

# Physics worksheets

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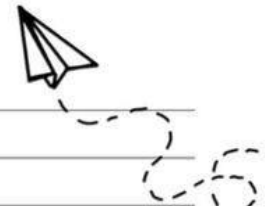


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# Physics worksheet solved



1) You ride your bike along a straight line from your house to a store 1000. m away. On your way back, you stop at a friend's house which is halfway between your house and the store.

- a) What is your displacement?
- b) What is the distance you have traveled?
- c) After talking to your friend, you continue to your house. When you arrive back at your house, what is your displacement?
- d) What is the total distance you have traveled?

○○A): 500 to the east

B) 1500 m

C) 0m

D) 2000 m

2) **MCQ** A car travels at 22.0 kph for 15.0 min and at 35.0 kph for 30.0 min. How far does it travel overall?

- a) 23.0 km
- b)  $3.70 \times 10^4$  km
- c)  $1.38 \times 10^3$  km
- d)  $3.30 \times 10^2$  km

23 km

3) **MCQ** A car travels at 22.0 m/s north for 30.0 min and then reverses direction and travels at 28.0 m/s for 15.0 min. What is the car's total displacement?

- a)  $1.44 \times 10^4$  m
- b)  $648 \times 10^4$  m
- c)  $3.96 \times 10^4$  m
- d)  $9.98 \times 10^4$  m



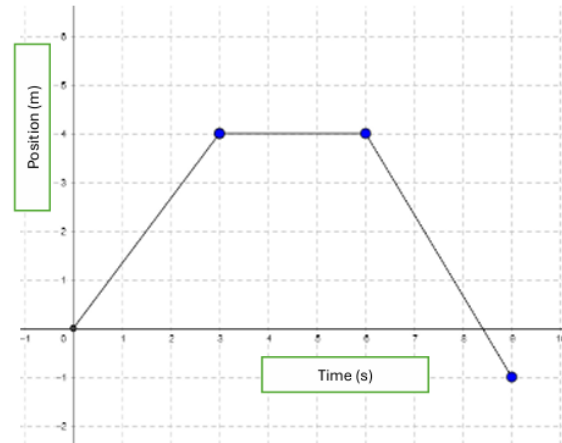
a

# Physics worksheet solved



6) the given position-time graph represents the motion of an object in one dimension

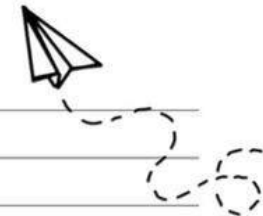
- a) What is the total distance
- b) What is the total displacement
- c) What is the average velocity between  $t = 3$  and  $t = 9$
- d) What is the average speed between  $t = 3$  and  $t = 9$



- A) 9m
- B) -1m
- C) -0.83
- D) 5/6 m/s



# Physics worksheet solved



- 1) The position of a particle moving along the x-axis is given by

$$x(t) = 11 + 3t^3 - t$$

where  $x(t)$  is measured in meters and  $t$  is measured in seconds.

- Find the position  $t = 2.00$
- Find the displacement between  $t = 0.00$ ,  $t = 2.00$
- Find the average velocity between  $t = 0.00$ ,  $t = 2.00$
- Find the instantaneous velocity at  $t = 2.00$

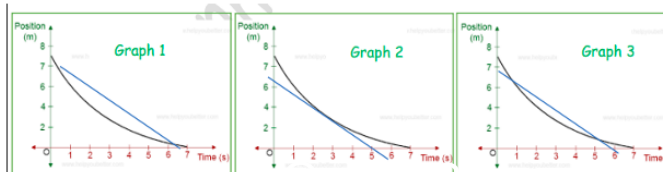
A) 33

B) 22

C) 11

D) 35

- 2) **MCQ** Which graph can be used to find the instantaneous velocity of an object at a specific instant?



- Graph 1.
- Graph 2.
- Graph 3.
- None of them.

Graph 2

3) The position of an object as a function of time is given as

$$x(t) = t^3 - t + 1$$

where  $x(t)$  is measured in meters and  $t$  is measured in seconds

- Find the instantaneous velocity at  $t = 2.00$
- Find average acceleration between  $t = 0.00$ ,  $t = 2.00$
- Find the instantaneous acceleration at  $t = 0.00$ ,  $t = 1.00$ , and  $t = 2.00$

A) 11

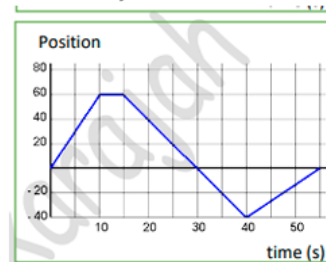
B) 6

C) 12

4) MCQ Based on the graph, in what time range we can say that the object is at rest

- (0 to 10) s
- (10 to 15) s
- (25 to 40) s
- (40 to 55) s

From 10 -15





5) MCQ Four objects, their motion is represented by the four position functions, which one has constant acceleration

a)  $x(t) = t^2 - t + 2$

b)  $x(t) = t^3 - t + 1$

c)  $x(t) = t^4 - t + 1$

d)  $x(t) = t^5 - t + 1$

A

This figure describes the position of an object as a function of time.

Refer to it to answer Questions 1–4

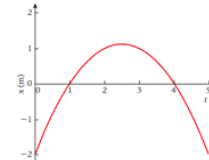
1) MCQ Which one of the following statements is true at  $t = 1$  s?

a) The x-component of the velocity of the object is zero.

b) The x-component of the acceleration of the object is zero.

c) The x-component of the velocity of the object is positive.

d) The x-component of the velocity of the object is negative.



2) MCQ Which one of the following statements is true at  $t = 4$  s?

a) The x-component of the velocity of the object is zero.

b) The x-component of the acceleration of the object is zero.

c) The x-component of the velocity of the object is positive.

d) The x-component of the velocity of the object is negative.

3) MCQ Which one of the following statements is true at  $t = 2.5$  s?

a) The x-component of the velocity of the object is zero.

b) The x-component of the acceleration of the object is zero.

c) The x-component of the velocity of the object is positive.

d) The x-component of the velocity of the object is negative.

4) MCQ Which one of the following statements is true at  $t = 2.5$  s?

a) The x-component of the acceleration of the object is zero.

b) The x-component of the acceleration of the object is positive.

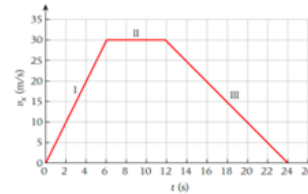
c) The x-component of the acceleration of the object is negative.

d) The acceleration of the object at that time can't be determined from the figure.

6) A fellow student found in the performance data for his new car the velocity-versus-time graph shown in the figure.

a) Find the average acceleration of the car during each of the segments I, II, and III.

b) What is the total displacement traveled by the car from  $t = 0$  s to  $t = 24$  s?



A) 5,0,-2.5

B) 90 m

1) Suppose the acceleration function of a moving object is given by

$$a(t) = -4t \hat{x}$$

where  $a(t)$  is measured in  $\text{m/s}^2$  and  $t$  is measured in seconds.

a) What is the position function, Knowing that  $\mathbf{v} = 3 \text{ m/s}$  at  $t = 0$

b) Find the change in velocity between  $t = 1$  to  $t = 4$

A)  $x(t) = -2/3t(3) + 3t$

B) 1,-29

2) MCQ Which of these statements is (are) true?

1. An object can have zero acceleration and be at rest.

2. An object can have nonzero acceleration and be at rest.

3. An object can have zero acceleration and be in motion.

- 
- 3) How much time does it take for a car to accelerate from a standing start to 22.2 m/s if the acceleration is constant and the car covers 243 m during the acceleration?
- 

1.01 m/s(2)

- 1) A ball is thrown straight upward in the air at a speed of 15.0 m/s. Ignore air resistance.
- What is the maximum height the ball will reach?
  - What is the needed time to arrive the maximum height
  - If the stone come down to the ground, what is the needed tome to arrive ground
  - What is its velocity when it hits the ground

A) 11.5

B) 1.5s

C) 1.5s

D) 15 m/s