

Speed and Acceleration Practice

1. A man on a bicycle travels 125 kilometers in 5 hours. He stops for dinner at a restaurant along the road, then leaves. He averages the same speed for 2 more hours before reaching his destination. How far did he travel after leaving the restaurant?
2. A jogger runs east for 2 kilometers, south for 3 kilometers, west for 4 kilometers and north for 3 kilometers. The entire run takes 1 hour. Find the jogger's average speed for the entire trip and express your answer in kilometers. Where would the jogger be relative to his or her starting point at the end of the jog?
3. At 200 seconds after liftoff, a high-speed motion picture camera clocks a high speed rocket moving at 2 m/s. At 300 seconds after liftoff, the rocket is moving at 7 m/s. How fast is the rocket accelerating into orbit during the elapsed time?

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Answer Sheet

1. $S = D / t$

$S = 125 \text{ km} / 5 \text{ h} = 25 \text{ kph}$ during the first 5 hours

$D = S \times t$ so $25 \text{ kph} \times 2 \text{ hours}$ after leaving the restaurant equals 50 kilometers

2. Total distance jogged = $2 \text{ km} + 3 \text{ km} + 4 \text{ km} + 3 \text{ km} = 12 \text{ km}$

$S = D / t$

$S = 12 \text{ km} / 1 \text{ hr} = 12 \text{ kph}$

Drawing it out shows you that the jogger would be 2 km west of his starting point

3. $A = (v_1 - v_2) / t$

$a = (7\text{m/s} - 2 \text{ km/s}) / 100 \text{ s} = 5 \text{ km/s} / 100 \text{ s} = 0.05 \text{ km/s}^2$