**2.7: Find Square Roots and Compare Real Numbers**

**Goals:** \*Find square roots of numbers

 \*Approximate a square root between two integers

 \*Order real numbers

 \*Classify real numbers

**Square Roots:**

**SYMBOL:**

**Evaluate the expression:**

**Ex:** $-\sqrt{9}$ **Ex:** $\sqrt{25}$ **Ex:** $\pm \sqrt{64}$

**Ex:** $-\sqrt{81}$ **Ex:** $\pm \sqrt{100}$ **Ex:** $\sqrt{121}$

**Ex:** $-\sqrt{400}$ **Ex:** $\sqrt{160,000}$ **Ex:** $\sqrt{4900}$

**Ex:** $\sqrt{0.0081}$ **Ex:** $\sqrt{0.000121}$

**Solve:**

**Ex:** *x*² = 144 **Ex:** *x*² = 64 **Ex:** *x*² = 1

**Approximate Square Roots:**

**Ex:** $\sqrt{32}$ **Ex:** $\sqrt{103}$

**Ex:** $-\sqrt{48}$ **Ex:** $-\sqrt{350}$

**Ex:** The top of a folding table is a square whose area is 945 square inches. Approximate the side length of the tabletop to the nearest inch.

**Ex:** The top of a square box has an area of 320 square inches. Approximate the side length of the box top to the nearest inch.

**Evaluate the expression for the given value of *x*:**

**Ex:** $-3\sqrt{x}+36$ when *x* = 64 **Ex:** $54-8·\sqrt{x}$ when *x* = 36

**Extension:**

**If** $\sqrt{x}$ **means to find the square root (the number times itself) that equals *x*, what do you think** $\sqrt[3]{x}$ **means?**

**Evaluate:**

**Ex:** $\sqrt[3]{8}$ **Ex:** $\sqrt[3]{27}$ **Ex:** $\sqrt[3]{64}$

**Irrational Number:**

**Classify the following numbers using all names that apply:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number** | **Rational?** | **Irrational?** | **Integer?** | **Whole?** |
| $$\sqrt{24}$$ |  |  |  |  |
| $$\sqrt{100}$$ |  |  |  |  |
| $$-\sqrt{81}$$ |  |  |  |  |
| $$-\sqrt{25}$$ |  |  |  |  |
| $$\sqrt{361}$$ |  |  |  |  |
| $$\sqrt{30}$$ |  |  |  |  |

**Order the following numbers from least to greatest:**

**Ex:** $\frac{4}{3}, -\sqrt{5}, \sqrt{13}, -2.5, \sqrt{9}$ **Ex:** $-\sqrt{10}, \frac{19}{5}, -3, \sqrt{12}, \sqrt{16}$

**Ex:** $-\frac{9}{2}, 5.2, 0, \sqrt{7}, 4.1-\sqrt{20}$