CP3: Representing fractions in lowest terms, uniqueness of representation

1) Explain what it means to represent a fraction in lowest terms and represent the fraction

$$\frac{8208}{36432}$$

in lowest terms.

2) Prove that any fraction has a representation in lowest terms.

3) Use the Fundamental Theorem of Arithmetic to show that the representation in lowest terms is unique.

4) Show that the square root of two cannot be represented as a fraction, that is, show that the equation

$$\left(\frac{a}{b}\right)^2 = 2$$

has no solution with a and b both being integers.