

Objectives

- To understand rational numbers
- To convert recurring decimals to fractions
- To simplify surds

Rational Numbers

A rational number is one which can be expressed as a fraction.

Terminating and recurring decimals are RATIONAL

Decimals that go on forever without recurring are IRRATIONAL

Which of these are rational? Prove it!

$$\pi = 3.141592654 \dots \quad \text{IRRATIONAL}$$

$$\sqrt[3]{27} = 3 = \frac{3}{1} \quad \text{RATIONAL}$$

$$\sqrt{121} = 11 = \frac{11}{1} \quad \text{RATIONAL}$$

$$0.3 = \frac{3}{10} \quad \text{RATIONAL}$$

$$0.1\bar{6} = \frac{1}{6} \quad \text{RATIONAL}$$

$$0.751 = \frac{751}{1000} \quad \text{RATIONAL}$$

$$\tan 20 = 0.363978 \dots \quad \text{IRRATIONAL}$$

$$\sqrt{2} = 1.414213 \dots \quad \text{IRRATIONAL}$$