

Name:

Class:



A mobile phone network uses microwaves to transmit signals through the air.
The microwaves have a frequency of 1.8×10^9 Hz and travel at a speed of 3.0×10^8 m/s.
Calculate the wavelength of the microwaves. Give your answer to **two** significant figures.

$$\text{Wavelength} = \text{velocity} \div \text{frequency}$$

$$\text{Wavelength} = (3.0 \times 10^8) \div (1.8 \times 10^9)$$

$$\text{Wavelength} = \mathbf{0.17 \text{ m}}$$

State the equation that links potential difference, current and resistance.

$$V = I \times R$$

State the unit of resistance.

Ohms or Ω

A force of 350 N is applied to an area 0.025 m^2 . Calculate the resulting pressure.

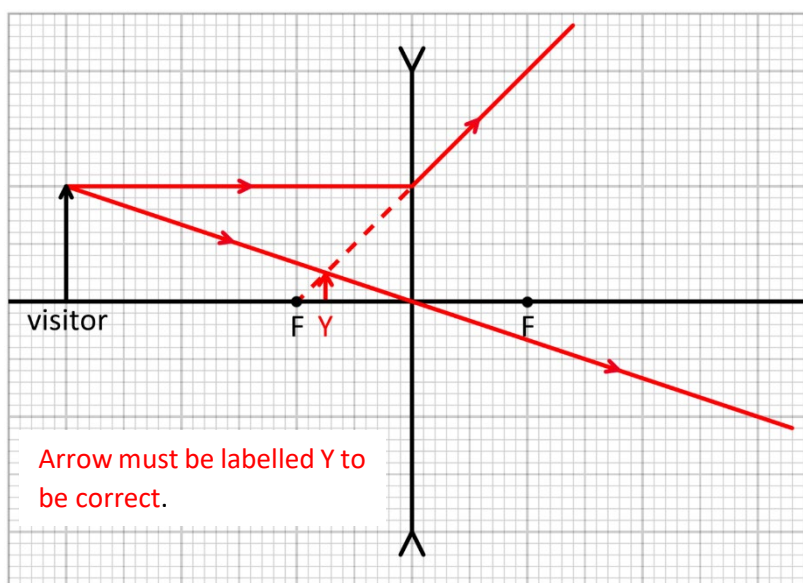
$$\text{Pressure} = \text{force} \div \text{area}$$

$$\text{Pressure} = 350 \div 0.025$$

$$\text{Pressure} = \mathbf{14\,000 \text{ Pa or } 14\,000 \text{ N/m}^2}$$

The figure below is an incomplete ray diagram representing a visitor standing near a security lens.

- i. Complete the figure to show how an image of the visitor is formed by the concave lens.
Draw an arrow to represent the image. Label the image as Y.



- ii. Describe the image formed.

A description to include **both** of the following:

- The image is reduced.
- The image is virtual.

One radioactive source used in hospitals is technetium (Tc).

Technetium is produced from the radioactive decay of molybdenum (Mo).

Complete the following nuclear equation.

