

Further Number Theory

Number Bases



$$27 = 2 \times 10^1 + 7 \times 10^0$$

Number Bases

Example

Express 1136_{10} in base 6

$$1136 \div 6 = 189 \text{ r } 2$$

$$189 \div 6 = 31 \text{ r } 3$$

$$31 \div 6 = 5 \text{ r } 1$$

$$5 \div 6 = 0 \text{ r } 5$$

$$1136_{10} = 5132_6$$

Example

Express 2213_4 in base 5

$$2213_4 = 2 \times 4^3 + 2 \times 4^2 + 1 \times 4^1 + 3 \times 4^0$$

$$= 167_{10}$$

$$167 \div 5 = 33 \text{ r } 2$$

$$33 \div 5 = 6 \text{ r } 3$$

$$6 \div 5 = 1 \text{ r } 1$$

$$1 \div 5 = 0 \text{ r } 1$$

$$2213_4 = 1132_5$$