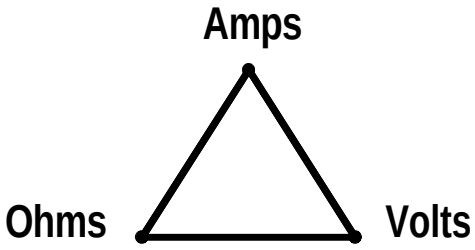
The voltage in volts
measured across a resistor is equal to
the current in amps
through the resistor multiplied by
the resistance in ohms.

$$V = I \times R$$



Given any two of
Voltage, Current, Resistance
The third can be determined

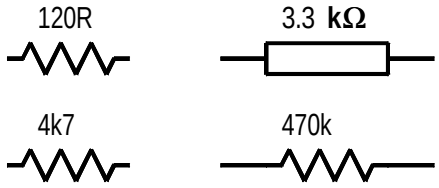


Figure 1.1:— Circuit symbols for resistors.

In circuit diagrams the resistor value may be printed beside the symbol in the format 120R, 3.3$k\Omega$, 4k7 or 470k The multiplier, R, k or M, may be used to indicate the position of the decimal point This avoids ambiguity between 4.7$k\Omega$ and 47$k\Omega$

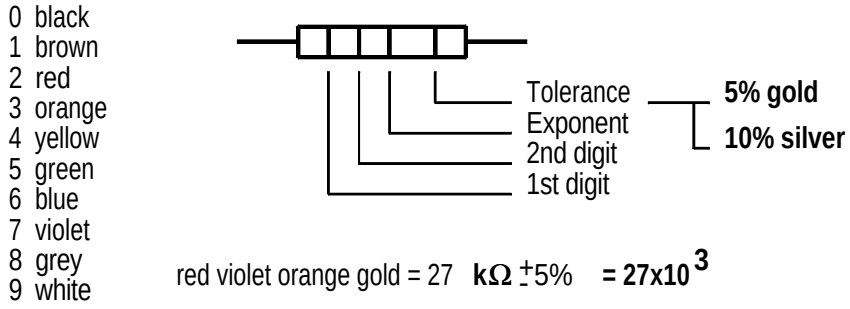


Figure 1.2:— Resistor colour codes.

There is a manufacturing tolerance on the resistor value.

Successive preferred values increase by 120% 100, 120, 150, 180, 220, 270, 330 etc

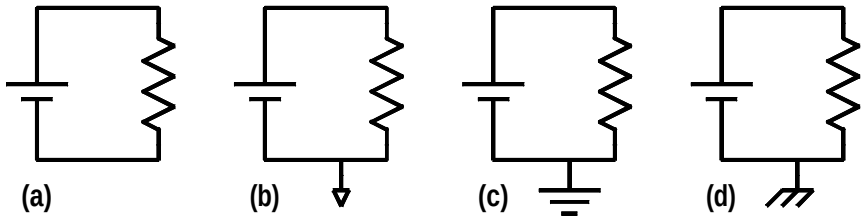


Figure 1.3 :— Common, Ground and Earth symbols

Voltages should always be quoted as
Voltage difference across a component
OR
Voltage measured with respect to a reference common or ground

Example 1
A current $1.2A$ flows in the resistor in Figure 1.4,
Calculate the voltage drop across the resistor.

Figure 1.4:—

The voltage across the resistor is given by

$$V = I \times R = 1.2A \times 3\Omega = 3.6V$$

Example 2
The voltage across the 17Ω resistor
is measured to be 34.0V.
Calculate the current in the resistor.

Figure 1.5:—

The current is

$$I = \frac{V}{R} = \frac{34.0V}{17\Omega} = 2.0$$