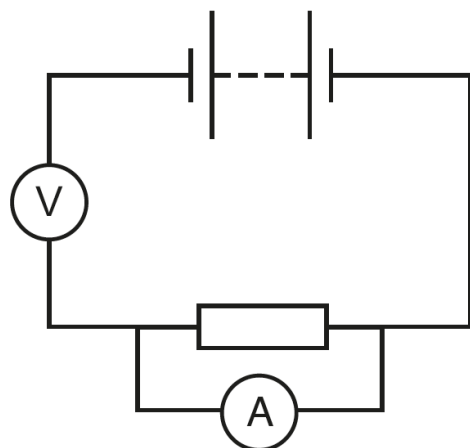


Name:

Class:



A student sets up a circuit to find out the resistance of an unknown resistor. The student makes three mistakes in their circuit. Look at the circuit diagram of their experiment.


 i. Write down the **three** mistakes the student makes.

- The voltmeter is connected in series.
- The ammeter is connected in parallel.
- One of the cells in the battery is connected the wrong way around.

ii. The student finds that the current is 20 mA when the potential difference is 4.0 V. Calculate the resistance of the unknown resistor. Include the unit for resistance in your answer.

$$20 \text{ mA} = 0.02 \text{ A}$$

$$\text{resistance} = \text{potential difference} \div \text{current}$$

$$\text{resistance} = 4.0 \div 0.02$$

$$\text{Resistance} = 200 \text{ Unit: } \Omega$$

A runner has a mass of 80 kg and moves at a speed of 5 m/s.

Calculate the kinetic energy of the runner.

$$E = \frac{1}{2} m \times v^2$$

$$E = 40 \times 25$$

$$\text{Kinetic energy} = 1000 \text{ J}$$

The acceleration of a car is 5 m/s². The mass of the car is 1310 kg.

Calculate the resultant force on the car.

$$\text{Force} = \text{mass} \times \text{acceleration}$$

$$\text{Force} = 1310 \times 5$$

$$\text{Force} = 6550 \text{ N}$$

A radioactive isotope has a half-life of 6 hours. 50 g of the isotope are put in a container. What mass of the isotope is left after 6 hours?

$$50 \div 2 = 25 \text{ g}$$

$$\text{Mass} = 25 \text{ g}$$

A person is driving along when a deer suddenly runs into the road in the way of the car. State **three** factors that will affect the braking distance of the car.

Condition of the tyres. Condition of the brakes themselves. Road conditions (wet or dry).