

Name:

Class:



A fuel supplies a total of 6500 kJ of energy every minute to an engine.

The efficiency of the engine is 0.70. Calculate the power output of the engine.

$$70\% \text{ of } 6500 = 4550 \text{ kJ}$$

$$\text{Power} = 4550 \div 60$$

$$\text{Power} = \mathbf{75.8 \text{ kW}}$$

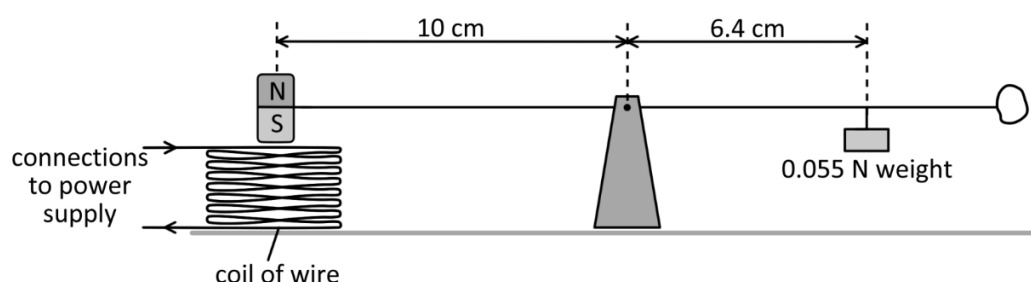
A 5.0 kg object moves at a velocity of 50 m/s. What is the momentum of the object?

$$\text{Momentum} = \text{mass} \times \text{velocity}$$

$$\text{Momentum} = 5 \times 50$$

$$\text{Momentum} = \mathbf{250 \text{ kg m/s}}$$

The student fixes a coil to a bench under the magnet as shown in the figure below.



The coil of wire is connected to a D.C. power supply so that there is a current in the coil. Calculate the size of the force between the magnet and the coil.

$$\text{Clockwise moment} = \text{force} \times \text{distance}$$

$$\text{Clockwise moment} = 0.064 \times 0.055$$

$$\text{Clockwise moment} = \mathbf{0.00352 \text{ Nm}}$$

The clockwise moment is equal to the anticlockwise moment in a balanced system.

$$\text{Anticlockwise moment} = \text{force} \times \text{distance}$$

$$0.00352 \text{ Nm} = \text{force} \times 0.10 \quad \text{force} = 0.00352 \div 0.10$$

$$\text{Force} = \mathbf{0.0352 \text{ N}}$$

Helium in a balloon has a mass of 0.0254 kg. The balloon has a volume of 0.0141 m³. Calculate the density of helium.

$$\text{Density} = 0.0254 \div 0.0141$$

$$\text{Density} = \mathbf{1.8 \text{ unit kg/m}^3}$$

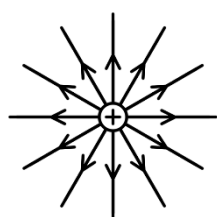
In the space below draw the electrical symbol for a thermistor.



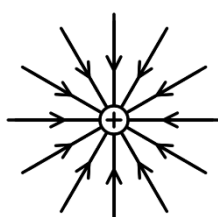
State **one** use of a thermistor.

A heating system or fire alarm system.

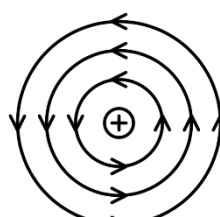
Which of these diagrams shows the shape and direction of the electric field around a positive point charge?



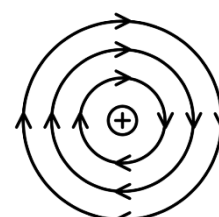
(A)



B



C



D