Instructor(s): *Field/Furic*

PHYSICS DEPARTMENT

PHY 2053 Exam 1 October 2, 2013

Name (print, last first): ______________________ Signature: ______________________

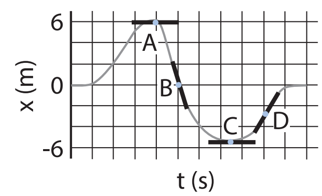
On my honor, I have neither given nor received unauthorized aid on this examination.

YOUR TEST NUMBER IS THE 5-DIGIT NUMBER AT THE TOP OF EACH PAGE.

(1) **Code your test number on your answer sheet (use lines 76–80 on the answer sheet for the 5-digit number)**. Code your name on your answer sheet. **DARKEN CIRCLES COMPLETELY**. Code your UFID number on your answer sheet.
(2) Print your name on this sheet and sign it also.
(3) Do all scratch work anywhere on this exam that you like. **Circle your answers on the test form.** At the end of the test, this exam printout is to be turned in. No credit will be given without both answer sheet and printout.
(4) **Blacken the circle of your intended answer completely, using a #2 pencil or blue or black ink**. Do not make any stray marks or some answers may be counted as incorrect.
(5) **The answers are rounded off. Choose the closest to exact. There is no penalty for guessing. If you believe that no listed answer is correct, leave the form blank.**
(6) Hand in the answer sheet separately.

Use $g = 9.80$ m/s^2

1. The curved line in the figure shows the position of an object along the x axis as a function of time. The thick straight black lines are the tangents to the curve at the points of the curve labeled A, B, C and D. At what point is the object moving with the greatest speed, and at what point is it moving with positive velocity, respectively (answering in that order)?



(1) B, D (2) A, A (3) B, A (4) A, B (5) C, A

2. 4 quarts = 3.786 liters and 1,000 cm^3 = 1 liter. An ice cream company decides to sell one quart of ice cream in cubical containers. What is the length (in cm) of the inside edge of that cubical quart container?

(1) 9.818 (2) 12.370 (3) 14.161 (4) 10.000 (5) 12.599

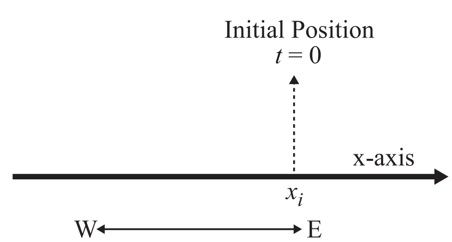
3. 4 quarts = 3.786 liters and 1,000 cm^3 = 1 liter. An ice cream company decides to sell two quarts of ice cream in cubical containers. What is the length (in cm) of the inside edge of that cubical two quart container?

(1) 12.370 (2) 9.818 (3) 14.161 (4) 10.000 (5) 12.599

4. 4 quarts = 3.786 liters and 1,000 cm^3 = 1 liter. An ice cream company decides to sell three quarts of ice cream in cubical containers. What is the length (in cm) of the inside edge of that cubical three quart container?

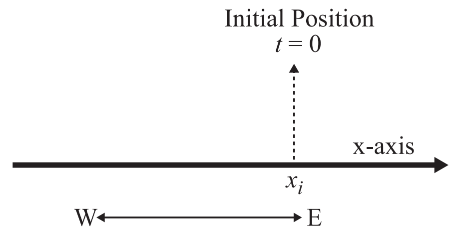
(1) 14.161 (2) 9.818 (3) 12.370 (4) 10.000 (5) 14.422

5. A train traveling along the x-axis is initially at the point x_i at $t = 0$. The train then travels 10 km to the East (*i.e.,* right) as shown in the figure. It then reverses direction and travels 30 km to the West (*i.e.,* left) to the final point x_f. If the train's average speed for this trip was 20 km/h, what was its average velocity for the trip (in km/h)?



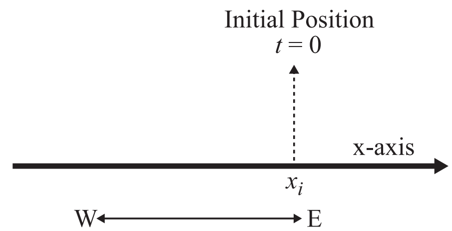
(1) −10 (2) −15 (3) −20 (4) 10 (5) 15

6. A train traveling along the x-axis is initially at the point x_i at $t = 0$. The train then travels 10 km to the East (*i.e.,* right) as shown in the figure. It then reverses direction and travels 30 km to the West (*i.e.,* left) to the final point x_f. If the train's average speed for this trip was 30 km/h, what was its average velocity for the trip (in km/h)?



(1) −15 (2) −10 (3) −20 (4) 10 (5) 15

7. A train traveling along the x-axis is initially at the point x_i at $t = 0$. The train then travels 10 km to the East (*i.e.,* right) as shown in the figure. It then reverses direction and travels 30 km to the West (*i.e.,* left) to the final point x_f. If the train's average speed for this trip was 40 km/h, what was its average velocity for the trip (in km/h)?



(1) −20 (2) −10 (3) −15 (4) 20 (5) 15

8. If $\vec{A} + \vec{B} = 2\vec{C}$, $\vec{A} - \vec{B} = \vec{C}$, then what is the value of the magnitude of $\vec{A}$ divided by the magnitude of $\vec{B}$ (*i.e.,* what is $|\vec{A}| \,/\, |\vec{B}|$)?

(1) 3 (2) 2 (3) 3/2 (4) 1 (5) 4

9. If $\vec{A} + \vec{B} = 3\vec{C}$, $\vec{A} - \vec{B} = \vec{C}$, then what is the value of the magnitude of $\vec{A}$ divided by the magnitude of $\vec{B}$ (*i.e.,* what is $|\vec{A}| \,/\, |\vec{B}|$)?

(1) 2 (2) 3 (3) 3/2 (4) 1 (5) 4

10. If $\vec{A} + \vec{B} = 5\vec{C}$, $\vec{A} - \vec{B} = \vec{C}$, then what is the value of the magnitude of $\vec{A}$ divided by the magnitude of $\vec{B}$ (*i.e.,* what is $|\vec{A}| \,/\, |\vec{B}|$)?

(1) 3/2 (2) 3 (3) 2 (4) 1 (5) 5

11. An object is released from rest at $t = 0$ near the surface of an unknown planet (not Earth) and falls 10 meters during the time interval from $t = 0$ s to $t = 2$ s. Ignoring atmospheric resistance, how far does it fall during the time interval from $t = 2$ s to $t = 3$ s?

(1) 12.5 m (2) 30.0 m (3) 52.5 m (4) 24.5 m (5) 102.9 m

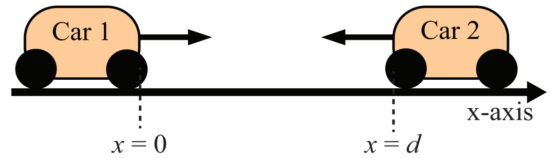
12. An object is released from rest at $t = 0$ near the surface of an unknown planet (not Earth) and falls 10 meters during the time interval from $t = 0$ s to $t = 2$ s. Ignoring atmospheric resistance, how far does it fall during the time interval from $t = 2$ s to $t = 4$ s?

(1) 30.0 m (2) 12.5 m (3) 52.5 m (4) 58.8 m (5) 102.9 m

13. An object is released from rest at $t = 0$ near the surface of an unknown planet (not Earth) and falls 10 meters during the time interval from $t = 0$ s to $t = 2$ s. Ignoring atmospheric resistance, how far does it fall during the time interval from $t = 2$ s to $t = 5$ s?

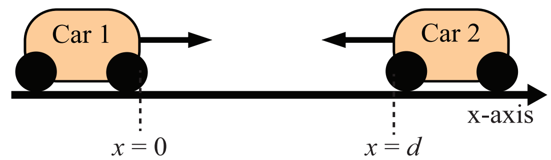
(1) 52.5 m (2) 12.5 m (3) 30.0 m (4) 24.5 m (5) 102.9 m

14. Two automobiles are moving at a constant speed but in opposite directions along the x-axis as shown in the figure. At $t = 0$ car 1 is at $x = 0$ traveling to the right at speed V and car 2 is at $x = d$ traveling to the left at speed $2V$. At what point along the x-axis will the two cars collide?



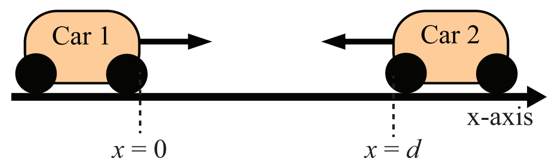
(1) $x = d/3$ (2) $x = d/4$ (3) $x = d/5$ (4) $x = d/2$ (5) $x = 2d/3$

15. Two automobiles are moving at a constant speed but in opposite directions along the x-axis as shown in the figure. At $t = 0$ car 1 is at $x = 0$ traveling to the right at speed V and car 2 is at $x = d$ traveling to the left at speed $3V$. At what point along the x-axis will the two cars collide?



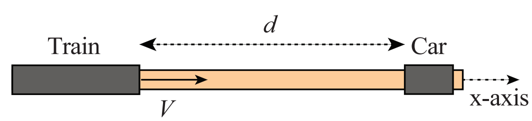
(1) $x = d/4$ (2) $x = d/3$ (3) $x = d/5$ (4) $x = d/2$ (5) $x = 2d/3$

16. Two automobiles are moving at a constant speed but in opposite directions along the x-axis as shown in the figure. At $t = 0$ car 1 is at $x = 0$ traveling to the right at speed V and car 2 is at $x = d$ traveling to the left at speed $4V$. At what point along the x-axis will the two cars collide?



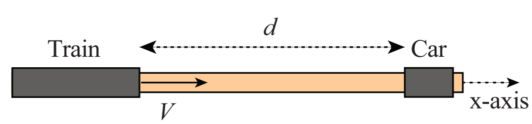
(1) $x = d/5$ (2) $x = d/3$ (3) $x = d/4$ (4) $x = d/2$ (5) $x = 2d/3$

17. At $t = 0$ the engineer of a high-speed train traveling at speed $V = 200$ m/s along the x-axis sees that a car has stopped on the track a distance $d = 1,000$ meters ahead as shown in the figure. When the engineer pushes the emergency stop button, the train will decelerate at a constant rate (*i.e.,* constant acceleration in the negative x-direction) of magnitude 25 m/s^2. What is the maximum amount of time (in s) the engineer has before he pushes the emergency stop in order to avoid colliding with the car (*i.e.,* reaction time)?



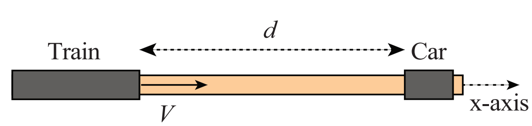
(1) 1.0 (2) 1.5 (3) 2.5 (4) 3.0 (5) 2.0

18. At $t = 0$ the engineer of a high-speed train traveling at speed $V = 200$ m/s along the x-axis sees that a car has stopped on the track a distance $d = 1,000$ meters ahead as shown in the figure. When the engineer pushes the emergency stop button, the train will decelerate at a constant rate (*i.e.,* constant acceleration in the negative x-direction) of magnitude 40 m/s^2. What is the maximum amount of time (in s) the engineer has before he pushes the emergency stop in order to avoid colliding with the car (*i.e.,* reaction time)?



(1) 2.5 (2) 1.0 (3) 1.5 (4) 3.0 (5) 2.0

19. At $t = 0$ the engineer of a high-speed train traveling at speed $V = 200$ m/s along the x-axis sees that a car has stopped on the track a distance $d = 1,000$ meters ahead as shown in the figure. When the engineer pushes the emergency stop button, the train will decelerate at a constant rate (*i.e.,* constant acceleration in the negative x-direction) of magnitude 50 m/s^2. What is the maximum amount of time (in s) the engineer has before he pushes the emergency stop in order to avoid colliding with the car (*i.e.,* reaction time)?



(1) 3.0 (2) 1.0 (3) 1.5 (4) 2.5 (5) 2.0

20. A race car accelerates uniformly from rest at $t = 0$ to a speed of 60 m/s in 7 seconds while traveling around a circular track of radius 600 m. What is the magnitude of the total acceleration of the car (in m/s^2) at time $t = 6$ s?

(1) 9.64 (2) 8.22 (3) 7.18 (4) 8.57 (5) 4.41

21. A race car accelerates uniformly from rest at $t = 0$ to a speed of 60 m/s in 8 seconds while traveling around a circular track of radius 600 m. What is the magnitude of the total acceleration of the car (in m/s^2) at time $t = 6$ s?

(1) 8.22 (2) 9.64 (3) 7.18 (4) 8.57 (5) 4.41

22. A race car accelerates uniformly from rest at $t = 0$ to a speed of 60 m/s in 9 seconds while traveling around a circular track of radius 600 m. What is the magnitude of the total acceleration of the car (in m/s^2) at time $t = 6$ s?

(1) 7.18 (2) 9.64 (3) 8.22 (4) 8.57 (5) 4.41

23. Near the surface of the Earth a man stands on a scale in a descending elevator traveling at 12 m/s which stops with a uniform deceleration. If during the deceleration his weight on the scale is 1.2 times his weight at rest, how long does it take for the elevator to stop (in s)?

(1) 6.12 (2) 3.06 (3) 2.04 (4) 4.25 (5) 5.65

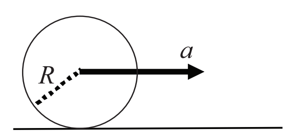
24. Near the surface of the Earth a man stands on a scale in a descending elevator traveling at 12 m/s which stops with a uniform deceleration. If during the deceleration his weight on the scale is 1.4 times his weight at rest, how long does it take for the elevator to stop (in s)?

(1) 3.06 (2) 6.12 (3) 2.04 (4) 4.25 (5) 5.65

25. Near the surface of the Earth a man stands on a scale in a descending elevator traveling at 12 m/s which stops with a uniform deceleration. If during the deceleration his weight on the scale is 1.6 times his weight at rest, how long does it take for the elevator to stop (in s)?

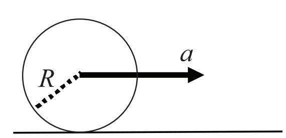
(1) 2.04 (2) 6.12 (3) 3.06 (4) 4.25 (5) 5.65

26. Starting from rest at time $t = 0$, a circular wheel with radius R is pulled to the right along a horizontal surface at a constant acceleration $a = 3.14$ m/s^2 as shown in the figure. If the wheel rolls without slipping and it takes the wheel 10 seconds to make 4 revolutions, what is the radius R of the wheel (in m)?



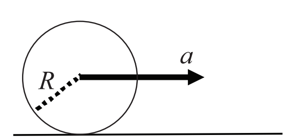
(1) 6.25 (2) 5.00 (3) 4.16 (4) 3.14 (5) 7.67

27. Starting from rest at time $t = 0$, a circular wheel with radius R is pulled to the right along a horizontal surface at a constant acceleration $a = 3.14$ m/s^2 as shown in the figure. If the wheel rolls without slipping and it takes the wheel 10 seconds to make 5 revolutions, what is the radius R of the wheel (in m)?



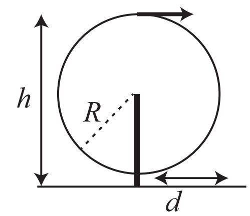
(1) 5.00 (2) 6.25 (3) 4.16 (4) 3.14 (5) 7.67

28. Starting from rest at time $t = 0$, a circular wheel with radius R is pulled to the right along a horizontal surface at a constant acceleration $a = 3.14$ m/s^2 as shown in the figure. If the wheel rolls without slipping and it takes the wheel 10 seconds to make 6 revolutions, what is the radius R of the wheel (in m)?



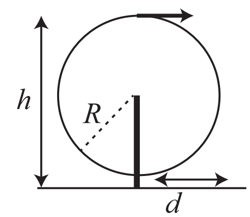
(1) 4.16 (2) 6.25 (3) 5.00 (4) 3.14 (5) 7.67

29. A Ferris wheel, near the surface of the Earth, with a radius $R = 12$ m rotates at a constant speed. When a passenger is at the top a height $h = 25$ m above the ground and a distance R from the axis of rotation of the Ferris wheel, he releases a ball. If the ball lands a horizontal distance $d = 10$ m from the point on the ground directly under the release point, how long (in s) does it take the Ferris wheel to make one complete revolution?



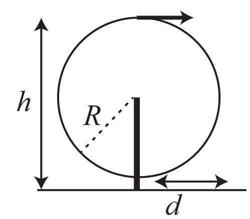
(1) 17.03 (2) 14.19 (3) 12.16 (4) 21.25 (5) 10.56

30. A Ferris wheel, near the surface of the Earth, with a radius $R = 12$ m rotates at a constant speed. When a passenger is at the top a height $h = 25$ m above the ground and a distance R from the axis of rotation of the Ferris wheel, he releases a ball. If the ball lands a horizontal distance $d = 12$ m from the point on the ground directly under the release point, how long (in s) does it take the Ferris wheel to make one complete revolution?



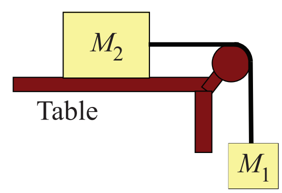
(1) 14.19 (2) 17.03 (3) 12.16 (4) 21.25 (5) 10.56

31. A Ferris wheel, near the surface of the Earth, with a radius $R = 12$ m rotates at a constant speed. When a passenger is at the top a height $h = 25$ m above the ground and a distance R from the axis of rotation of the Ferris wheel, he releases a ball. If the ball lands a horizontal distance $d = 14$ m from the point on the ground directly under the release point, how long (in s) does it take the Ferris wheel to make one complete revolution?



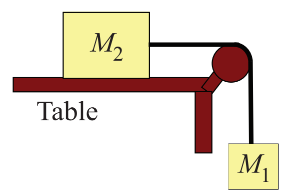
(1) 12.16 (2) 17.03 (3) 14.19 (4) 21.25 (5) 10.56

32. Near the surface of the Earth, a block of mass $M_2 = 2$ kg on a horizontal surface is connected by a cord over a massless, frictionless pulley to a second block of mass $M_1 = 2$ kg. The static and kinetic coefficient of friction between the table and mass M_2 are $\mu_s = 0.5$ and $\mu_k = 0.2$, respectively. What is the tension in the cord after the blocks are released from rest (in N)?



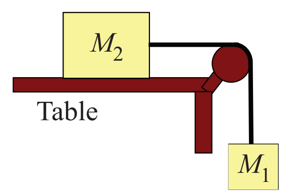
(1) 11.8 (2) 14.1 (3) 19.6 (4) 9.8 (5) 10.5

33. Near the surface of the Earth, a block of mass $M_2 = 3$ kg on a horizontal surface is connected by a cord over a massless, frictionless pulley to a second block of mass $M_1 = 2$ kg. The static and kinetic coefficient of friction between the table and mass M_2 are $\mu_s = 0.5$ and $\mu_k = 0.2$, respectively. What is the tension in the cord after the blocks are released from rest (in N)?



(1) 14.1 (2) 11.8 (3) 19.6 (4) 9.8 (5) 10.5

34. Near the surface of the Earth, a block of mass $M_2 = 4$ kg on a horizontal surface is connected by a cord over a massless, frictionless pulley to a second block of mass $M_1 = 2$ kg. The static and kinetic coefficient of friction between the table and mass M_2 are $\mu_s = 0.5$ and $\mu_k = 0.2$, respectively. What is the tension in the cord after the blocks are released from rest (in N)?



(1) 19.6 (2) 11.8 (3) 14.1 (4) 9.8 (5) 15.7

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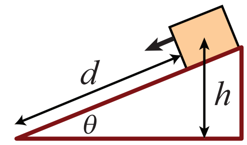
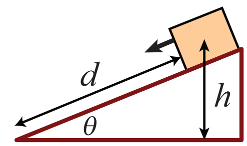
35. Near the surface of the Earth a block of mass M is sliding down a frictionless inclined ramp as shown in the figure. If the block is traveling at a speed of 10 m/s when it is at height $h = 10$ m above the ground, how long (in s) does it take the block to travel the distance $d = 20$ m to the end of the ramp?



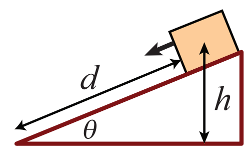
(1) 1.47 (2) 2.21 (3) 2.94 (4) 3.56 (5) 0.54

36. Near the surface of the Earth a block of mass M is sliding down a frictionless inclined ramp as shown in the figure. If the block is traveling at a speed of 10 m/s when it is at height $h = 10$ m above the ground, how long (in s) does it take the block to travel the distance $d = 30$ m to the end of the ramp?



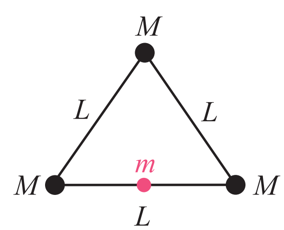
(1) 2.21 (2) 1.47 (3) 2.94 (4) 3.56 (5) 0.54

37. Near the surface of the Earth a block of mass M is sliding down a frictionless inclined ramp as shown in the figure. If the block is traveling at a speed of 10 m/s when it is at height $h = 10$ m above the ground, how long (in s) does it take the block to travel the distance $d = 40$ m to the end of the ramp?



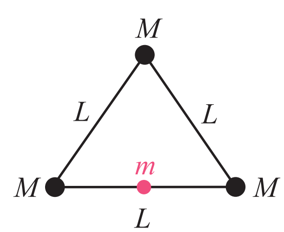
(1) 2.94 (2) 1.47 (3) 2.21 (4) 3.56 (5) 0.54

38. Three point particles with equal mass M form an equilateral triangle with sides of length L as shown in the figure. What is the magnitude of the *net* gravitational force on a mass $m = 1.5M$ (*i.e.,* 1.5 times the mass M) located at the midpoint of the edge of the triangle?



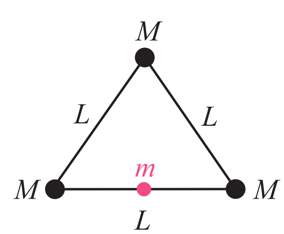
(1) $2GM^2/L^2$ (2) $4GM^2/L^2$ (3) $8GM^2/L^2$ (4) GM^2/L^2 (5) $5GM^2/L^2$

39. Three point particles with equal mass M form an equilateral triangle with sides of length L as shown in the figure. What is the magnitude of the *net* gravitational force on a mass $m = 3M$ (*i.e.,* 3 times the mass M) located at the midpoint of the edge of the triangle?



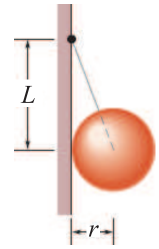
(1) $4GM^2/L^2$ (2) $2GM^2/L^2$ (3) $8GM^2/L^2$ (4) GM^2/L^2 (5) $5GM^2/L^2$

40. Three point particles with equal mass M form an equilateral triangle with sides of length L as shown in the figure. What is the magnitude of the *net* gravitational force on a mass $m = 6M$ (*i.e.,* 6 times the mass M) located at the midpoint of the edge of the triangle?



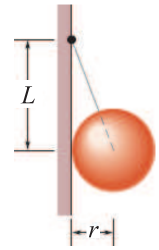
(1) $8GM^2/L^2$ (2) $2GM^2/L^2$ (3) $4GM^2/L^2$ (4) GM^2/L^2 (5) $5GM^2/L^2$

41. In the figure, a uniform sphere with a weight of 6 N and radius r is held in place by a massless rope attached to a frictionless wall a vertical distance L above the center of the sphere. If the magnitude of the force on the sphere from the wall is 2 N, what is the radius r of the ball?



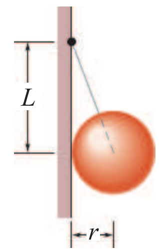
(1) $L/3$
(2) $L/2$
(3) $2L/3$
(4) $3L/4$
(5) $L/4$

42. In the figure, a uniform sphere with a weight of 6 N and radius r is held in place by a massless rope attached to a frictionless wall a vertical distance L above the center of the sphere. If the magnitude of the force on the sphere from the wall is 3 N, what is the radius r of the ball?



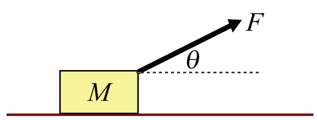
(1) $L/2$
(2) $L/3$
(3) $2L/3$
(4) $3L/4$
(5) $L/4$

43. In the figure, a uniform sphere with a weight of 6 N and radius r is held in place by a massless rope attached to a frictionless wall a vertical distance L above the center of the sphere. If the magnitude of the force on the sphere from the wall is 4 N, what is the radius r of the ball?



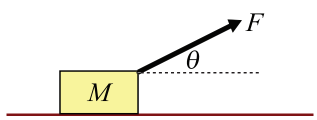
(1) $2L/3$
(2) $L/3$
(3) $L/2$
(4) $3L/4$
(5) $L/4$

44. Near the surface of the Earth, a block of mass $M = 2$ kg slides along a horizontal surface at a constant speed by a constant force F that is at an angle θ with the horizontal as shown in the figure. If the kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.5$, what is the magnitude of the force F (in N)?



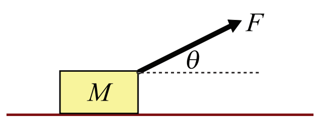
(1) 21.91 (2) 32.87 (3) 43.83 (4) 18.52 (5) 50.67

45. Near the surface of the Earth, a block of mass $M = 3$ kg slides along a horizontal surface at a constant speed by a constant force F that is at an angle θ with the horizontal as shown in the figure. If the kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.5$, what is the magnitude of the force F (in N)?



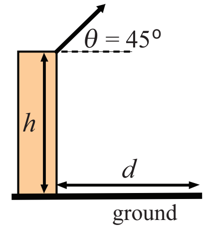
(1) 32.87 (2) 21.91 (3) 43.83 (4) 18.52 (5) 50.67

46. Near the surface of the Earth, a block of mass $M = 4$ kg slides along a horizontal surface at a constant speed by a constant force F that is at an angle θ with the horizontal as shown in the figure. If the kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.5$, what is the magnitude of the force F (in N)?



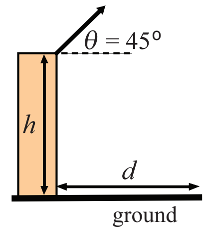
(1) 43.83 (2) 21.91 (3) 32.87 (4) 18.52 (5) 50.67

47. Near the surface of the Earth, a beanbag is thrown at an angle $\theta = 45°$ from the top of a building a height h above the ground, and lands a horizontal distance d from the base of the building as shown in the figure. If $d = h = 10$ m, what was the initial speed of the beanbag (in m/s)? Ignore air resistance.



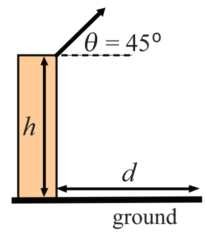
(1) 7.0
(2) 8.6
(3) 9.9
(4) 5.5
(5) 12.6

48. Near the surface of the Earth, a beanbag is thrown at an angle $\theta = 45°$ from the top of a building a height h above the ground, and lands a horizontal distance d from the base of the building as shown in the figure. If $d = h = 15$ m, what was the initial speed of the beanbag (in m/s)? Ignore air resistance.



(1) 8.6
(2) 7.0
(3) 9.9
(4) 5.5
(5) 12.6

49. Near the surface of the Earth, a beanbag is thrown at an angle $\theta = 45°$ from the top of a building a height h above the ground, and lands a horizontal distance d from the base of the building as shown in the figure. If $d = h = 20$ m, what was the initial speed of the beanbag (in m/s)? Ignore air resistance.



(1) 9.9
(2) 7.0
(3) 8.6
(4) 5.5
(5) 12.6

50. An object of mass $M = 2$ kg is released from rest at $t = 0$ near the surface of the Earth. Ignoring air resistance, what is the kinetic energy of the object (in J) at $t = 2$ s?

(1) 384.2 (2) 576.2 (3) 768.3 (4) 255.4 (5) 897.3

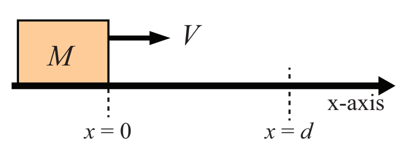
51. An object of mass $M = 3$ kg is released from rest at $t = 0$ near the surface of the Earth. Ignoring air resistance, what is the kinetic energy of the object (in J) at $t = 2$ s?

(1) 576.2 (2) 384.2 (3) 768.3 (4) 255.4 (5) 897.3

52. An object of mass $M = 4$ kg is released from rest at $t = 0$ near the surface of the Earth. Ignoring air resistance, what is the kinetic energy of the object (in J) at $t = 2$ s?

(1) 768.3 (2) 384.2 (3) 576.2 (4) 255.4 (5) 897.3

53. Near the surface of the Earth a block of mass $M = 2$ kg is sliding along a horizontal surface as shown in the figure. The kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.2$. If the block is traveling at a speed of 10 m/s when it is at the point $x = 0$, what is the speed of the block (in m/s) when it is at the point $x = d = 10$ m?

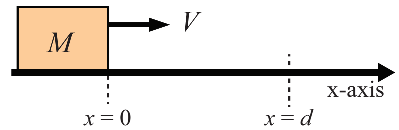


(1) 7.80 (2) 6.42 (3) 4.65 (4) 8.95 (5) 3.23

54. In the previous problem, how much work is done by the block (in J) when it travels from the point $x = 0$ to the point $x = d = 10$ m?

(1) 39.2 (2) 58.8 (3) 78.4 (4) 25.5 (5) 87.8

55. Near the surface of the Earth a block of mass $M = 2$ kg is sliding along a horizontal surface as shown in the figure. The kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.3$. If the block is traveling at a speed of 10 m/s when it is at the point $x = 0$, what is the speed of the block (in m/s) when it is at the point $x = d = 10$ m?

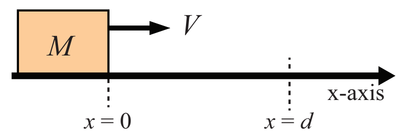


(1) 6.42 (2) 7.80 (3) 4.65 (4) 8.95 (5) 3.23

56. In the previous problem, how much work is done by the block (in J) when it travels from the point $x = 0$ to the point $x = d = 10$ m?

(1) 58.8 (2) 39.2 (3) 78.4 (4) 25.5 (5) 87.8

57. Near the surface of the Earth a block of mass $M = 2$ kg is sliding along a horizontal surface as shown in the figure. The kinetic coefficient of friction between the block and the horizontal surface is $\mu_k = 0.4$. If the block is traveling at a speed of 10 m/s when it is at the point $x = 0$, what is the speed of the block (in m/s) when it is at the point $x = d = 10$ m?



(1) 4.65 (2) 7.80 (3) 6.42 (4) 8.95 (5) 3.23

58. In the previous problem, how much work is done by the block (in J) when it travels from the point $x = 0$ to the point $x = d = 10$ m?

(1) 78.4 (2) 39.2 (3) 58.8 (4) 25.5 (5) 87.8

THE FOLLOWING QUESTIONS, NUMBERED IN THE ORDER OF THEIR APPEARANCE ON THE ABOVE LIST, HAVE BEEN FLAGGED AS CONTINUATION QUESTIONS: 54 56 58 FOLLOWING GROUPS OF QUESTIONS WILL BE SELECTED AS ONE GROUP FROM EACH TYPE

TYPE 1
Q# S 2
Q# S 3
Q# S 4
TYPE 2
Q# S 5
Q# S 6
Q# S 7
TYPE 3
Q# S 8
Q# S 9
Q# S 10
TYPE 4
Q# S 11
Q# S 12
Q# S 13
TYPE 5
Q# S 14
Q# S 15
Q# S 16
TYPE 6
Q# S 17
Q# S 18
Q# S 19
TYPE 7
Q# S 20
Q# S 21
Q# S 22

TYPE 8
Q# S 23
Q# S 24
Q# S 25
TYPE 9
Q# S 26
Q# S 27
Q# S 28
TYPE 10
Q# S 29
Q# S 30
Q# S 31
TYPE 11
Q# S 32
Q# S 33
Q# S 34
TYPE 12
Q# S 35
Q# S 36
Q# S 37
TYPE 13
Q# S 38
Q# S 39
Q# S 40
TYPE 14
Q# S 41
Q# S 42
Q# S 43
TYPE 15
Q# S 44
Q# S 45
Q# S 46
TYPE 16
Q# S 47
Q# S 48
Q# S 49
TYPE 17
Q# S 50
Q# S 51
Q# S 52
TYPE 18
Q# S 53 54
Q# S 55 56
Q# S 57 58