Physics Unit Review

A speed skater travels 500 m in 35.39 s. What is their average speed?

A. 0.71 m/s

B. 14.1 m/s

C. 535 m/s

D. 1.77 x 10^4 m/s

$$v = \frac{d}{t}$$

$$= \frac{500}{35.39}$$

$$= 14.1$$

Scalar and Vector Quantities

1	Distance
2	Displacement
3	Velocity
4	Speed
5	Mass
6	Weight
7	Acceleration

Numerical Response # 2

The scalar quantities listed above are 1 4 5 6?

An electric train travels at an average speed of 6.9 m/s for 4.0 s. Calculate the distance traveled.

A. 0.58 m
B. 1.7 m
C. 11 m
D. 28 m

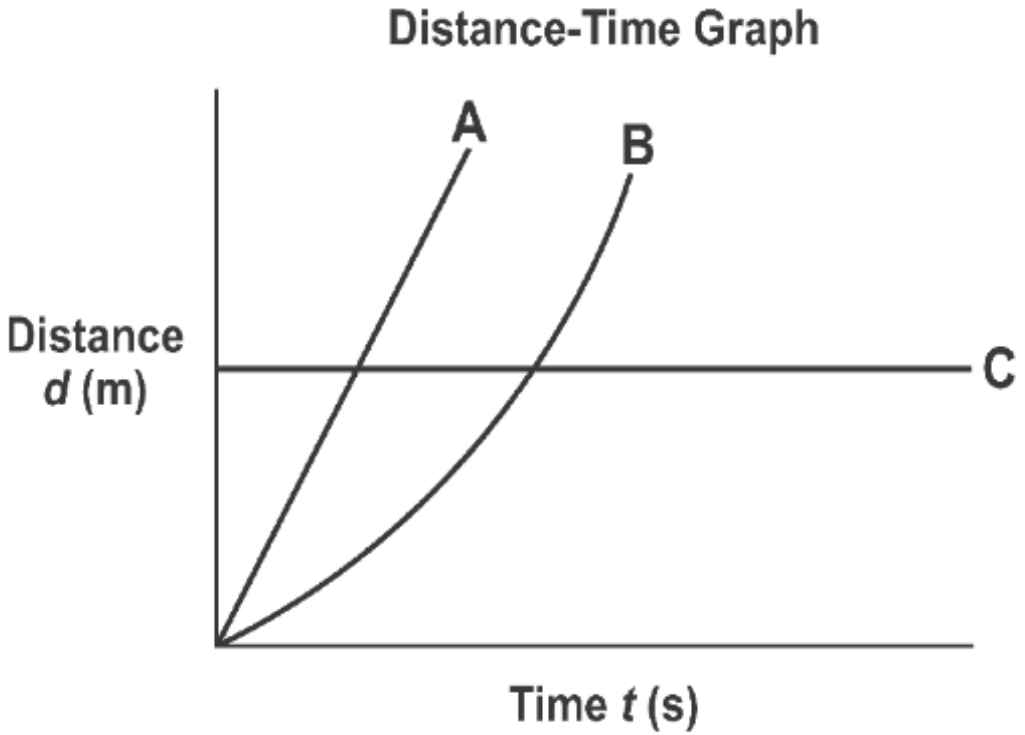
$d = v \times t$

$= 6.9 \times 4$

$= 28$

Which line(s) in the graph represent an object at rest?

A. A
B. B
C. C
D. A and C



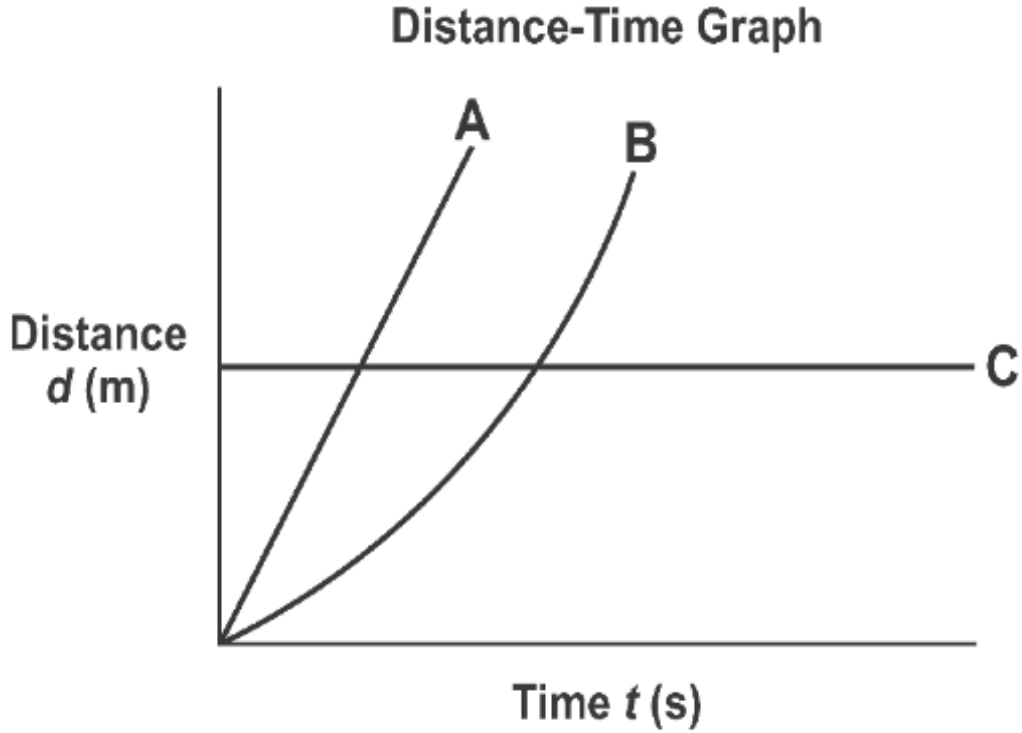
Which line(s) in the graph represent accelerated motion?

A. A

B. B

C. C

D. A and B



How long does it take a car accelerating at 0.750 m/s^2 to go from 0 m/s to 30 m/s?

A. 3.75 s

B. 11.1 s

C. 40.0 s

D. 144 s

$$a = \frac{\Delta V}{t}$$

$$t = \frac{\Delta V}{a} = \frac{30.0 - 0}{0.750}$$

$$= 40.0 \text{ s}$$

Which of the following statements is **true**?

$$a = \frac{\Delta V}{t}$$

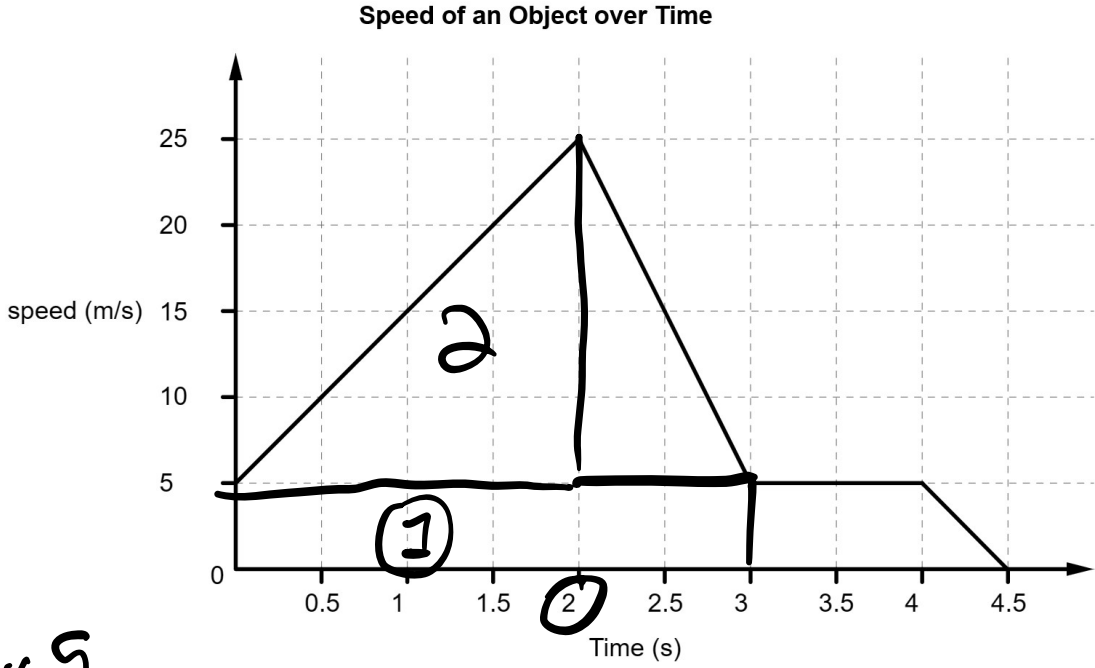
A. Acceleration is measured in m/s

B. Acceleration is a change in velocity over time

C. The slope of a velocity-time graph is the velocity

D. The slope of a distance-time graph is the acceleration

According to the graph, what is the distance travelled after 2.0 s?



A. 50 m

B. 30 m

C. 25 m

D. 20 m

$A_1 = 2 \times 5 = 10$

$A_2 = \frac{2 \times 20}{2} = 20$

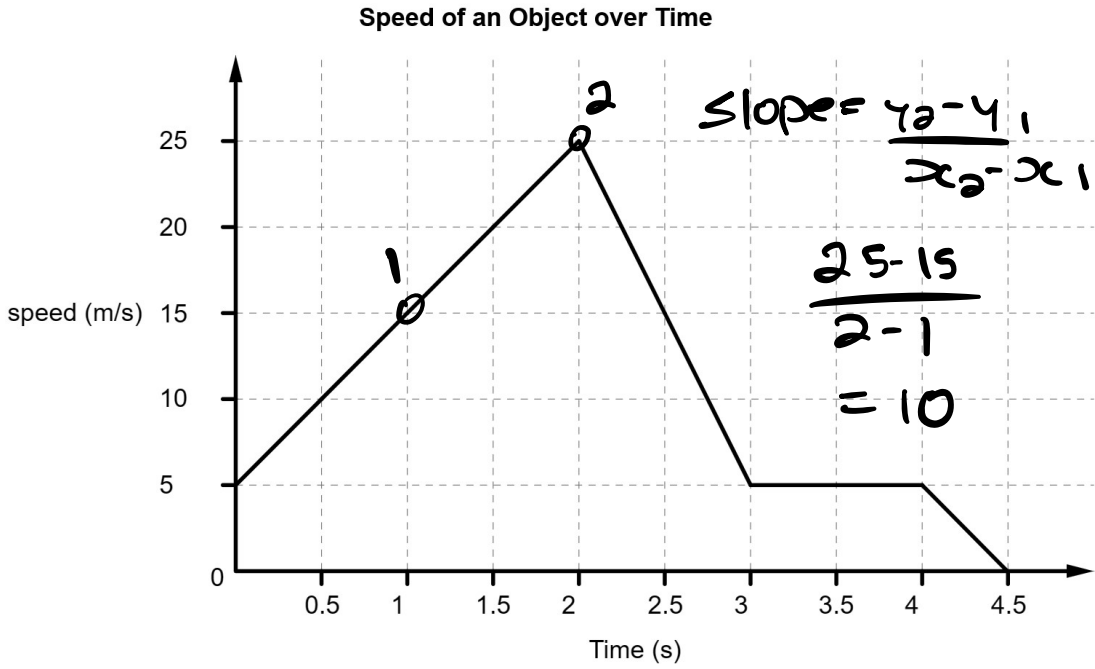
According to the graph, what is the Acceleration from 1.0 to 2.0 s?

A. 25 m/s^2

B. 20 m/s^2 m

C. 10 m/s^2

D. 5 m/s^2



Objects can gain potential energy when _____ is done on them

A. Force
B. Movement
C. Work
D. Power

$W = \Delta E$

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A force of 40.0 N is exerted on a table to move it 12.0 m. How much work is done?

A. 0.300 J

B. 3.30 J

C. 52.0 J

D. 480 J

$$W = F \times d$$
$$= 40.0\,N \times 12.0\,m$$
$$= 480\,J$$

A force of 240 N is applied to lift an elevator. If 480 J of work are done, how high was the elevator lifted?

A. 0.500 m
B. 2.00 m
C. 240 m
D. 720 m

$W = F \times d$

$\frac{W}{F} = d = \frac{480}{240} = 2.00\text{m}$

A 200 kg car is moving at a speed of 6.32 m/s. What is the car's kinetic energy?

A. 1264 J

B. 3994 J

C. 1.26 kJ

D. 3.99 kJ

$$E_k = \frac{1}{2}mv^2$$

$$= \frac{1}{2}(200)(6.32)^2$$

$$= 3994 \text{ J}$$

$$= 3.99 \times 10^3 \text{ J}$$

$$= 3.99 \text{ kJ}$$

John throws a 0.500 kg ball straight up in the air. If the ball initially has a speed of 7.0 m/s, how high above John can it go?

A. 1.6 m
B. 2.5 m
C. 0.36 m
D. 3.6 m

$$h = \frac{v^2}{2g} = \frac{7^2}{2 \times 9.81}$$

$$= 2.5\text{m}$$

A lawnmower uses 700 J of energy to do 240 J of work. How efficient is the lawnmower?

A. 34%

B. 230 %

C. 192%

D. 66%

$$\%\,eff = \frac{out}{in} = \frac{240}{700} \times 100\%$$

$$= 34\%$$

A car travels at 90 km/h. what distance can it travel in 25 seconds?

A car travels at 90 km/h. what distance can it travel in 18 minutes?

How many Joules are in 15 kJ?

A 30.0 g bullet has 21.0 kJ of kinetic energy. What is its speed in m/s?