

1. Is $-\frac{10}{\sqrt{16}}$ rational? Justify your response.

2. Determine the value of the variable that satisfies the equation $-4 - 2(3x - 2) = 13x - (8 - x) + 4x$, and use our rhymes to describe each step of your solution.

Simplify.

3. $\frac{(8n^2d^3)^3}{64n^5d^7}$

4. $\frac{18x^{-5}}{(\sqrt{324})x^{-3}}$

Solve.

5. $x^2 = \frac{196}{49}$
 $x =$

6. $n^2 = -16$
 $n =$

7. Johanna has a 512cm^3 cubic box for storing special items. Her brother builds a shelf that is 78mm in height. Will Johanna's box fit? Justify your response.

8. The diameter of the Sun is 864,948.7mi, and the diameter of Earth is 7,917.5 mi. Express these values in scientific notation, and determine the Sun to Earth diameter ratio. Perform and express your solution in scientific notation.