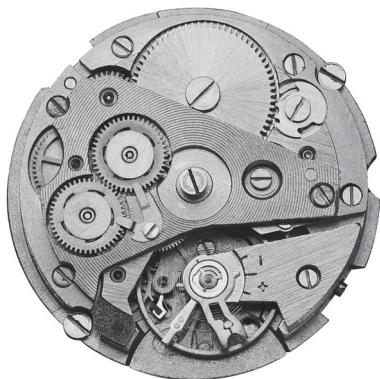


**GCSE Physics B (Twenty First Century Science)**  
**J259/04** Depth in physics (Higher Tier)

**Question Set 10**

1 This question is about gears and levers.

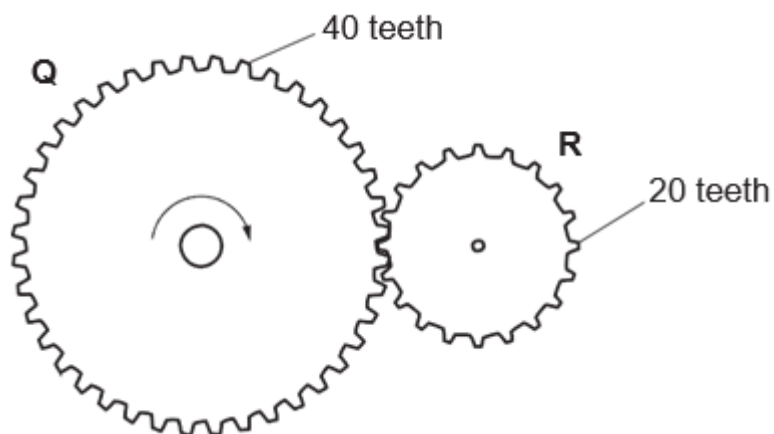
(a) A wristwatch with its back cover removed is shown in **Fig. 1.1**.



**Fig. 1.1**

You can see some of the gears inside the wristwatch.

Two gears **Q** and **R** are shown in **Fig. 1.2**.



**Fig. 1.2**

The gear **Q** has 40 teeth and gear **R** has 20 teeth. Both gears have the same size teeth.

The gear **Q** moves in a clockwise direction.

Gear **Q** rotates at 6 revolutions per minute.

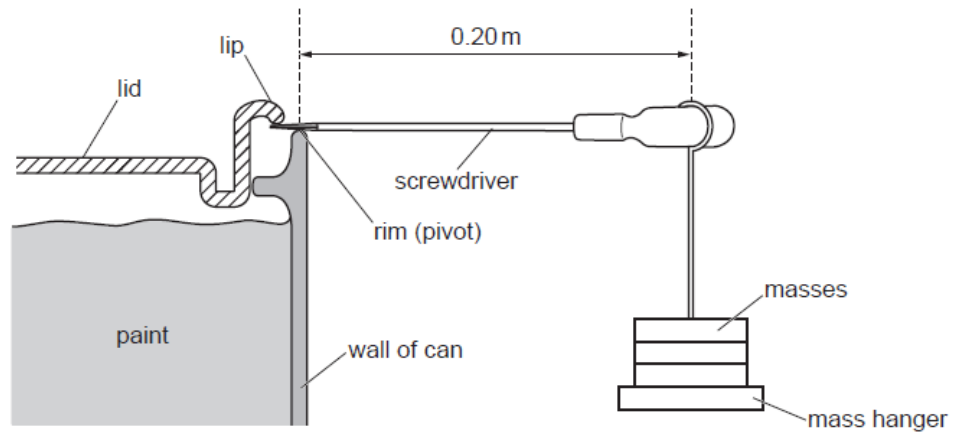
(i) On **Fig.1.2**, show the direction of rotation of gear **R**. [1]

(ii) How many revolutions are completed by gear **R** in one minute?

Number of revolutions = ..... per minute [2]

(b) The lid of a can of paint has a lip which makes it easier to open, using a lever.

The diagram below shows a screwdriver placed under the lip.



**Fig. 1.3**

In an experiment, masses are added to the mass hanger to open the lid.

The mass hanger hangs at a distance of 0.20 m from the rim (pivot) of the can.

A total weight of 32 N of the hanging masses opens the lid.

Calculate the moment of this force.

Moment = ..... Nm [3]

**Total Marks for Question Set 10: 6**

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