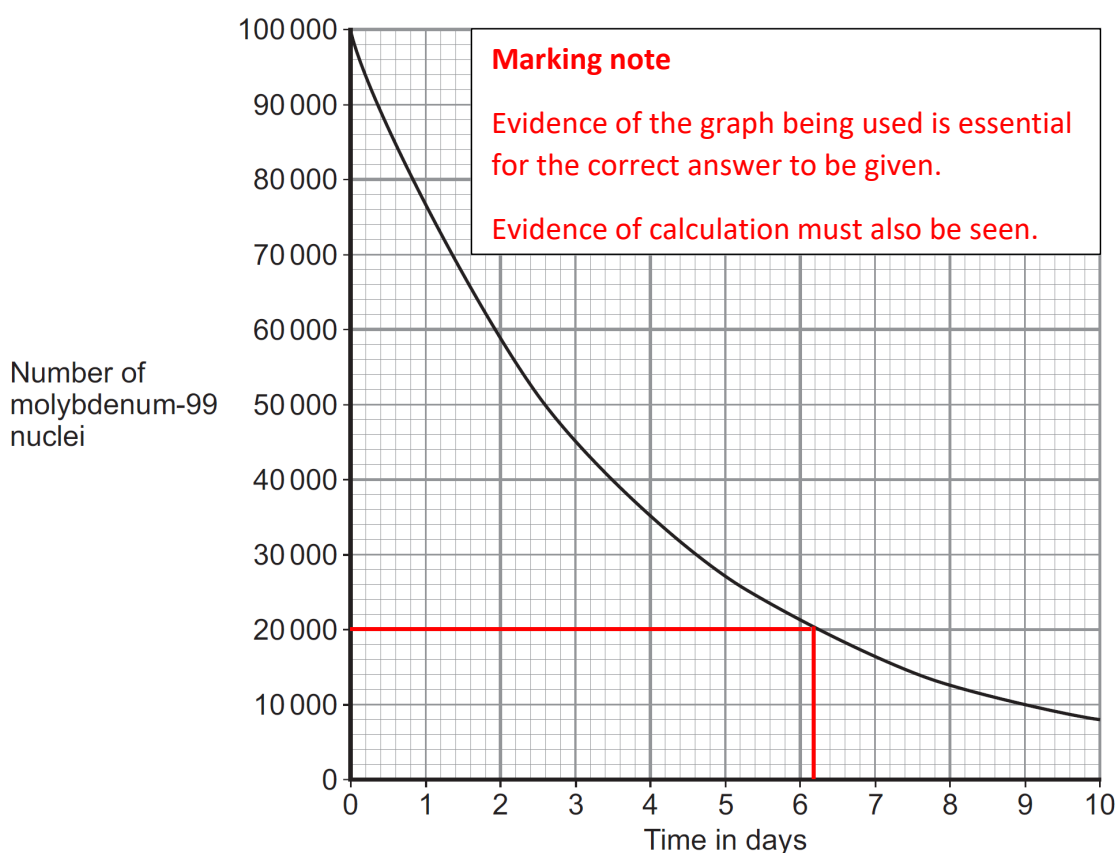


Name:

Class:



The figure below shows how the number of nuclei in a sample of molybdenum-99 changes with time as the nuclei decay.



A technetium generator will continue to produce sufficient technetium-99 until 80% of the original molybdenum nuclei have decayed. After how many days will a source of molybdenum-99 inside a technetium-99 generator need replacing?

Show clearly your calculation **and** how you use the graph to get your answer.

$$80 \% \text{ of } 100\,000 = 80\,000 \quad 100\,000 - 80\,000 = 20\,000$$

Number of days = **6**

What is a moment?

A turning effect of a force about (around) a pivot.

Convert 150 km/h to m/s.

$$150 \text{ km} = 150\,000 \text{ m} \quad 1 \text{ hour} = 3600 \text{ s}$$

$$150\,000 \div 3600 = \mathbf{41.7 \text{ m/s}}$$

A mains supply has a potential difference of 230 V.

The kettle has a current of 5.0 A. The kettle is switched on for 3.0 minutes.

Calculate the total energy transferred to the kettle in 3.0 minutes.

Power = current $\times$ potential difference

$$\text{Power} = 5 \times 230$$

$$\text{Power} = 1150 \text{ W}$$

Energy = power $\times$ time

$$\text{Energy} = 1150 \times 180$$

$$\text{Energy} = 207000 \text{ J}$$

Energy transfer = **207000 J**