Question 1

An object moves at a constant speed of 6 m/s. This means that the object:

A. Increases its speed by 6 m/s every second

B. Decreases its speed by 6 m/s every second

C. Doesn't move

D. Has a positive acceleration

E. Moves 6 meters every second

Question 1

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A. Increases its speed by 6 m/s every second

B. Decreases its speed by 6 m/s every second

C. Doesn't move

D. Has a positive acceleration

E. Moves 6 meters every second

Question 2

A toy car moves 8 m in 4 s at a constant velocity. What is the car's velocity?

A. 1 m/s

B. 2 m/s

C. 3 m/s

D. 4 m/s

E. 5 m/s

Question 2

A toy car moves 8 m in 4 s at a constant velocity. What is the car's velocity?

A. 1 m/s

B. 2 m/s

C. 3 m/s

D. 4 m/s

E. 5 m/s

Question 3

A train moves at a constant velocity of 50 km/h. How far will it move in 0.5 h?

A. 10 km

B. 20 km

C. 25 km

D. 45 km

E. 50 km

Question 3

A train moves at a constant velocity of 50 km/h. How far will it move in 0.5 h?

A. 10 km

B. 20 km

C. 25 km

D. 45 km

E. 50 km

Question 4

A boat can move at a constant velocity of 8 km/h in still water. How long will it take for the boat to move 24 km?
A. 2 h
B. 3 h
C. 4 h
D. 6 h
E. 8 h

Question 4

A boat can move at a constant velocity of 8 km/h in still water. How long will it take for the boat to move 24 km?
A. 2 h
B. 3 h
C. 4 h
D. 6 h
E. 8 h

Question 5

Starting from the origin, a person walks 6 km east during the first day, and 3 km east the next day. What is the net displacement of the person from the initial point in two days?
A. 6 km, west
B. 3 km, east
C. 10 km, east
D. 5 km, west
E. 9 km, east

Question 5

Starting from the origin, a person walks 6 km east during the first day, and 3 km east the next day. What is the net displacement of the person from the initial point in two days?
A. 6 km, west
B. 3 km, east
C. 10 km, east
D. 5 km, west
E. 9 km, east

Question 6

An object moves with a constant acceleration of 5 m/s^2. Which of the following statements is true?
A. The object's velocity stays the same
B. The object moves 5 m each second
C. The object's acceleration increases by 5 m/s^2 each second
D. The object's acceleration decreases by 5 m/s^2 each second
E. the object's velocity increases by 5 m/s each second

Question 6

An object moves with a constant acceleration of 5 m/s^2. Which of the following statements is true?
A. The object's velocity stays the same
B. The object moves 5 m each second
C. The object's acceleration increases by 5 m/s^2 each second
D. The object's acceleration decreases by 5 m/s^2 each second
E. the object's velocity increases by 5 m/s each second

Question 7

V₀ → **Vf** →

A truck travels east with an increasing velocity. Which of the following is the correct direction of the car's acceleration?

A. →   B. ↗   C. ↓

D. ←   E. ↘

Question 7

V₀ → **Vf** →

A truck travels east with an increasing velocity. Which of the following is the correct direction of the car's acceleration?

A. → (circled)   B. ↗   C. ↓

D. ←   E. ↘

Question 8

V₀ → **Vf** →

A motorbike travels east and begins to slow down before a traffic light. Which of the following is the correct direction of the motorbike's acceleration?

A. →   B. ↗   C. ↓

D. ←   E. ↘

Question 8

V₀ → **Vf** →

A motorbike travels east and begins to slow down before a traffic light. Which of the following is the correct direction of the motorbike's acceleration?

A. →   B. ↗   C. ↓

D. ← (circled)   E. ↘

Question 9

← **Vf**   ← **V₀**

. A race car moving west begins to slow down after crossing a finish line. Which of the following is the correct direction of the car's acceleration?

A. →   B. ↗   C. ↓

D. ←   E. ↘

Question 9

← **Vf**   ← **V₀**

. A race car moving west begins to slow down after crossing a finish line. Which of the following is the correct direction of the car's acceleration?

A. → (circled)   B. ↗   C. ↓

D. ←   E. ↘

Question 10

A car and a delivery truck both start from rest and accelerate at the same rate. However, the car accelerates for twice the amount of time as the truck. What is the final speed of the car compared to the truck?

A. Half as much

B. The same

C. Twice as much

D. Four times as much

E. One quarter as much

Question 10

A car and a delivery truck both start from rest and accelerate at the same rate. However, the car accelerates for twice the amount of time as the truck. What is the final speed of the car compared to the truck?

A. Half as much

B. The same

C. Twice as much

D. Four times as much

E. One quarter as much

Question 11

An object is released from rest and falls in the absence of air resistance. Which of the following is true about its motion?

A. Its acceleration is zero

B. Its acceleration is constant

C. Its velocity is constant

D. Its acceleration is increasing

E. Its velocity is decreasing

Question 11

An object is released from rest and falls in the absence of air resistance. Which of the following is true about its motion?

A. Its acceleration is zero

B. Its acceleration is constant

C. Its velocity is constant

D. Its acceleration is increasing

E. Its velocity is decreasing

Question 12

The graph represents the relationship between velocity and time for an object moving in a straight line. Which of the following statements is true about the graph?
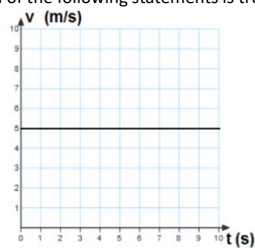
A. The object speeds up

B. The object slows down

C. The object moves with a constant velocity

D. The object stays at rest

E. The object is in free fall

Question 12

The graph represents the relationship between velocity and time for an object moving in a straight line. Which of the following statements is true about the graph?

A. The object speeds up

B. The object slows down

C. The object moves with a constant velocity

D. The object stays at rest

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26/01/2018

Question 13

The graph represents the relationship between velocity and time for an object moving in a straight line. What is the velocity of the object at 5 s?
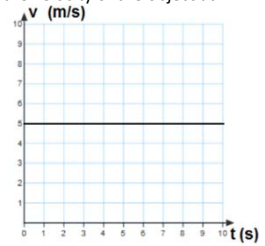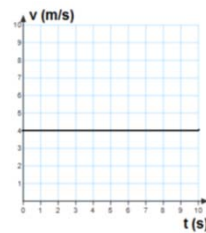
A. 1 m/s
B. 2 m/s
C. 3 m/s
D. 4 m/s
E. 5 m/s

Question 14

The graph represents the relationship between velocity and time for an object moving in a straight line. What is the traveled distance of the object from zero to 9s?
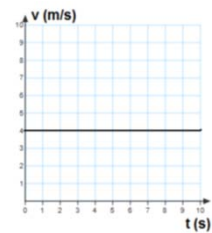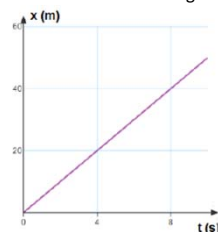
A. 10 m
B. 24 m
C. 36 m
D. 48 m
E. 56 m

Question 15

The graph represents the position as a function of time for a moving object. Which of the following is true?

A. The object increases its velocity
B. The object decreases its velocity
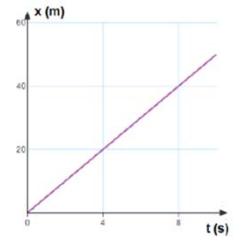C. The object's velocity stays unchanged
D. The object stays at rest
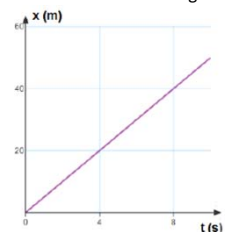
Question 16

The graph represents the position as a function of time for a moving object

What is the velocity of the object?

A. 4 m/s
B. 20 m/s
C. 8 m/s
D. 40 m/s
E. 5 m/s
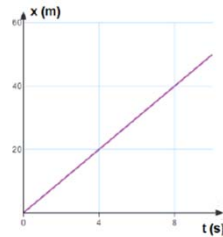
Question 16

The graph represents the position as a function of time for a moving object
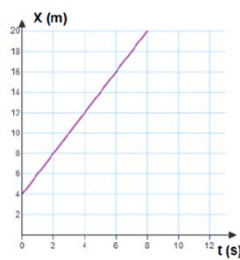
What is the velocity of the object?

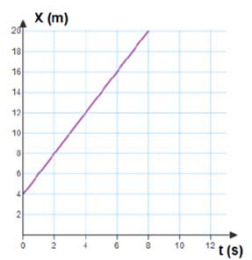A. 4 m/s
B. 20 m/s
C. 8 m/s
D. 40 m/s
E. 5 m/s

Question 17

The graph represents the position as a function of time for a moving object. What is the initial position of the object?

A. 2 m
B. 4 m
C. 6 m
D. 8 m
E. 10 m

Question 17

The graph represents the position as a function of time for a moving object. What is the initial position of the object?
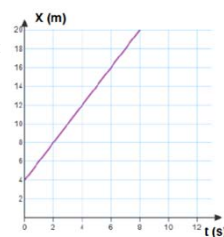
A. 2 m
B. 4 m
C. 6 m
D. 8 m
E. 10 m

Question 18

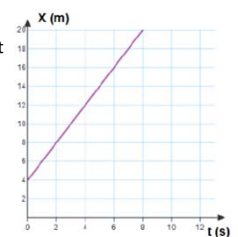The graph represents the position as a function of time for a moving object. What is the velocity of the object?

A. 2 m/s
B. 4 m/s
C. 6 m/s
D. 8 m/s
E. 10 m/s

Question 18

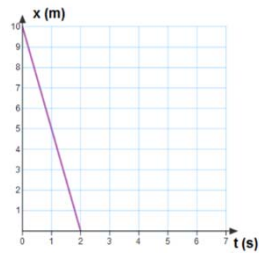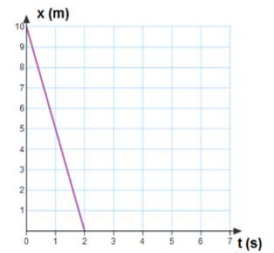The graph represents the position as a function of time for a moving object. What is the velocity of the object?

A. 2 m/s
B. 4 m/s
C. 6 m/s
D. 8 m/s
E. 10 m/s

Question 19

The graph represents the position as a
function of time for a moving object
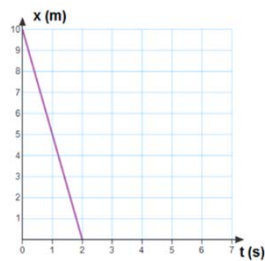What is the initial position of the object?

A. 2 m
B. 4 m
C. 6 m
D. 8 m
E. 10 m

Question 20

The graph represents the position as
a function of time for a moving
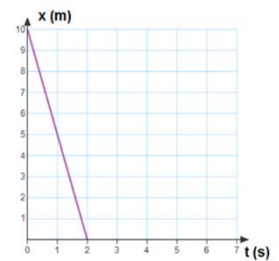object. What is the velocity of the
object?

A. 5 m/s
B. -5 m/s
C. 10 m/s
D. -10 m/s
E. 0 m/s

Question 21

Which of the following is a vector quantity?
A. Speed
B. Time
C. Traveled distance
D. Velocity
E. Area

Grade 8 Only

Question 22

If an object is rolled down an inclined plane, it will accelerate at a constant rate, but one that is…

A. Smaller than g
B. Bigger than g
C. Equal to g

Grade 8 Only

Question 22

If an object is rolled down an inclined plane, it will accelerate at a constant rate, but one that is…

A. Smaller than g
B. Bigger than g
C. Equal to g

http://www.batesville.k12.in.us/physics/phynet/mechanics/RotMechanics/fall_slide_roll.htm

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Grade 8 Only

Question 23

If an object is rolled down an inclined plane, it will accelerate at a constant rate. An object rolled from rest down an inclined rolls 1 m in the first 1 second. What is the acceleration of the object?

A. ½ m/s²
B. 1 m/s²
C. 2 m/s²

Grade 8 Only

Question 23

If an object is rolled down an inclined plane, it will accelerate at a constant rate. An object rolled from rest down an inclined rolls 1 m in the first 1 second. What is the acceleration of the object?

A. ½ m/s²
B. 1 m/s²
C. 2 m/s²

$$\Delta x = v_i t + \frac{1}{2} a t^2$$
$$\Delta x = \frac{1}{2} a t^2$$
$$a = \frac{2\Delta x}{t^2}$$

https://www.quora.com/If-I-am-at-rest-and-I-start-to-move-with-constant-acceleration-2-m-s-2-wouldnt-I-have-traveled-2-m-in-the-first-second

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Grade 8 Only

Question 24

If an object is rolled down an inclined plane, it will accelerate at a constant rate. An object rolled from rest down an inclined rolls 1 m in the first 1 second. (in the last problem we learned a = 2 m/s²) What is the velocity of the object after that 1 second?

A. 0 m/s
B. ½ m/s
C. 1 m/s
D. 2 m/s

Grade 8 Only

Question 24

If an object is rolled down an inclined plane, it will accelerate at a constant rate. An object rolled from rest down an inclined rolls 1 m in the first 1 second. (in the last problem we learned a = 2 m/s²) What is the velocity of the object after that 1 second?

A. 0 m/s
B. ½ m/s
C. 1 m/s
D. 2 m/s

$$a = \frac{v_f - v_i}{t}$$
$$v_f - v_i = at$$
$$v_f = at + v_i = (2m/s^2 * 1s) + 0m/s$$

Grade 8 Only

Question 25

If an object is rolled down an inclined plane, it will accelerate at a constant rate, but one that is smaller than g.

An object rolled from rest down an inclined rolls 1 m in the first 1 second. (now we know a=2 m/s^2 and v$_1$=2 m/s) how far does it roll in the next 1 second (from t = 1 to t = 2)

A. 1 m
B. 2 m
C. 3 m
D. 4 m

$$\Delta x = v_i t + \frac{1}{2} a t^2$$
$$= (2*1) + (\tfrac{1}{2} * 2 * 1^2)$$
$$= 2 + 1$$
$$= 3m$$

Grade 8 Only

Question 26

An elephant, initially at rest on a frictionless ice pond, burps and recoils with a constant acceleration. After it has moved through a distance of 2.4 meters, its speed is 0.3 m/s.

What was its acceleration?
A. 0 m/s^2
B. 0.019 m/s^2
C. 0.09 m/s^2
D. 0.432 m/s^2

$$v_f^2 = v_i^2 + 2a\Delta x$$
$$2a\Delta x = v_f^2 - v_i^2$$
$$a = (v_f^2 - v_i^2)/2 \,\Delta x$$
$$= 0.3^2 / (2 * 2.4) = 0.019 \text{ m/s}^2$$

Question 27

What acceleration must a car have if its speed is to change from 11.6 m/s to 16.4 m/s in 3.6 seconds?

A. 0 m/s^2
B. 1.33 m/s^2
C. 4.5 m/s^2
D. 17.28 m/s^2

$$a = \frac{v_f - v_i}{t}$$

Question 28

How many seconds will it take a car to travel 45.3 meters if it starts at rest and it accelerates at 3.7 m/s².

A. 2.8 s
B. 4.9 s
C. 7.9 s
D. 15.9 s

Grade 8 Only

Question 28

How many seconds will it take a car to travel 45.3 meters if it starts at rest and it accelerates at 3.7 m/s².

A. 2.8 s
B. 4.9 s
C. 7.9 s
D. 15.9 s

$$\Delta x = v_i t + \frac{1}{2} a t^2$$
$$= \frac{1}{2} a t^2$$

$$t = \sqrt{(2\Delta x / a)}$$
$$= \sqrt{((2*45.3)/3.7)}$$

Question 29

The speed of an object one second after it has been dropped from rest out of a high office window on the planet Mitochondria is 8 m/s. What will its speed be 3 seconds after it was first dropped?

A. 8 m/s
B. 24 m/s
C. 12 m/s
D. 72 m/s
E. 36 m/s

Question 29

The speed of an object one second after it has been dropped from rest out of a high office window on the planet Mitochondria is 8 m/s. What will its speed be 3 seconds after it was first dropped?

A. 8 m/s
B. 24 m/s
C. 12 m/s
D. 72 m/s
E. 36 m/s

$$a = \frac{v_f - v_i}{t} = \frac{8 - 0}{1} = 8 \text{m/s}^2$$

$$v_f = at + v_i = (8 \text{ m/s}^2 * 3) + 0$$

Question 30

An object is thrown upward from the ground at sea level on Earth with an initial speed of 30 m/s. Which of the following is closest to the total time that the object will be in the air before it strikes the ground again?

A. 2.5 seconds
B. 6.0 seconds
C. 3.0 seconds
D. 5.0 seconds
E. 30 seconds

Question 30

An object is thrown upward from the ground at sea level on Earth with an initial speed of 30 m/s. Which of the following is closest to the total time that the object will be in the air before it strikes the ground again?

A. 2.5 seconds
B. 6.0 seconds
C. 3.0 seconds
D. 5.0 seconds
E. 30 seconds

$$a = \frac{v_f - v_i}{t}$$

$$t = \frac{v_f - v_i}{a} = \frac{0 - 30}{-9.8} = 3.06\text{s}$$

Question 31

A ball is thrown vertically up and is caught when it returns to the same vertical position from which it was thrown. The ball takes 3 seconds to reach its maximum height. For what total time interval is the ball in the air? Neglect air friction.

A. between 3 seconds and 6 seconds

B. 6 seconds

C. longer than 6 seconds

D. 9.8 seconds

E. 19.6 seconds

Question 31

A ball is thrown vertically up and is caught when it returns to the same vertical position from which it was thrown. The ball takes 3 seconds to reach its maximum height. For what total time interval is the ball in the air? Neglect air friction.

A. between 3 seconds and 6 seconds

B. 6 seconds

C. longer than 6 seconds

D. 9.8 seconds

E. 19.6 seconds

Grade 8 Only

Question 32

A physics teacher finds a scrap of paper on which one of his students has written the following equation: $(0)^2 - (27)^2 = 2(-9.8)x$

For which of the following problems would this equation be part of the correct solution?

A. Find the speed of an object 27 seconds after it was dropped from rest.

B. Find the distance an object has fallen 27 seconds after it was released from rest on Earth.

C. Find the maximum height to which a ball will rise if it is thrown upward with an initial speed of 27 m/s.

D. Find the distance an object travels if it accelerates uniformly from rest and reaches a speed of 27 m/s after 9.8 seconds have elapsed

E. Find the time it takes an object to hit the ground if it is dropped from a height of 27 meters

Grade 8 Only

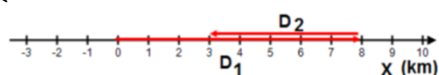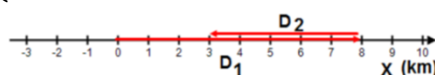## Question 32

$$v_f^2 = v_i^2 + 2a\Delta x$$
$$v_f^2 - v_i^2 = 2a\Delta x$$

A physics teacher finds a scrap of paper on which one of his students has written the following equation: $(0)^2 - (27)^2 = 2(-9.8)x$

For which of the following problems would this equation be part of the correct solution?

A. Find the speed of an object 27 seconds after it was dropped from rest.

B. Find the distance an object has fallen 27 seconds after it was released from rest on Earth.

C. Find the maximum height to which a ball will rise if it is thrown upward with an initial speed of 27 m/s.

D. Find the distance an object travels if it accelerates uniformly from rest and reaches a speed of 27 m/s after 9.8 seconds have elapsed

E. Find the time it takes an object to hit the ground if it is dropped from a height of 27 meters

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Question 33

What is the net displacement of the person from the initial point in two days?

A. 6 km, east

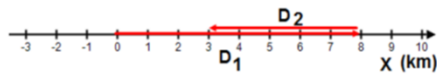B. 3 km, east

C. 10 km, west

D. 5 km, west

E. 9 km, east

Question 33

What is the net displacement of the person from the initial point in two days?

A. 6 km, east

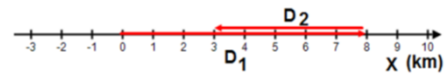**B. 3 km, east**

C. 10 km, west

D. 5 km, west

E. 9 km, east

Question 34

What is the traveled distance of the person from the initial point in two days?
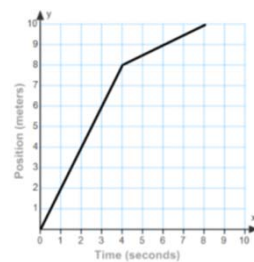
A. 13 km
B. 3 km
C. 10 km
D. 5 km
E. 9 km

Question 34

What is the traveled distance of the person from the initial point in two days?

A. **13 km**
B. 3 km
C. 10 km
D. 5 km
E. 9 km

Question 35

What is the average speed from 0 s to 4 s?
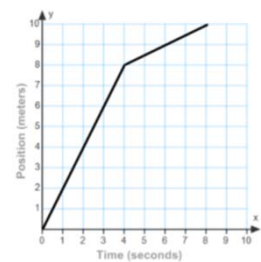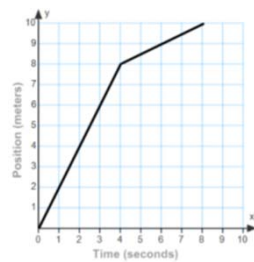
A. 0.5 m/s
B. 1 m/s
C. 2 m/s
D. 3 m/s
E. 4 m/s

Question 35

What is the average speed from 0 s to 4 s?

A. 0.5 m/s
B. 1 m/s
C. 2 m/s $\frac{8-0}{4-0} = \frac{8}{4}$
D. 3 m/s
E. 4 m/s

Question 36

What is the average speed from 4 s to 8 s?

A. 0.5 m/s
B. 1 m/s
C. 2 m/s
D. 3 m/s
E. 4 m/s

Question 36

What is the average speed from 4 s to 8 s?

A. 0.5 m/s $\frac{10-8}{8-4} = \frac{2}{4}$
B. 1 m/s
C. 2 m/s
D. 3 m/s
E. 4 m/s
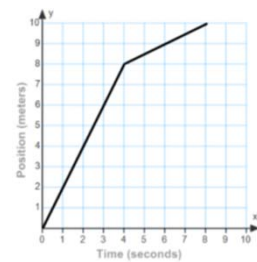
Question 37

What is the object's
position at 6 s?

A. 2 m
B. 1 m
C. 3 m
D. 7 m
E. 9 m
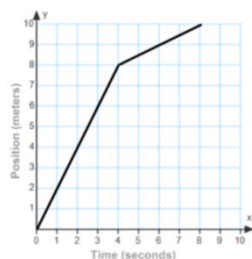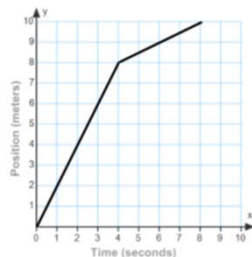

Question 37

What is the object's
position at 6 s?
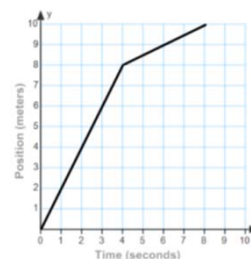
A. 2 m
B. 1 m
C. 3 m
D. 7 m
E. 9 m

Question 38

What is the average acceleration
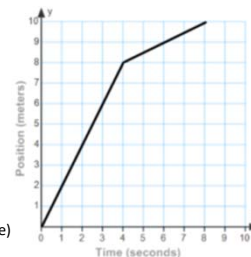from 4 s to 8 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4 m/s²

Question 38

What is the average acceleration
from 4 s to 8 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4 m/s²

constant velocity (not a curve)

Question 40

What is the acceleration of the
object between 0 s
and 2 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4 m/s²
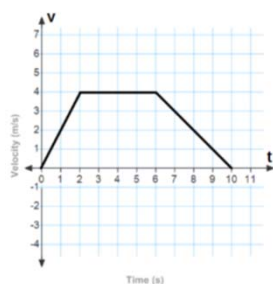
Question 40
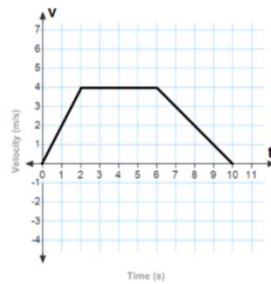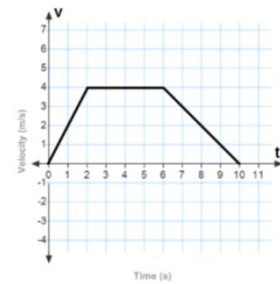
What is the acceleration of the
object between 0 s
and 2 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s² $\frac{4-0}{2-0}=\frac{4}{2}$
D. 3 m/s²
E. 4 m/s²
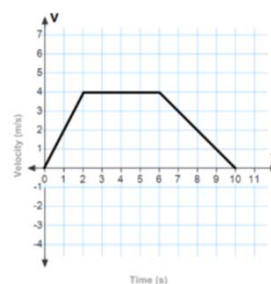
Question 41

What is the acceleration of the object between 2 s

and 6 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4m/s²

Question 41
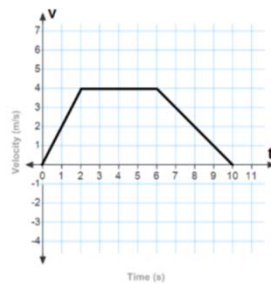
What is the acceleration of the object between 2 s

and 6 s?

A. 0 m/s²   constant velocity (horizontal line)
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4m/s²

Question 42

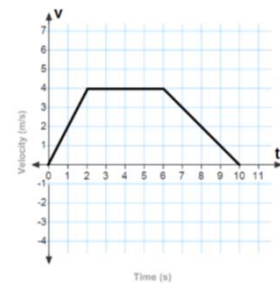What is the magnitude of the acceleration of the object between 6 s

and 10 s?

A. 0 m/s²
B. 1 m/s²
C. 2 m/s²
D. 3 m/s²
E. 4m/s²

Question 42

What is the **magnitude** of the acceleration of the object between 6 s

and 10 s?

A. 0 m/s²
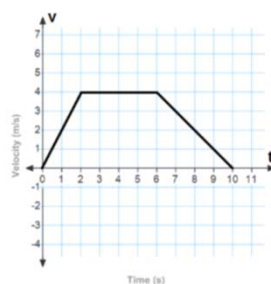**B. 1 m/s²** $\frac{10-6}{0-4} = \frac{4}{-4}$
C. 2 m/s²
D. 3 m/s²
E. 4m/s²

Question 43

How far from the origin does the object move in first 2 s?
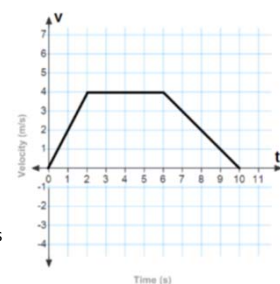
A. 4 m
B. 16 m
C. 20 m
D. 28 m
E. 36 m

Question 43

How far from the origin does the object move in first 2 s?
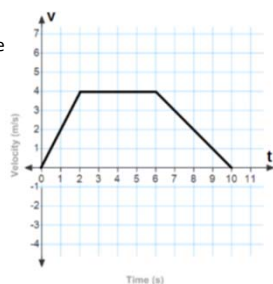
A. 4 m
B. 16 m
C. 20 m
D. 28 m
E. 36 m

area under the graph in 1st 2s
= ½ * 2 * 4 = 1 * 4

Question 44

How far from the origin does the object move in first 6 s?
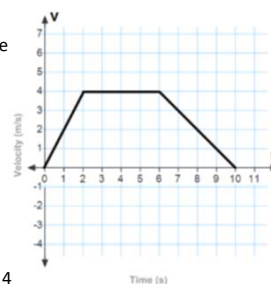
A. 4 m
B. 16 m
C. 20 m
D. 28 m
E. 36 m

Question 44

How far from the origin does the object move in first 6 s?

A. 4 m
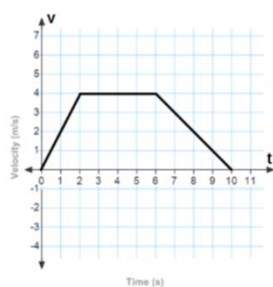B. 16 m
C. 20 m
D. 28 m
E. 36 m

area under the graph from 2s – 6s
= 4 * (6 – 2) = 4 * 4 = 16
area under the graph from 0s – 2s = 4
total displacement = 16 + 4

Question 45

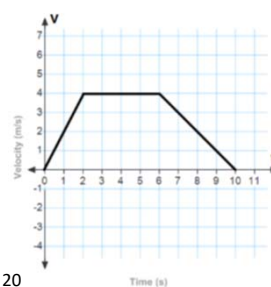How far from the origin does the object move in first 10 s?

A. 4 m
B. 16 m
C. 20 m
D. 28 m
E. 36 m

Question 45
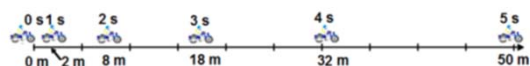
How far from the origin does the object move in first 10 s?

A. 4 m
B. 16 m
C. 20 m
D. 28 m
E. 36 m

area under the graph from 6s – 10s
= ½ * 4 * 4 = 8
area under the graph from 0s – 6s = 20
total displacement = 20 + 8

Question 46
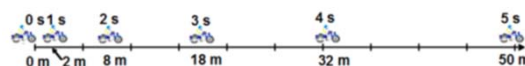
0 s 1 s   2 s   3 s   4 s   5 s
0 m 2 m 8 m   18 m   32 m   50 m

What is the average velocity of the motorbike during the first 5 s?

A. 0 m/s
B. 5 m/s
C. 10 m/s
D. 15 m/s
E. 20 m/s

Question 46

0 s 1 s   2 s   3 s   4 s   5 s
0 m 2 m 8 m   18 m   32 m   50 m

What is the average velocity of the motorbike during the first 5 s?

A. 0 m/s
B. 5 m/s
C. 10 m/s
D. 15 m/s
E. 20 m/s

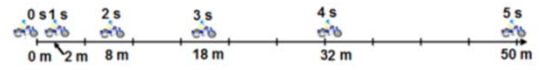$$v = \frac{d}{t} = \frac{50}{5}$$

Grade 8 Only

Question 47

What is the acceleration of the motorbike?

A. 0 m/s²
B. 2 m/s²
C. 4 m/s²
D. 6 m/s²
E. 8 m/s²

Grade 8 Only

Question 47

What is the acceleration of the motorbike?

A. 0 m/s²
B. 2 m/s²
C. 4 m/s²
D. 6 m/s²
E. 8 m/s²

$$\Delta x = v_i t + \frac{1}{2}at^2 = \frac{1}{2}at^2$$

$$a = \frac{2\Delta x}{t^2} = \frac{2*50}{5^2} = \frac{100}{25}$$