

TEST 2 Q 1

some ACADEMIC review questions to try

Define: displacement, velocity, average velocity, average speed, acceleration.

Describe the motion of an object that starts with:

Positive velocity, positive acceleration

Positive velocity, negative acceleration

Negative velocity, positive acceleration

Negative velocity, negative acceleration

When does an object have an average velocity of zero?

A ball is rolled down a ramp.

Sketch the D-T and V-T graph.

Explain how to get the acceleration, using only a stopwatch and ruler. (T & D)

If the  $a$  is  $1 \text{ m/s}^2$ , what is the ball's velocity after 5 seconds? What is its average velocity? How much distance has it covered in that time? What was the distance traveled in the 5<sup>th</sup> second? (from 4 to 5)

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A ball is thrown up in the air and caught at the point of release.

Sketch the D-T and V-T graph.

Explain what two pieces of information would help calculate the maximum height.

Explain what would be different about the ball's path, its maximum height, its graphs, and its time and velocity if this were done on Jupiter (greater gravity).

A speeder going at a constant speed passes a police car, who starts accelerating from 0 some time later. Explain how to calculate when and where the cops catch the speeder, and sketch a strobe motion dot image, D-T, and V-T graph for each.

TWO WORD PROBLEMS TO TRY:

I start traveling at 3 m/s and accelerate at the rate of  $2 \text{ m/s}^2$  up to a max of 25 m/s.

A tiger is 70 meters behind me traveling a constant 20 m/s.

When I reach my maximum speed of 25 m/s, will I be in front of, or behind the tiger?

I stand on a cliff and jump up at 39.2 m/s. If I hit the valley below after 10 seconds, how fast am I going? How high is the cliff? How high did I jump?

TEST 2 Q 1                    some HONORS review questions to try

Define: displacement, velocity, average velocity, average speed, acceleration.

Describe the motion of an object that starts with:

- Positive velocity, positive acceleration
- Positive velocity, negative acceleration
- Negative velocity, positive acceleration
- Negative velocity, negative acceleration

When does an object have an average velocity of zero?

\*\* How do you calculate total distance for an object that has a starting velocity of zero, accelerates, then stays the same speed, then slows down to zero again, if:

- all three parts of the journey are the same time.
- All three parts of the journey are the same distance.

A ball is rolled down a ramp.  
Sketch the D-T and V-T graph.

Explain how to get the acceleration, using only a stopwatch and ruler. (T & D)

If the  $a$  is  $1 \text{ m/s}^2$ , what is the ball's velocity after 5 seconds? What is its average velocity? How much distance has it covered in that time? What was the distance traveled in the 5<sup>th</sup> second? (from 4 to 5)

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Sketch the D-T and V-T graph.

Explain what two pieces of information would help calculate the maximum height.

Explain what would be different about the ball's path, its maximum height, its graphs, and its time and velocity if this were done on Jupiter (greater gravity).

A speeder going at a constant speed passes a police car, who starts accelerating from 0 some time later. Explain how to calculate when and where the cops catch the speeder, and sketch a strobe motion dot image, D-T, and V-T graph for each.

WORD PROBLEMS TO TRY:

A tennis ball is released at the top of a 5-m ramp and rolls down .  
The ball reaches the end of the ramp in 5.0 s and rolls onto the floor. If the ball experiences an average deacceleration of  $-0.25 \text{ m/s}^2$  as it rolls along the floor, how far from the end of the ramp will the ball stop?

I start traveling at 3 m/s and accelerate at the rate of  $2 \text{ m/s}^2$ , to a max of 25 m/s. I can only last 5 seconds at this top speed though....

A tiger is 50 meters behind me traveling a constant 20 m/s.

When I reach my maximum speed of 25 m/s, will I be in front of, or behind the tiger?

Will I eventually ever be ahead of him?

I stand on a cliff and jump up at 39.2 m/s. If I hit the valley below after 10 seconds, how fast am I going? How high is the cliff? How high did I jump?

If my friend saw me and started running to catch me, with an acceleration of  $3 \text{ m/s}^2$ , how close would he have to be to the cliff to catch me?