

Estimating Square Roots and Rounding Decimals

Warmup

1. Simplify $\sqrt{25}$

2. Simplify $\sqrt{144}$

3. Convert $\frac{4}{9}$ to a decimal number.

4. Convert $\frac{3}{11}$ to a decimal number.

- I. Estimating the Square Root Using a List of Squares
- II. Estimating Square Root to the Nearest Tenth
- III. Round Repeating Decimal Numbers

Homeschool



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Pre-Algebra and Geometry I

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I. Estimating the Square Root Using a List of Squares

$$\sqrt{4} = \underline{\hspace{2cm}} \text{ because } \underline{\hspace{4cm}}$$

$$\sqrt{9} = \underline{\hspace{2cm}} \text{ because } \underline{\hspace{4cm}}$$

To find the square root of a number that is Not a perfect square, estimate the answer.

$$\sqrt{70} \text{ is between } \underline{\hspace{2cm}} \text{ and } \underline{\hspace{2cm}}$$

$$\sqrt{70} \text{ estimated to the nearest tenth} = \underline{\hspace{2cm}}$$

$$8.1^2 = 65.61$$

$$8.2^2 = 67.24$$

$$8.3^2 = 68.89$$

$$8.4^2 = 70.56$$

$$8.5^2 = 72.25$$

$$8.6^2 = 73.96$$

Estimate $\sqrt{37}$ to
the nearest tenth

$$6^2 = 36$$

$$6.1^2 = 37.21$$

$$6.2^2 = 38.44$$

$$6.3^2 = 39.69$$

$$6.4^2 = 40.96$$

$$6.5^2 = 42.25$$

$$6.6^2 = 43.56$$

$$6.7^2 = 44.89$$

$$6.8^2 = 46.24$$

$$6.9^2 = 47.61$$

$$7^2 = 49$$

Estimate $\sqrt{133}$ to
the nearest tenth

$$11^2 = 121$$

$$11.1^2 = 123.21$$

$$11.2^2 = 125.44$$

$$11.3^2 = 127.69$$

$$11.4^2 = 129.96$$

$$11.5^2 = 132.25$$

$$11.6^2 = 134.56$$

$$11.7^2 = 136.89$$

$$11.8^2 = 139.24$$

$$11.9^2 = 141.61$$

$$12^2 = 144$$

5. Estimate $\sqrt{22}$ to the nearest tenth

$$4^2 = 16$$

$$4.1^2 = 16.81$$

$$4.2^2 = 17.64$$

$$4.3^2 = 18.49$$

$$4.4^2 = 19.36$$

$$4.5^2 = 20.25$$

$$4.6^2 = 21.16$$

$$4.7^2 = 22.09$$

$$4.8^2 = 23.04$$

$$4.9^2 = 24.01$$

$$5^2 = 25$$

6. Estimate $\sqrt{101}$ to the nearest tenth

$$10^2 = 100$$

$$10.1^2 = 102.01$$

$$10.2^2 = 104.04$$

$$10.3^2 = 106.09$$

$$10.4^2 = 108.16$$

$$10.5^2 = 110.25$$

$$10.6^2 = 112.36$$

$$10.7^2 = 114.49$$

$$10.8^2 = 116.64$$

$$10.9^2 = 118.81$$

$$11^2 = 121$$

II. Estimating Square Root to the Nearest Tenth

Estimate the decimal equivalent of $\sqrt{32}$ to the nearest tenth.

Explore

What is the question asking?

Plan

What is the best method to get a valid solution?

Solve

Determine the nearest whole number squares.
Guess and Check to determine the number to the nearest tenth.

Check

Check by multiplying the answer.

Estimate the decimal equivalent of $\sqrt{176}$ to the nearest tenth.

7. Estimate the decimal equivalent of $\sqrt{228}$ to the nearest tenth.

III. Round Repeating Decimal Numbers

Write $450\frac{2}{3}$ as a repeating decimal, then estimate the value of to the nearest thousandth.

Round to the nearest tenth

34.763

23.936

Round $42.\overline{173}$ to 3 decimal places.

8. Round $216.\overline{19}$ to 4 decimal places.

9. Round $100.\overline{85}$ to 5 decimal places.

[illegible]