

Every Morning a student jogs around 200m track four times in 30mins.

What is the students:

Average speed and Average velocity? Show me a solution.

### **Solution**

A student jogs around 200m track four times, so she pass the distance:

$$S = 4 * 200 \text{ m} = 800 \text{ m}.$$

Average speed of the student:

$$v = \frac{S}{t} = \frac{800 \text{ m}}{30 \text{ min}} = \frac{800 \text{ m}}{30 * 60 \text{ s}} = 0.44 \frac{\text{m}}{\text{s}}.$$

Average velocity is a vector equal:

$$\vec{v} = \frac{\vec{s}}{t},$$

where  $\vec{s}$  – the displacement of the student,  $t$  – time of jogging.

The displacement of the student is zero because she jogs around a track four times and returns to her initial position.

Average velocity of the student:

$$\vec{v} = \frac{0}{30 \text{ min}} = 0.$$

**Answer:  $0.44 \frac{\text{m}}{\text{s}}$ ; 0.**