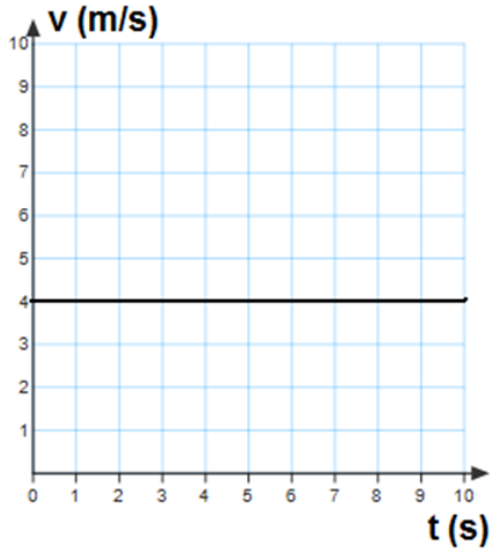
1 A train moves at a constant velocity of 90 km/h. How far will it move in 0.25 h?

- A 10 km
- B 22.5 km
- C 25 km
- D 45 km
- E 50 km

2 A bicyclist moves at a constant speed of 6 m/s. How long it will take for the bicyclist to move 36 m?

- A 3 s
- B 6 s
- C 12 s
- D 9 s
- E 18 s

3 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 at 5 s?



A 10 m

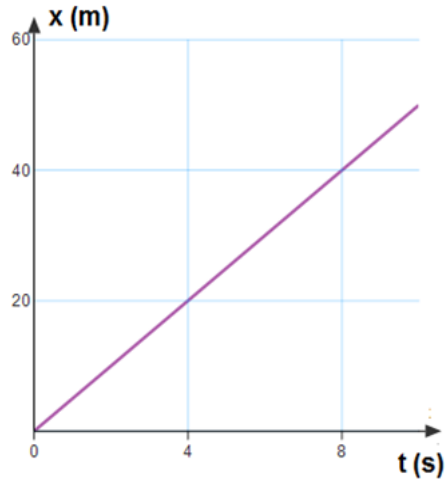
B 15 m

C 20 m

D 48 m

E 56 m

4 Which of the following is true?



A The object increases its velocity

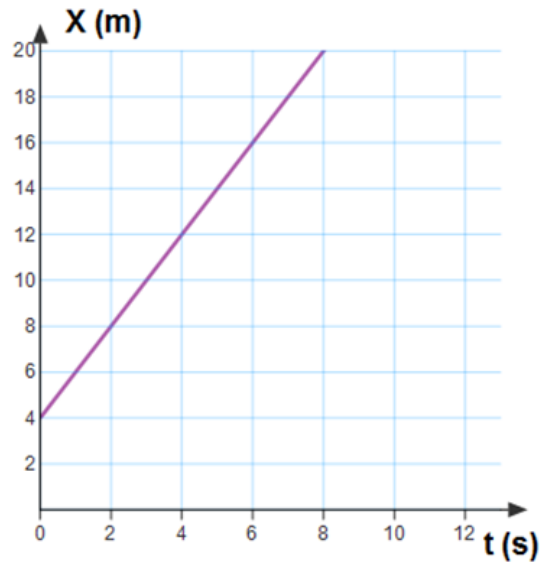
B The object decreases its velocity

C The object's velocity stays unchanged

D The object stays at rest

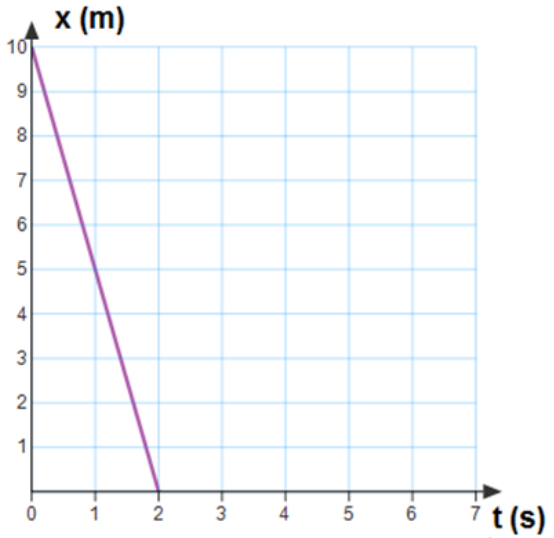
E More information is required

5 What is the velocity of the object?



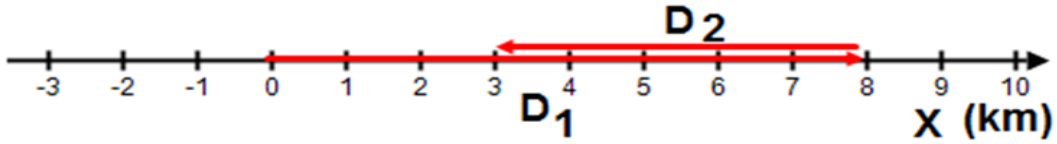
- A 2 m/s
- B 4 m/s
- C 6 m/s
- D 8 m/s
- E 10 m/s

6 The graph represents the position as a function of time of 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

7 Starting from the origin, a person walks 8 km east during first day, and 5 km west the next day. What is the net displacement of the person from the initial point in two days?



A 6 km, east

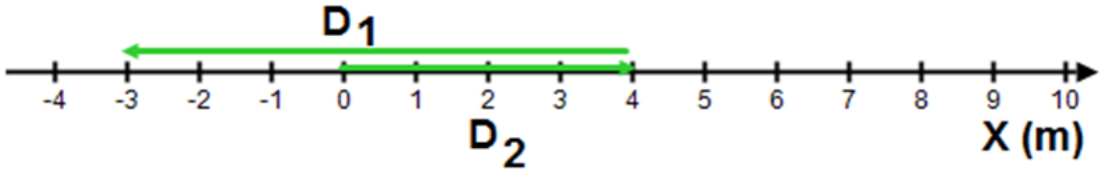
B 3 km, east

C 10 km, west

D 5 km, west

E 9 km, east

8 Starting from the origin, a car travels 4 km east and then 7 km west. What is the net displacement of the car from the initial point?



- A 3 km, west
- B 3 km, east
- C 4 km, east
- D 7 km, west
- E 7 km east

9 An object moves with a constant acceleration of 6 m/s^2. Which of the following statements is true?

- A The object's velocity stays the same
- B The object moves 6 m each second
- C The object's acceleration increases by 6 m/s^2 each second
- D The object's acceleration decreases by 6 m/s^2 each second
- E the object's velocity increases by 6 m/s each secon

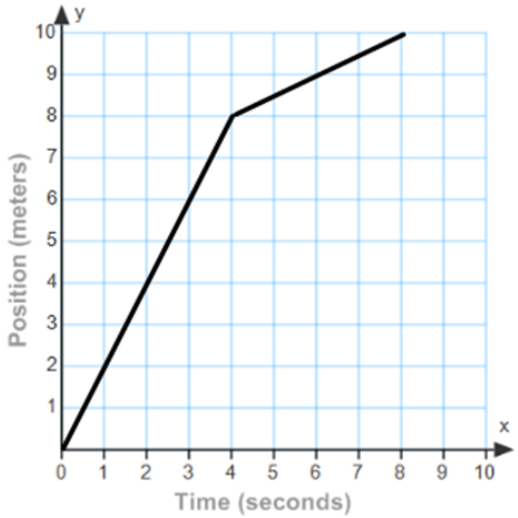
10 A truck travels east with an increasing velocity. Which of the following is the correct direction of the car's acceleration?

- A →
- B ↗
- C ↓
- D ←
- E ↖

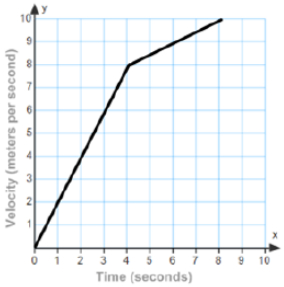
11 A motorbike travels east and begins to slow down before a traffic light. Which of the following is the correct direction of the motorbike's acceleration?

- A →
- B ↗
- C ↓
- D ←
- E ↖

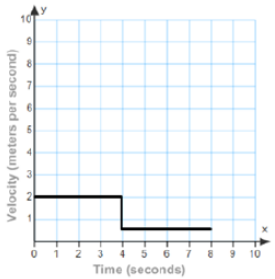
12 Which of the following is the velocity vs. time graph?



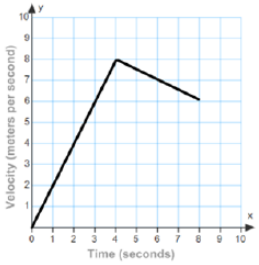
○ A



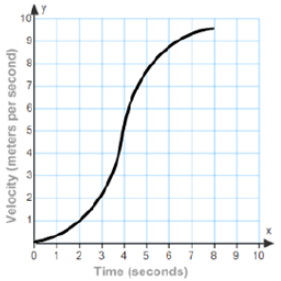
○ B



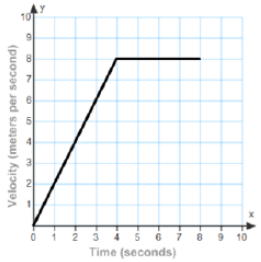
○ C



○ D



○ E



13 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

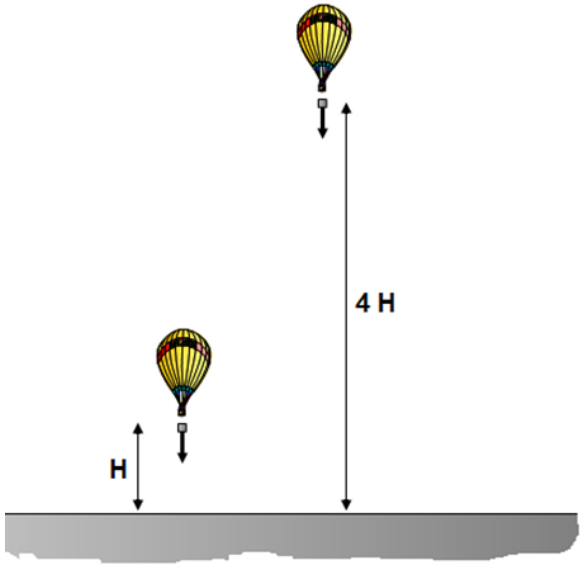
D Its acceleration is increasing

E Its velocity is decreasing

14 **A ball is thrown straight up from point A it reaches a maximum height at point B and falls back to point C. Which of the following is true about the direction the ball's velocity and acceleration between A and B?**

- ○ **A** v↓ a↑
- ○ **B** v↑ a↓
- ○ **C** v↑ a↑
- ○ **D** v↓ a↓
- ○ **E** v = 0 a = 0

15 A package is dropped from an air balloon two times. In the first trial the distance between the balloon and the surface is H and in the second trial 4H. Compare the time it takes for the package to reach the surface in the second trial to that in the first trial?



A The time in the second trial is four times greater

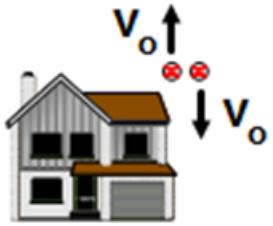
B The time in the second trial is two times greater

C The time the same in both trials because it doesn't depend on height

D The time in the second trial is four times less

E The time in the second trial is two times less

16 Two baseballs are thrown from the roof of a house with the same initial speed, one is thrown up, and the other is down. Compare the speeds of the baseballs just before they hit the ground.



A The one thrown up moves faster because the initial velocity is up

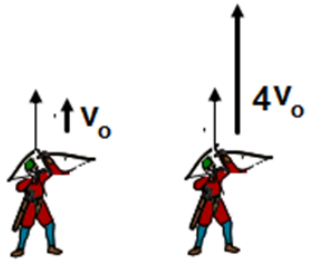
B The one thrown down moves faster because the initial velocity is down

C They both move with the same speed

D The one thrown up moves faster because it has greater acceleration

E The one thrown down moves faster because it has greater acceleration

17 An archer practicing with an arrow bow shoots an arrow straight up two times. The first time the initial speed is v_0 and second time he increases the initial sped to $4v_0$. How would you compare the maximum height in the first trial to that in the first trial?



A Two times greater

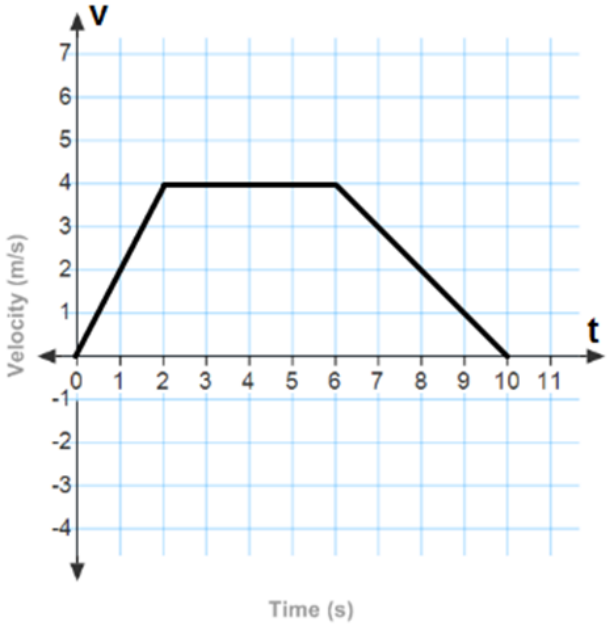
B Four times greater

C Eight times greater

D Sixteen times greater

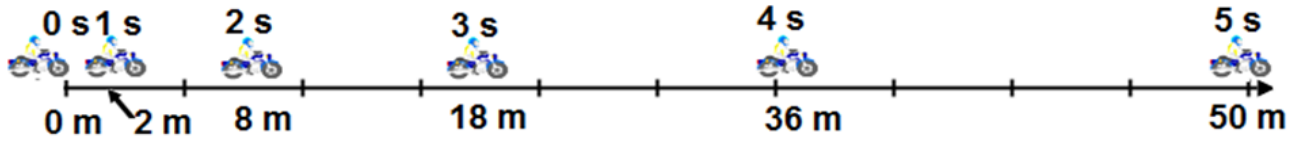
E The same

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



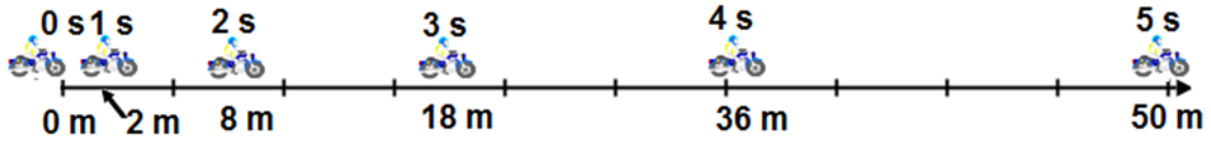
- A 4 m
- B 16 m
- C 20 m
- D 28 m
- E 36 m

19 The position and the elapsed time of a motorbike are presented by the diagram. The motorbike starts from rest and accelerates at a constant rate. What is the average velocity of the motorbike during first 5 s?



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

20 The position and the elapsed time of a motorbike are presented by the diagram. The motorbike starts from rest and accelerates at a constant rate. What is the acceleration of the motorbike?



- A $0\ m/s^2$
- B $2\ m/s^2$
- C $4\ m/s^2$
- D $6\ m/s^2$
- E $8\ m/s^2$

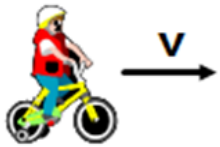
21 In order for a rocket ship in deep space, far from any other objects, to move in a straight line with constant speed it must exert a net force that is

- A proportional to its mass
- B proportional to its weight
- C proportional to its velocity
- D zero
- E proportional to its displacement

22 If a book on the dashboard of your car suddenly flies towards you, the forward velocity of the car must have

- A decreased
- B increased
- C changed direction to the right
- D become zero
- E changed direction to the left

23 A boy rides a bicycle at a constant velocity. Which of the following about the net force is true?



- A There is a net force acting in the velocity direction
- B There is a net force acting in opposite to the velocit direction
- C The net force is zero
- D There is a net force acting perpendicularly to the ve direction
- E None from the above

24 A passenger standing in a moving bus, facing forward suddenly falls backward. This can be an indication which of the following?

- ○ **A The bus speeds**
- ○ **B The bus slows down**
- ○ **C The bus doesn't change its velocity**
- ○ **D The bus turns to the right**
- ○ **E The bus turns to the left**

25 A net force F acts on a mass m and produces an acceleration a. What acceleration results if a net force 3F acts on mass 6m?

- A a/2
- B 8a
- C 4a
- D 2a
- E a/4

26 A loaded truck collides with a car causing a huge damage to the car. Which of the following is true about the collision?

- A The force on the truck is greater than the force
- B The force on the car is greater than the force on the
- C The force on the truck is the same in magnitude as force on the car
- D During the collision the truck makes greater displac than the car
- E During the collision the truck has greater accelerati the car

27 Newton's third law refers to "action-reaction forces". These forces always occur in pairs and

- A sometimes act on the same object
- B always act on the same object
- C may be at right angles
- D never act on the same object
- E always act at right angles

28 A car traveling at 40 m/s strikes a mosquito. Which of the following is the true statement?

- A The force on the mosquito is greater than the force car
- B The force on the mosquito is equal to the force on t
- C The force on the mosquito is smaller than the force car
- D The damage to the mosquito is equal to the damage car
- E None from the above

29 A railroad wagon pushes down on a railroad with a force of 400 kN. Which of the following is the "reaction force"?

- A The wagon pulls up the Earth with 400 kN
- B The wagon pushes down the railroad with 400 kN
- C The railroad pushes up the wagon with 400 kN
- D The buoyant force pushes up the wagon with 400 k
- E The wagon pushes down the Earth with 400 kN

30 A soccer player kicks a soccer ball with a force of 1300 N. The soccer ball hits the player with a force of

- A less than 1300 N
- B exactly 1300 N
- C more than 1300 N
- D 0 N
- E none from the above

31 The acceleration due to gravity is higher on Jupiter than on Earth. The mass and weight of a rock on Jupiter compared to that on Earth would be

- A same, more
- B same, less
- C more, more
- D more, less
- E same, same

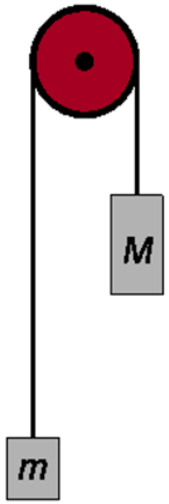
32 An elevator of mass M is pulled upwards by a cable; the elevator has a positive, but decreasing, velocity. What is the tension in the cable (neglecting the mass of the cable)?

- A less than zero
- B between zero and Mg
- C equal to Mg
- D greater than Mg
- E zero

33 An elevator of mass M is pulled upwards at constant velocity by a cable. What is the tension in the cable (neglecting the mass of the cable)?

- A less than zero
- B between zero and Mg
- C equal to Mg
- D greater than Mg
- E zero

34 **In the Atwood machine, shown on the diagram, two masses M and m are suspended from the pulley, what is the magnitude of the acceleration of the system? (Ignore friction and the mass of the pulley. M > m)**



○ **A** $\frac{(M-m)g}{M+m}$

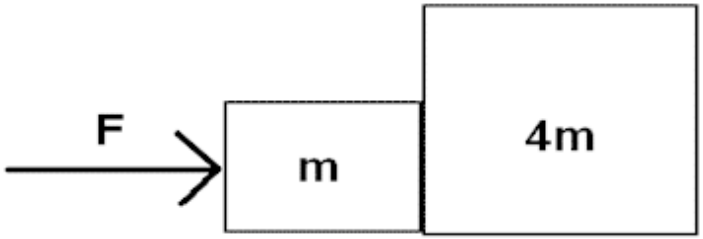
○ **B** $\frac{(M-m)g}{M-m}$

○ **C** $\frac{(M+m)g}{M+m}$

○ **D** $\frac{(M-m)g}{2M}$

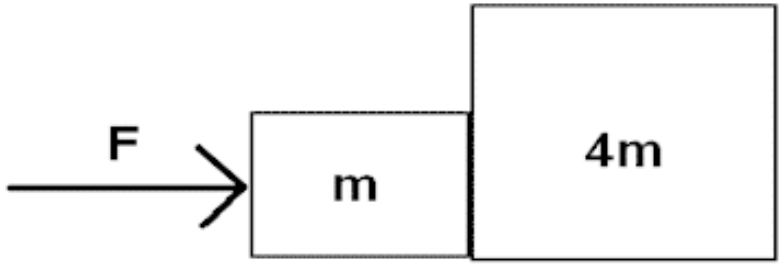
○ **E** $\frac{(M-m)g}{2m}$

35 In the figure to the right, two boxes of masses m and 4m are in contact with each other on a frictionless surface. What is the acceleration of the more massive box?



- A $\frac{F}{m}$
- B $\frac{F}{2m}$
- C $\frac{F}{4m}$
- D $\frac{F}{5m}$
- E $\frac{F}{6m}$

36 In the figure to the right, two boxes of masses m and 4m are in contact with each other on a frictionless surface. What is the force causing the acceleration of the more massive box?



- A 4F
- B 3F/2
- C 5F/4
- D 4F/5
- E F/6

37 A block of mass 4m can move without friction on a horizontal table. This block is attached to another block of mass m by a string that passes over a frictionless pulley. If the masses of the string and the pulley are negligible, what is the magnitude of the acceleration of the descending block?

A g/5

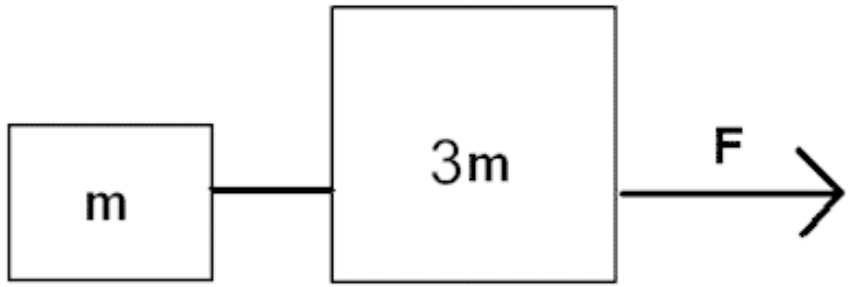
B g/4

C g/3

D g/7

E g/6

38 In the figure to the right, two boxes of masses m and 3m are connected by a string while a force F is pulling on the more massive box; what is the tension force in the string between the boxes?



- A F/m
- B F/2
- C F/4
- D F/5
- E F/6

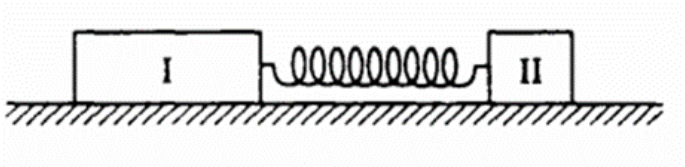
39 A system of two blocks is accelerated by an applied force of magnitude F on the frictionless horizontal surface. The tension in the string between the blocks is:

- A 3F
- B 5F
- C 3/8 F
- D 1/3 F
- E 1/5 F

40 Two blocks are attached by a compressed spring and are initially held at rest on a frictionless surface. The blocks are then released simultaneously. If block I has four times the mass of block II, which of the following quantities is the same for both blocks as the spring pushes the two blocks away from each other?

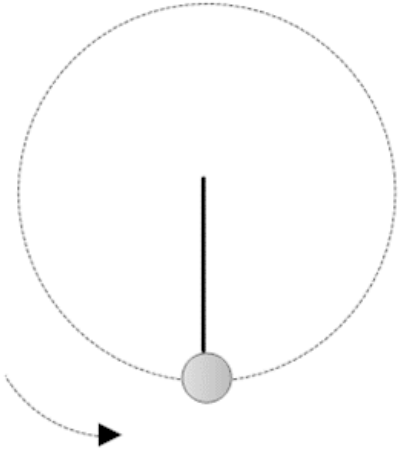
- A Speed
- B Velocity
- C Acceleration
- D Displacement
- E Force on each block

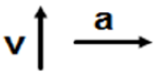
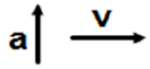
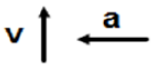
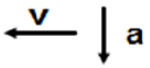
41 A car moves around a circular path of a constant radius at a constant speed. Which of the following statements is true?



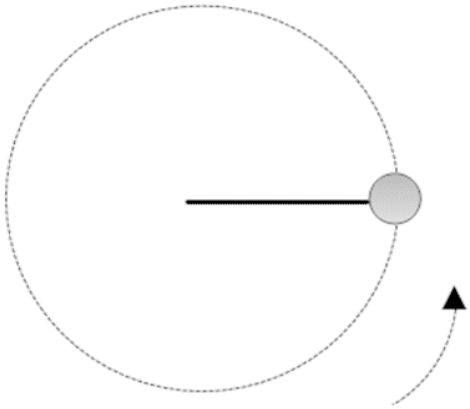
- A The car's velocity is constant
- B The car's acceleration is constant
- C The car's acceleration is zero
- D The car's velocity is directed toward the center
- E The car's acceleration is directed toward the center

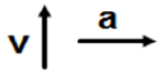
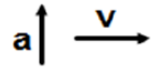
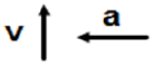
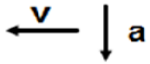
42 **A small sphere is swung in a vertical circle. Which of the following combinations represents the direction of the velocity and acceleration at the point where the sphere is located?**



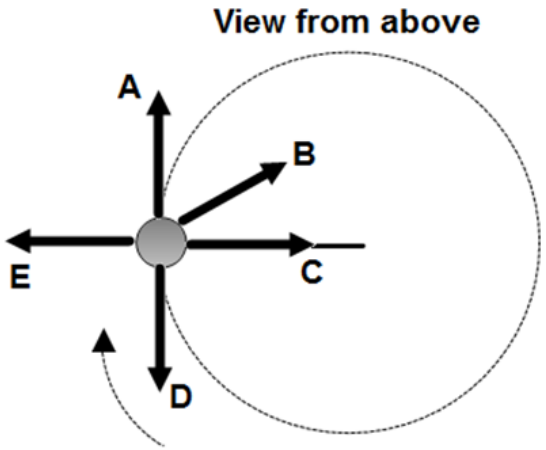
- A 
- B 
- C 
- D 
- E 

43 A small sphere is swung in a vertical circle. Which of the following combinations represents the direction of the velocity and acceleration at the point where the sphere is located?



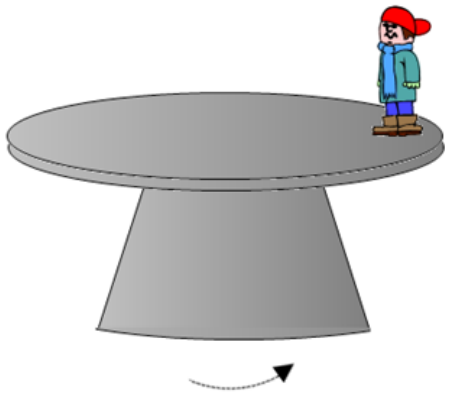
- A 
- B 
- C 
- D 
- E 

44 An object experiences a uniform circular motion in a horizontal plane. The direction of the net force is:



- A A
- B B
- C C
- D D
- E E

45 A boy stands at the edge of a rotating table. In order to keep him moving in a circular path the table applies a static friction force on the boy. Which of the following is the reaction force?



A The normal force on the boy

B The force of gravity exerted on the boy by Earth

C The force of gravity exerted on Earth by the boy

D The force exerted on the table by the boy that is direc straight down

E The static friction force exerted by the boy on the tab

46 An object travels in a circular path of radius r at a constant speed v. What happens to the object's acceleration if the speed is doubled and the radius stays unchanged?

- A It doubles
- B It quadruples
- C It is cut to a half
- D It is cut to a quarter
- E Stays unchanged

47 An object moves at a constant acceleration a in a circular path of radius r. Which of the following is the object's velocity?

- A $a \times r$
- B $\frac{a}{r}$
- C $\frac{r}{a}$
- D $\sqrt{a \times r}$
- E $\sqrt{\frac{a}{r}}$

48 An object of mass m moves at a constant speed v around a circular path of radius r. The net force applied to the object is F. What happens to the net force if speed is doubled and radius remains the same?

A It doubles

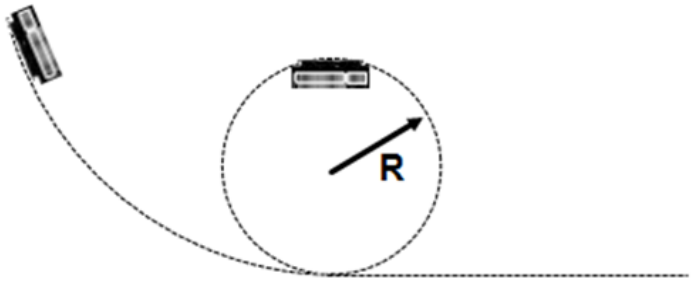
B It quadruples

C Stays the same

D Is cut to one-half

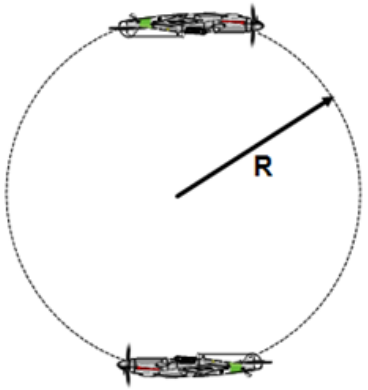
E Is cut to one-quarter

49 A roller coaster car moves on a track with one section of vertical circular loop of radius R. When the car is at the top of the loop it just maintains contact with the track, what is the car's acceleration at this point?



- A g upward
- B 0.5 g upward
- C Zero
- D 0.5 g downward
- E g downward

50 A pilot performs a vertical maneuver around a circle with a radius R. When the airplane is at the lowest point of the circle pilot's weight is 6 mg. What is the acceleration at the lowest point?

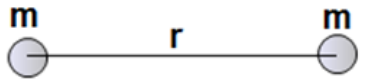


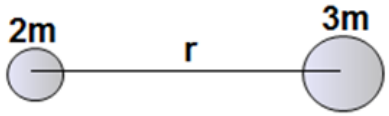
- A g
- B 2 g
- C 3 g
- D 4 g
- E 5 g

51 Two objects, one with a mass of m and one with a mass of 4m are attracted to each other by a gravitational force. If the force on 4m is F, what is the force on mass m in terms of F?

- A 16F
- B 4F
- C F
- D ¼ F
- E 1/16 F

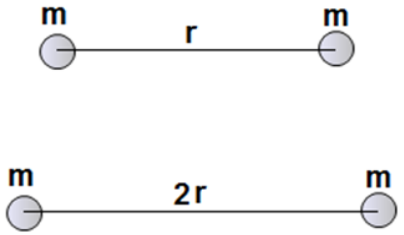
52 Two objects are attracted to each other by a gravitational force F. If one mass is doubled and the other is tripled without changing the distance, what is the new gravitational force between the objects in terms of F?





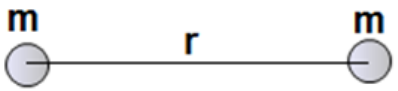
- A 4 F
- B 9 F
- C 6 F
- D 1/9 F
- E 1/6 F

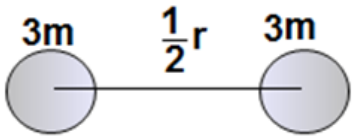
53 Two objects are attracted to each other by a gravitational force F. If the distance between the objects is doubled, what is the new gravitational force between the objects in terms of F?



- A 4 F
- B 9 F
- C 16 F
- D 1/9 F
- E 1/4 F

54 Two objects are attracted to each other by a gravitational force F. If each mass is tripled and the distance between the objects is cut in half, what is the new gravitational force between the objects in terms of F?



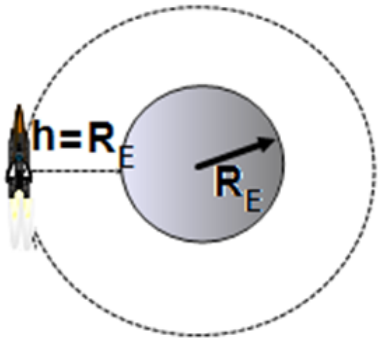


- A 24 F
- B 36 F
- C 16 F
- D 1/16 F
- E 1/24 F

55 An object with a mass of 48 kg measured on Earth is taken to the Moon. What is the weight of the object on the Moon's surface if the acceleration due to gravity on Moon is one-sixth of that on Earth?

- A 8 N
- B 48 N
- C 288 N
- D 480 N
- E 80 N

56 **A satellite is orbiting Earth at a distance h = R_E above the surface. What is the centripetal acceleration of the satellite compared to that on the surface?**

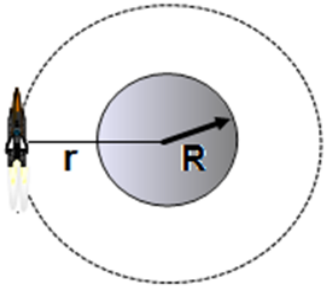


- A $a = \frac{g}{4}$
- B $a = \frac{g}{2}$
- C $a = g$
- D $a = 2g$
- E $a = 4g$

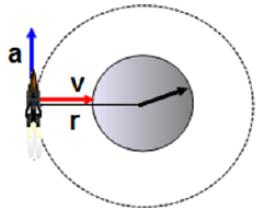
57 A hypothetical planet has a mass of four times that of the Earth and radius of twice that of the Earth? What is the acceleration due to gravity on the planet in terms of the acceleration on the Earth?

- **A** g
- **B** $\frac{g}{2}$
- **C** $\frac{g}{4}$
- **D** $2g$
- **E** $\frac{g}{8}$

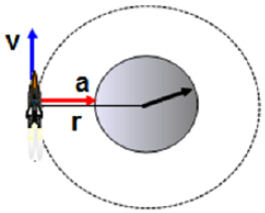
58 **A satellite is orbiting a planet with an orbital radius r. Which of the following diagrams represents the direction of the velocity and acceleration of the satellite?**



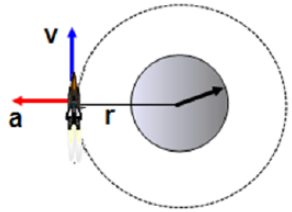
○ **A**



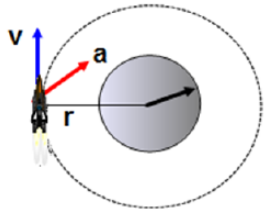
○ **B**



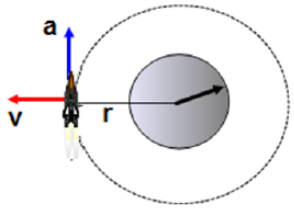
○ **C**



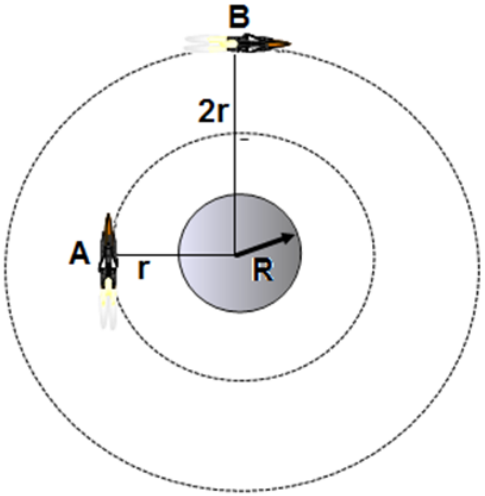
○ **D**



○ **E**



59 Two satellites A and B orbit the same planet. Satellite B moves in circular orbit with twice the radius of Satellite A. What is the orbital velocity of Satellite B compared to the velocity of A?



○ **A** $v_A = \frac{1}{\sqrt{2}} v_B$

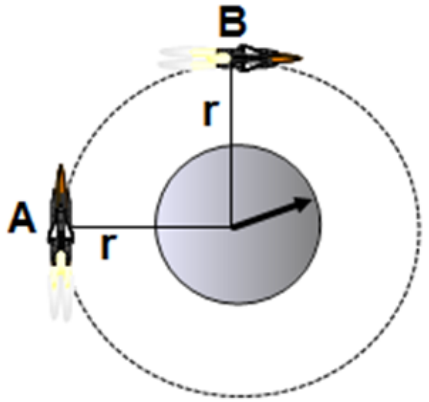
○ **B** $v_A = \frac{1}{2} v_B$

○ **C** $v_A = \frac{\sqrt{2}}{1} v_B$

○ **D** $v_A = \frac{1}{4} v_B$

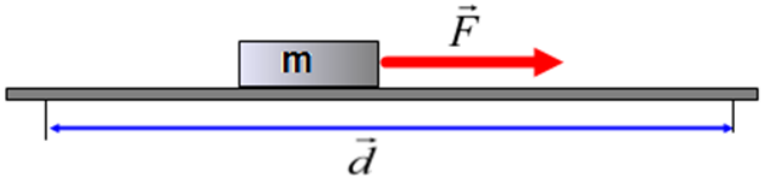
○ **E** $v_A = \frac{2}{1} v_B$

60 A satellite A has twice the mass of satellite B. The satellites orbit a planet with the same orbital radius. The orbital period of the satellite A compared to B is:



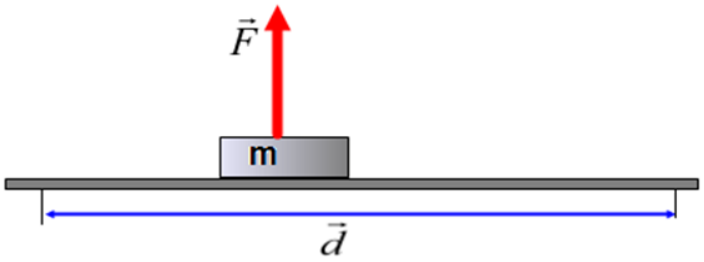
- ○ A Twice greater
- ○ B Four times greater
- ○ C Half as much
- ○ D One-quarter as much
- ○ E The same

61 A block of mass m is pulled over a distance d by an applied force F which is directed in parallel to the displacement. How much work is done on the block by the force F?



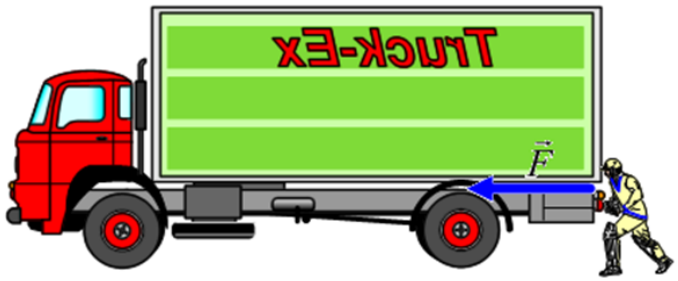
- A mFd
- B zero
- C Fd
- D F/d
- E -Fd

62 A block of mass m is moved over a distance d. An applied force F is directed perpendicularly to the block's displacement. How much work is done on the block by the force F?



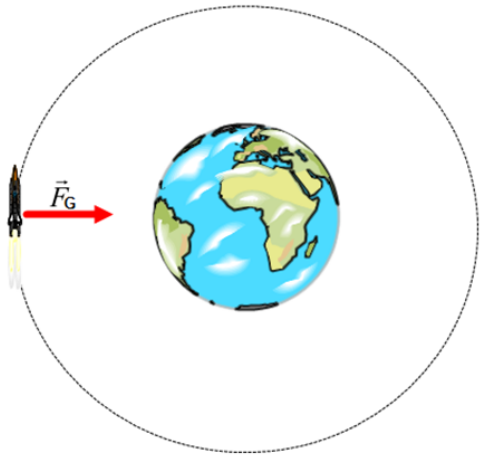
- A mFd
- B zero
- C Fd
- D F/d
- E -Fd

63 A truck driver is trying to push a loaded truck with an applied force. Unfortunately, his attempt was unsuccessful the truck stays stationary no matter how hard the driver pushes. How much work is done by the driver?



- A **Fd**
- B **–Fd**
- C $\frac{F}{d}$
- D $\frac{d}{F}$
- E **Zero**

64 A spacecraft moves around Earth in a circular orbit with a constant radius. How much work is done by the gravitational force on the spacecraft during one revolution?



- A $F_G d$
- B $-F_G d$
- C mgh
- D $\frac{1}{2} mv^2$
- E zero

65 A container with a mass of 5 kg is lifted to a height of 8 m. How much work is done by the gravitational force?

- A 400 J
- B -400 J
- C zero
- D 50 J
- E -50J

66 A container with a mass of 5 kg is lifted to a height of 8 m and then returned back to the ground level. How much work is done by the gravitational force?

- A 400 J
- B -400 J
- C zero
- D 50 J
- E -50J

67 An object is thrown straight up. Which of the following is true about the sign of work done by the gravitational force while the object moves up and then down?

A Work is positive on the way up, work is positive on way down

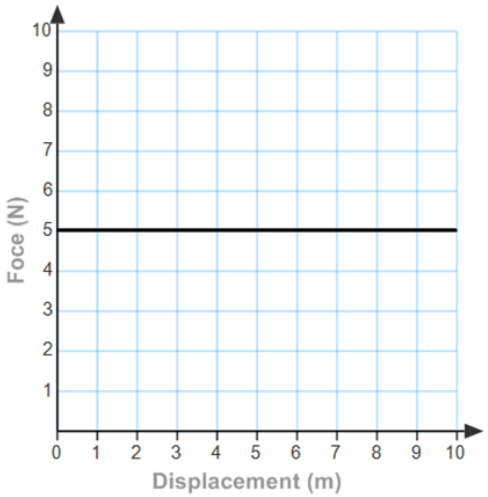
B Work is negative on the way up, work is negative or way down

C Work is negative on the way up, work is positive on way down

D Work is positive on the way up, work is negative on way down

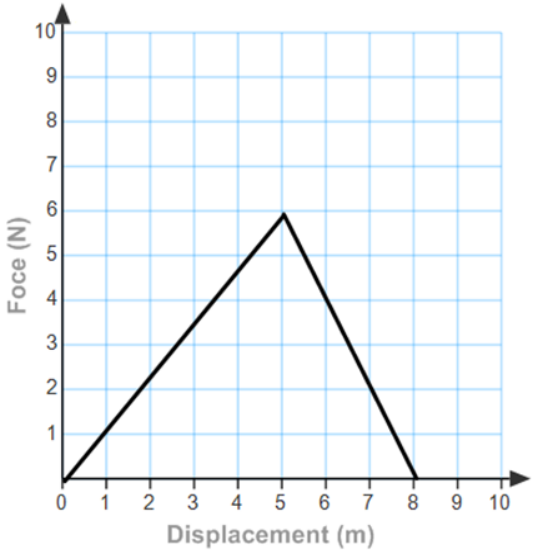
E Work is zero the way up, work is zero on the way dc

68 **The force as a function of displacement of a moving object is presented by the graph. How much work is done when the object moves from 0 m to 8 m?**



- A 40 J
- B 20 J
- C 0 J
- D 10 J
- E 5 J

69 The force as a function of displacement of a moving object is presented by the graph. How much work is done when the object moves from 0 m to 8 m?



- A 30 J
- B 15 J
- C 18 J
- D 9 J
- E 24 J

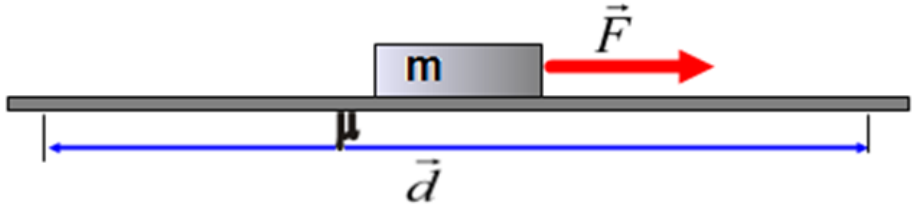
70 An applied force F accelerates an object from rest to a velocity v. How much work is done by the applied force F?

- A $\frac{1}{2} mv^2$
- B mgh
- C $\frac{1}{2} kx^2$
- D mFd
- E Zero

71 What happens to the kinetic energy of a moving object if the net work done is positive?

- A The kinetic energy increases
- B The kinetic energy decreases
- C The kinetic energy remains the same
- D The kinetic energy is zero
- E The kinetic energy becomes negative

72 A block of mass m = 50 kg moves on a rough horizontal surface with a coefficient of kinetic friction μ = 0.5. The traveled distance is 2 m. How much work is done by the friction force?



A 100 J

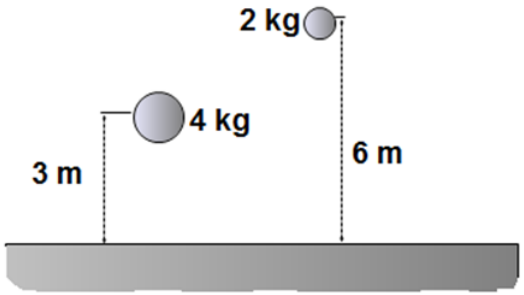
B 122.5 J

C 245 J

D 490 J

E 980 J

73 An object I with a mass of 4 kg is lifted vertically 3 m from the ground level; another object II with a mass of 2 kg is lifted 6 m up. Which of the following statements is true?



I. Object I has greater potential energy since it is heavier

II. Object II has greater potential energy since it is lifted to a higher position

III. Two objects have the same potential energy

A I

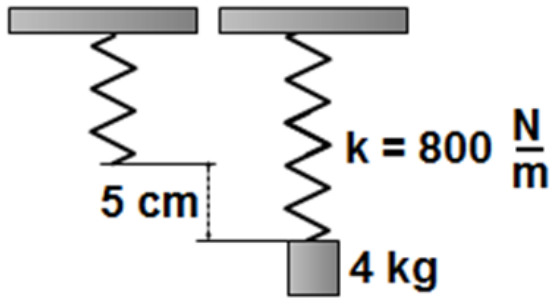
B II

C III

D I and II

E II and III

74 A 4 kg block is attached to a vertical spring with a spring constant 800 N/m. The spring stretches 5 cm down. How much elastic potential energy is stored in the system?



A 1.0 J

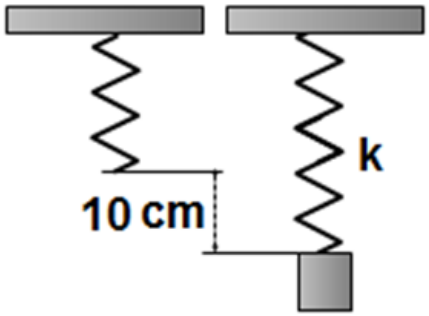
B 0.5 J

C 1.5 J

D 2.0 J

E 2.5 J

75 A heavy block is suspended from a vertical spring. The elastic potential energy is stored in the spring is 2 J. What is the spring constant if the elongation of the spring is 10 cm?



A 400 N/m

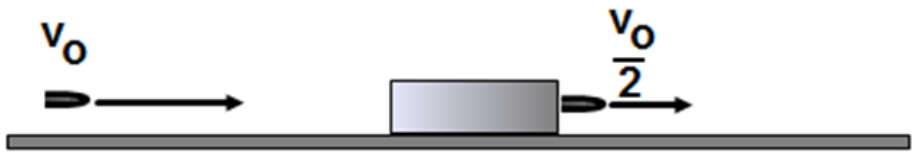
B 300 N/m

C 200 N/m

D 100 N/m

E 50 N/m

76 A bullet penetrates a wooden block and loses its velocity by a half. What is the ration between the initial kinetic energy of the bullet and kinetic energy when the bullet leaves the block?

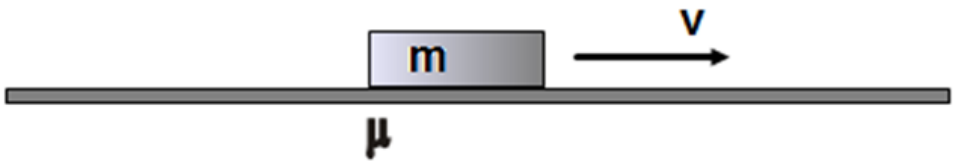


- A $\frac{KE_i}{KE_f} = \frac{1}{2}$
- B $\frac{KE_i}{KE_f} = \frac{1}{4}$
- C $\frac{KE_i}{KE_f} = \frac{2}{1}$
- D $\frac{KE_i}{KE_f} = \frac{4}{1}$
- E $\frac{KE_i}{KE_f} = \frac{16}{1}$

77 A machine generates 2500 W of power in 1 min. What is the work done by the machine?

- A 15 W
- B 150 W
- C 2500 W
- D 15000 W
- E 150000 W

78 A car travels with a constant speed of 15 m/s. The car's engine produces a 4000 N pushing force in order to keep the speed constant. How much power is developed by the engine?



A 60 W

B 600 W

C 6000 W

D 60000 W

E 600000W

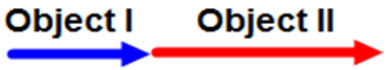
79 A block with a mass of m crosses a rough horizontal surface at a constant speed of v. The coefficient of kinetic friction between the block and the surface is μ. How much power must be produced in order to overcome the friction force?

- A mg
- B μmg
- C zero
- D μg
- E μmgv

80 A motorbike engine can develop a power of 90000 W in order to keep a constant velocity of 30 m/s. What is the pushing force?

- A 3000 N
- B 30000 N
- C 300000 N
- D 300 N
- E 30 N

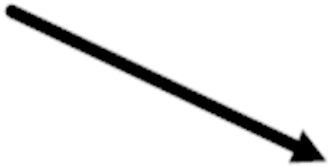
81 The momenta of two different objects are presented by on the diagram. Which of the following is the net momentum of the system of two objects?



○ A

○ B

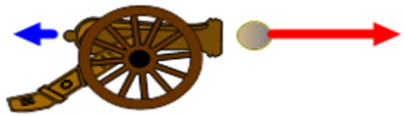
○ C



○ D

○ E

82 A cannon fires a cannonball and recoils backward. Which of the following statements is true about the cannon recoil?



A It happens because the energy of the system is con

B It happens because the energy of the system is incr

C It happens because the momentum of the system is conserved

D It happens because the momentum of the system is conserved

E It happens because the momentum of the system is increased

83 An air balloon hovers at a certain altitude above the ground. A pilot throws a sand bag down from the balloon. What is the direction of the balloon's velocity just after the bag was thrown?

○ A →

○ B ↗

○ C ↘

○ D ←

○ E ↑

84 What is the momentum of the cannon after firing a cannon ball with an initial momentum of 5,000 kg·m/s to the right?

A 5,000 kg·m/s to the right

B 5,000 kg·m/s to the left

C zero

D 2,500 kg·m/s to the right

E 2,500 kg·m/s to the left

85 A platform moves at a constant velocity on a horizontal surface. What happens to the velocity of the platform after a sudden rain falls down?

A It increases because the energy is conserved

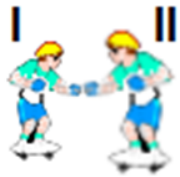
B It decreases because the energy is conserved

C It remains constant because the momentum is conse

D It increases because the momentum is conserved

E It decreases because the momentum is conserved

86 A stationary skateboarder I with a mass of 50 kg pushes a stationary skateboarder II with a mass of 75 kg. After the push the skateboarder II moves with a velocity of 2 m/s to the right. What is the velocity of the skateboarder I?



A 3 m/s to the left

B 2 m/s to the left

C 1 m/s to the right

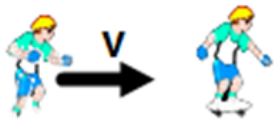
D 3 m/s to the right

E 2 m/s to the right

87 A loaded freight car A with a mass of 24,000 kg moves at a constant velocity of 8 m/s on a horizontal railroad track and collides with an empty stationary car B with a mass of 8,000 kg. After the collision the cars stick to each other and moves like one object. What is the velocity of two cars after the collision?

- A 2 m/s
- B 4 m/s
- C 6 m/s
- D 8 m/s
- E 12 m/s

88 A 40 kg skateboarder runs at a constant velocity of 0.12 m/s and jumps onto a stationary skateboard with a mass of 8 kg. What is the velocity of the skateboard after the jump?



A 0.12 m/s

B 0.90 m/s

C 0.60 m/s

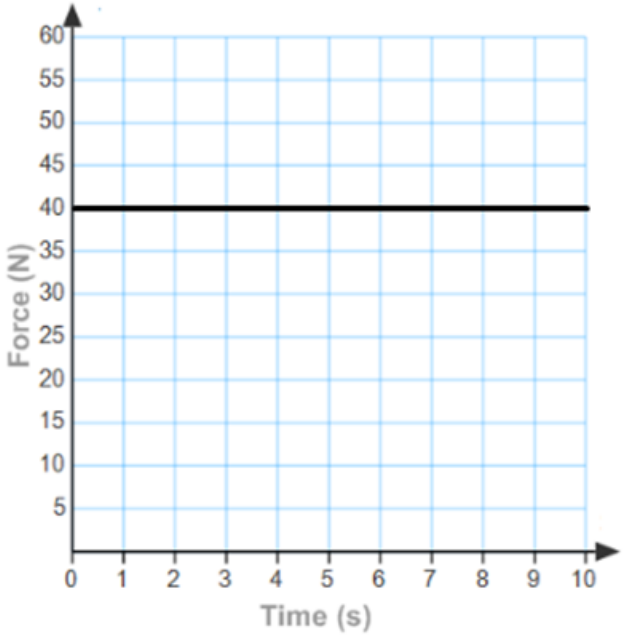
D 0.20 m/s

E 0.10 m/s

89 A tennis ball approaches a racket with a momentum of 5 kg·m/s and bounces back with a momentum of 6 kg·m/s after the collision with the racket. What is the change in momentum of the tennis ball?

- ○ A 1 kg·m/s
- ○ B 5 kg·m/s
- ○ C 6 kg·m/s
- ○ D 11 kg·m/s
- ○ E 0 kg·m/s

90 The force as a function of time is presented by the graph. What is the impulse exerted on the object during first five seconds?



- A 40 N·s
- B 80 N·s
- C 120 N·s
- D 200 N·s
- E 360 N·s

91 There are two round tables in the physics classroom: one with the radius of 50 cm the other with a radius of 150 cm. What is the relationship between the two forces applied on the tabletops by the atmospheric pressure?

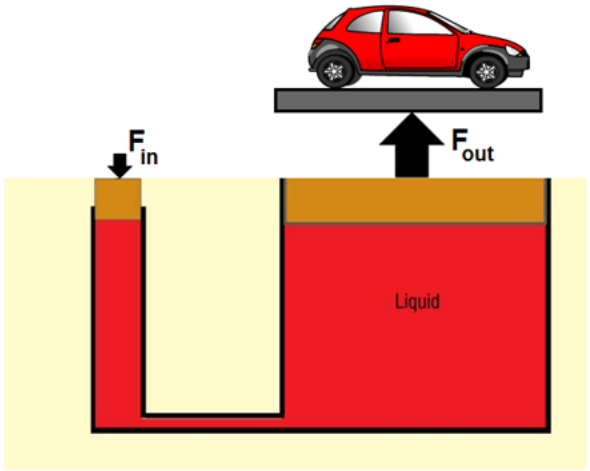
- A $F_1/F_2 = 1/3$
- B $F_1/F_2 = 1/9$
- C $F_1/F_2 = 3/1$
- D $F_1/F_2 = 9/1$
- E $F_1/F_2 = 1/6$

92 A piece of iron has a weight of 4 N when it is in air and 3 N when it is submerged into water. What is the buoyant force on the piece of iron?

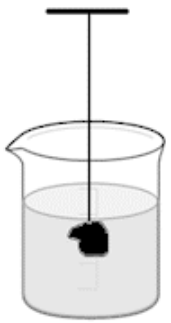
- A 3.5 N
- B 2.0 N
- C 1.5 N
- D 1.0 N
- E 0.5 N

93 A hydraulic lift is used to lift a car. The small piston has a radius of 5 cm and the large piston has a radius of 50 cm. If a driver applies a force of 88 N to the small piston, what is the weight of the car the large piston can support?

- A 880 N
- B 88 N
- C 8800 N
- D 8.8 N
- E 88000 N



94 Physics students use a spring scale to measure the weight of a piece of lead. The experiment was performed two times one in air the other in water. If the volume of lead is 50 cm^3, what is the difference between two readings on the scale?



- A 0.5 N
- B 5.0 N
- C 50 N
- D 500 N
- E 0 N

95 Three blocks of equal volume are completely submerged into water. The blocks made of different materials: aluminum, iron and lead. Which of the following is the correct statement about the buoyant force on each block? ($P_{aluminum}$ = 2700 kg/m^3, ρ_{iron} = 7800 kg/m^3, ρ_{lead} = 11300 kg/m^3)

- A $F_{aluminum} > F_{iron} > F_{lead}$
- B $F_{aluminum} < F_{iron} < F_{lead}$
- C $F_{aluminum} < F_{iron} > F_{lead}$
- D $F_{aluminum} = F_{iron} = F_{lead}$
- E $F_{aluminum} > F_{iron} < F_{lead}$