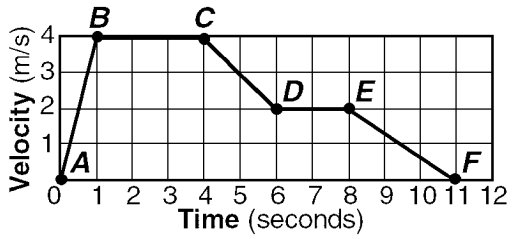
Question 1 refers to the following:

The graph below represents the velocity-time relationship for a 2.0-kilogram mass moving along a horizontal frictionless surface.



1) What distance does the mass move during interval *EF*?

A) 3.0 m B) 2.0 m C) 1.0 m D) 6.0 m

Question 2 refers to the following:

A 1,000-kilogram car traveling with a velocity of +20. meters per second decelerates uniformly at −5.0 meters per second^2 until it comes to rest.

2) What is the total distance the car travels as it decelerates to rest?

A) 40. m B) 10. m C) 20. m D) 80. m

3) An object initially at rest accelerates at 5 meters per second^2 until it attains a speed of 30 meters per second. What distance does the object move while accelerating?

A) 90 m B) 3 m C) 30 m D) 600 m

4) A boat initially traveling at 10. meters per second accelerates uniformly at the rate of 5.0 meters per second^2 for 10. seconds. How far does the boat travel during this time?

A) 50. m B) 350 m C) 500 m D) 250 m

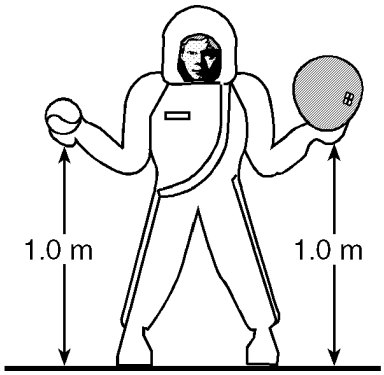
5) An object initially traveling in a straight line with a speed of 5.0 meters per second is accelerated at 2.0 meters per second squared for 4.0 seconds. The total distance traveled by the object in the 4.0 seconds is

A) 36 m B) 24 m C) 4.0 m D) 16 m

6) Which is constant for a freely falling object?

A) speed B) acceleration C) displacement D) velocity

7) As shown in the diagram below, an astronaut on the Moon is holding a baseball and a balloon. The astronaut releases both objects at the same time.



What does the astronaut observe? [NOTE: *The Moon has no atmosphere*.]

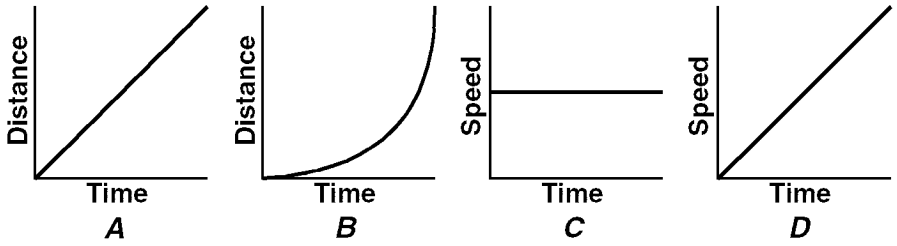
A) The baseball and balloon fall at the same rate.

B) The baseball falls faster than the balloon.

C) The baseball falls slower than the balloon.

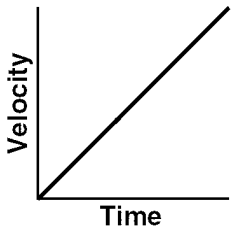
D) The baseball and balloon remain suspended and do not fall.

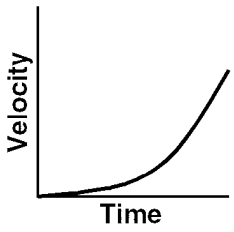
8) Which combination of graphs *best* describes free-fall motion? [*Neglect air resistance*.]

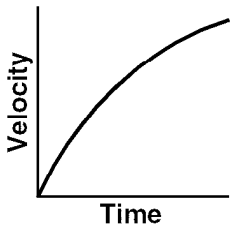


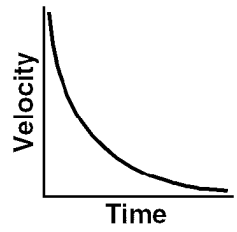
A) *B* and *D* B) *B* and *C* C) *A* and *D* D) *A* and *C*

9) An astronaut drops a stone near the surface of the Moon. Which graph *best* represents the motion of the stone as it falls toward the Moon's surface?

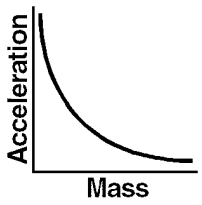
A)


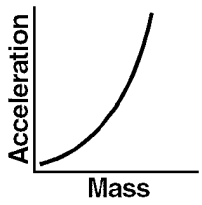
B)


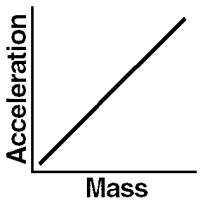
C)


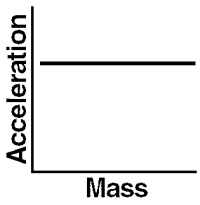
D)


10) Which graph *best* represents the relationship between mass and acceleration due to gravity for objects near the surface of the Earth? [*Neglect air resistance*.]

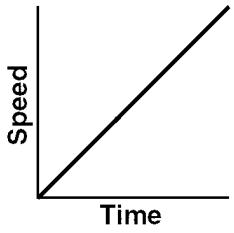
A)


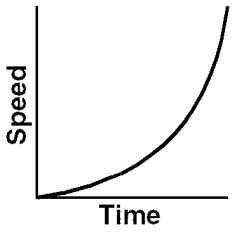
B)


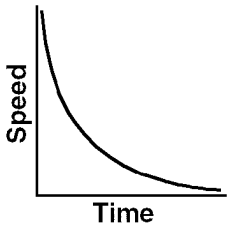
C)


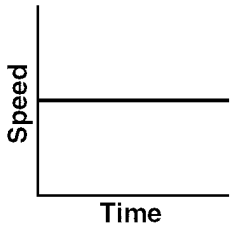
D)


11) Which graph *best* represents the motion of a freely falling body near the Earth's surface [*Neglect friction*.]?

A) 

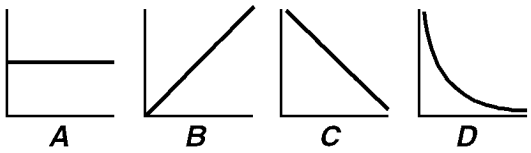
B) 

C) 

D) 

Questions 12 and 13 refer to the following:

The graphs below represent various phenomena in physics.



12) Which graph *best* represents the relationship between speed and time for an object in free fall near the Earth's surface?

A) *A* B) *B* C) *C* D) *D*

13) Which graph *best* represents the relationship between velocity and time for an object thrown vertically upward near the surface of the Earth?

A) *B* B) *A* C) *C* D) *D*

14) A ball dropped from a bridge takes 3.0 seconds to reach the water below. How far is the bridge above water?

A) 29 m B) 44 m C) 15 m D) 88 m

15) A clam dropped by a sea gull takes 3.0 seconds to hit the ground. What is the sea gull's approximate height above the ground at the time the clam was dropped?

A) 15 m B) 30. m C) 90. m D) 45 m