The Square Root of 2

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$$\sqrt{2}$$

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$$\sqrt{2} \times \sqrt{2} = 2$$

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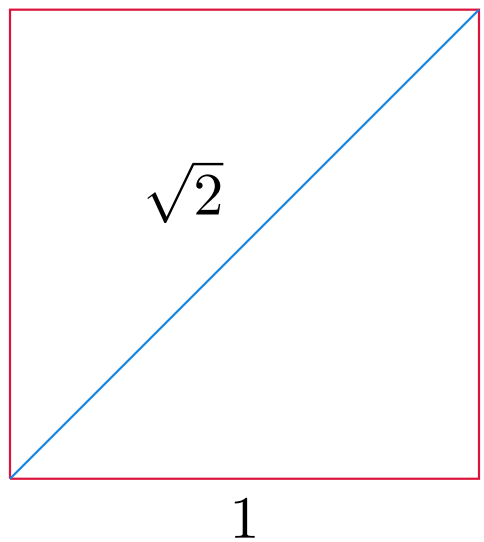

$$\sqrt{2} = \frac{a}{b}$$

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$$gcd(a, b) = 1$$

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$$2 \mid a \Rightarrow 2^2 \mid a^2$$

$$2b^2 = a^2$$

$$2 \mid a \Rightarrow 2^2 \mid a^2$$

$$4 \mid b^2$$

$$2b^2 = a^2$$

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$$4 \mid b^2$$

$$2 \mid b$$

$$2b^2 = a^2$$

$$2 \mid a \Rightarrow 2^2 \mid a^2$$

$$4 \mid b^2$$

$$2 \mid b$$

$$gcd(a, b) = 1$$