



# LINEAR MOTION

Honors Review

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I. What is the average speed of a complete round-trip in which the outgoing 200 km is covered at 90 km/hr, followed by a one-hour lunch break, and the return 200 km is covered at 50 km/h?

- A. 47 km/h
  - B. 70 km/hr
  - C. 55 km/h
  - D. 0 km/h
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2. A sports car is advertised to be able to stop in a distance of 50 m from a speed of 90 km/h. How many g's is its acceleration?

A. 0.64

B. 6.25

C. 81

D. 8.26

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3. In coming to a stop, a car leaves skid marks 80.0 m long on the highway. Assuming an initial speed of 33.5 m/s and a deceleration of  $7.00 \text{ m/s}^2$ , estimate the time it took the car to come to a complete halt.

A. 3.38 s

B. 2.38 s

C. 5.44 s

D. 4.78 s

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4. A car speeds from rest to 25.0 m/s in 5.00 s. How far did it travel in that time?

A. 112 m

B. 125 m

C. 250 m

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5. A baseball player catches a ball 3.3 s after throwing it. With what speed did he throw it?

A. 3.0 m/s

B. 16 m/s

C. 53 m/s

D. 25 m/s

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6. A train leaves Chicago traveling at 100. km/h. It's destined for New York City, 1,200 km away. At the same time, another leaves NYC headed for Chicago at 90. km/h. How long is it before they cross paths?

A. 6.3 h

B. 12 h

C. 13 h

D. 1.3 h

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7. A bowling ball traveling with a constant speed hits the pins at the end of a bowling lane 16.5 m long. The bowler hears the sound of the ball hitting the pins 2.50 s after the ball is released from his hands. What is the speed of the ball? The speed of sound is 340 m/s.

A. 12.3 m/s

B. 6.73 m/s

C. 18.8 m/s

D. 6.60 m/s

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8. A speeding motorist traveling 120. km/h passes a stationary police officer. The officer immediately begins pursuit at a constant acceleration of 10.0 km/h/s. How much time will it take for the police officer to reach the speeder, assuming the speeder maintains a constant speed?

A. 12.0 s

B. 18.4 s

C. 24.0 s

D. 30.1 s

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9. A falling stone takes 0.30 s to travel past a window 2.2 m tall. From what height above the top of the window did the stone fall?

A. 1.8 m

B. 4.0 m

C. 2.6 m

D. 7.3 m

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10. A stone is thrown vertically upward with a speed of  $12.0 \text{ m/s}$  from the edge of a cliff  $75.0 \text{ m}$  high. How much time later does it reach the bottom of the cliff?

A.  $6.25 \text{ s}$

B.  $2.45 \text{ s}$

C.  $5.32 \text{ s}$

D.  $2.87 \text{ s}$

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11. A runner hopes to complete the 10,000-m run in less than 30.0 min. After exactly 27.0 min of running at a constant pace, there are still 1100 m to go. The runner must then accelerate at  $0.20 \text{ m/s}^2$  for how many seconds in order to achieve a run time of exactly 30.0 min?

A. 180. s

B. 73.7 s

C. 3.13 s

D. 2.53 s

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