \end{aligned}$$

11.	2	175616
	2	87808
	2	43904
	2	21952
	2	10976
	2	5488
	2	2744
	2	1372
	2	686
	7	343
	7	49

$$\begin{aligned} \sqrt[3]{175616} &= \sqrt[3]{\underbrace{2 \times 2 \times 2} \times \underbrace{2 \times 2 \times 2} \times \underbrace{2 \times 2 \times 2} \times \underbrace{7 \times 7 \times 7}} \\ &= 2 \times 2 \times 2 \times 7 \\ &= 56 \end{aligned}$$

12.	3	250047
	3	83349
	3	27783
	3	9261
	3	3087
	3	1029
	7	343
	7	49

$$\begin{aligned} \sqrt[3]{250047} &= \sqrt[3]{\underbrace{3 \times 3 \times 3} \times \underbrace{3 \times 3 \times 3} \times \underbrace{7 \times 7 \times 7}} \\ &= 3 \times 3 \times 7 \\ &= 63 \end{aligned}$$