McRoberts Secondary

Dynamics Unit Retest 2025-11-26

Personal Data

Family Name:

Given Name:

Signature:

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Registration Number

0 1 2 3 4 5 6 7 8 9

In this section **no** changes or modifications must be made!

Scrambling 0 0

Type: 020

Exam ID(Physics 11): 25112600001

Please mark the boxes carefully: ☒ Not marked: ☐ or ■

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Only clearly marked and positionally accurate crosses will be processed!

Answers 1 - 15

	a	b	c	d
1	☐	☐		
2	☐	☐		
3	☐	☐		
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐
13	☐	☐	☐	☐
14	☐	☐	☐	☐
15	☐	☐	☐	☐
	a	b	c	d

Answers 16 - 20

	a	b	c	d
16	☐	☐	☐	☐
17	☐	☐	☐	☐
18	☐	☐	☐	☐
19	☐	☐	☐	☐
20	☐	☐	☐	☐
	a	b	c	d

1. True or false? If an object is at rest, then there are no forces acting upon the object.
    a. True
    b. False
2. True or false? An object weighs less on the moon than it does on earth.
    a. True
    b. False
3. True or false? A ball is thrown upwards and rightwards. While it is in the air, the net force on the ball is directed upwards and rightwards.
    a. True
    b. False
4. A box that weighs 100 N rests on a digital scale on the floor of an elevator. When would the scale measure a value less than 100 N? *Select all that apply.*
    a. moving upward with increasing speed.
    b. moving upward with decreasing speed.
    c. moving downward with increasing speed.
    d. moving downward with decreasing speed.
5. A person of mass 94 kg pushes on a wall with 60 N of force. What is the magnitude of the force that the wall exerts on the person?
    a. 60 N
    b. 6.1 N
    c. 590 N
    d. 920 N
6. A rocket moves through outer space with a constant velocity of $9.8\,\mathrm{m/s}$ toward the Andromeda galaxy. What is the net force acting on the rocket?
    a. A force equal to the gravity acting on it.
    b. A force equal to its weight on Earth, mg.
    c. Cannot be determined without more information.
    d. The net force is zero.
7. A physics textbook of mass m is at rest on a flat table. Earth's gravity applies a downward force mg on the book, which we will call the action force. What is the reaction force?
    a. The table pushing down on the floor with force mg.
    b. The book pulling upward on the Earth with force mg.
    c. The table pushing up on the book with force mg.
    d. The book pushing down on the table with force mg.
8. A box, of mass M, is suspended by a string from the ceiling inside an elevator. The elevator is traveling downward with a constant speed. The tension in the string is
    a. less than Mg.
    b. equal to Mg.
    c. greater than Mg.
    d. impossible to determine without knowing the speed.

9. You place a 79.76-kg object on a spring scale. If the scale reads 812.8 N, what is the acceleration of gravity at that location?

   a. $14.68\,\mathrm{m/s^2}$
   b. $14.04\,\mathrm{m/s^2}$
   c. $10.19\,\mathrm{m/s^2}$
   d. $10.96\,\mathrm{m/s^2}$

10. An object of mass 6.0 kg accelerates at $11.0\,\mathrm{m/s^2}$. What is the magnitude of the net force on the object?

    a. 66 N
    b. 50 N
    c. 59 N
    d. 76 N

11. An box is at rest on an inclined plane. The angle of incline is increased slowly. When the angle reaches 29.0°, the box begins to slide. What is the coefficient of static friction between the box and the inclined plane?

    a. 0.756
    b. 0.554
    c. 0.672
    d. 0.828

12. As the angle of an inclined plane increases, the parallel force _____ and the perpendicular force _____.

    a. decreases, decreases
    b. decreases, increases
    c. increases, decreases
    d. increases, increases

13. Two forces act on an object. A 98-N force acts at 0° and a 90-N force acts at 90°. What is the magnitude of the equilibrant?

    a. 138 N
    b. 133 N
    c. 74.2 N
    d. 109 N

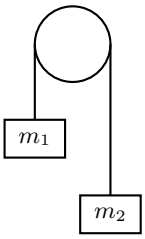
14. Carly pulls on a box with 18.0 N of force. Debby pulls on the the same box at a right angle to Carly. How hard must Debby pull to make the resultant force on the box 27.0 N?

    a. 18.0 N
    b. 10.4 N
    c. 20.1 N
    d. 13.1 N

15. Robert pulls on a box with 30.0 N of force at 176°. Steve pulls on the the same box with 21.0 N of force at 19°. What is the magnitude of the net force on the box?

    a. 13.5 N
    b. 18.5 N
    c. 10.5 N
    d. 14.8 N

16. Two masses are attached to a lightweight cord that passes over a frictionless pulley as shown in the diagram. The values of the masses are $m_1 = 73.0$ kg and $m_2 = 27.0$ kg. The hanging masses are free to move. What is the magnitude of the acceleration of the system?



    a. 3.03 m/s/s
    b. 4.51 m/s/s
    c. 5.62 m/s/s
    d. 2.56 m/s/s

17. Two forces act on an object. A 24.0-N force acts at $-112°$. A 68.0-N force acts at 39°. What is the angle of their equilibrant?

    a. $-154.9°$
    b. $-180.0°$
    c. $-165.2°$
    d. $-169.7°$

18. A box of mass 12 kg slides down a frictionless inclined plane. The angle of incline is 71° from the horizontal. What is the acceleration of the box?

    a. 13.0 m/s^2
    b. 9.3 m/s^2
    c. 10.9 m/s^2
    d. 11.1 m/s^2

19. A box of mass 14 kg slides down an inclined plane with friction. The angle of incline is 41° and $\mu_k = 0.15$. What is the acceleration of the box?

    a. 5.3 m/s^2
    b. 1.2 m/s^2
    c. 0.6 m/s^2
    d. 1.1 m/s^2

20. An 2.6-kg box slides down a 34° inclined plane with constant acceleration. The box starts from rest at the top. At the bottom, its velocity reaches 4.03 m/s. The length of the incline is 3.44 m. What is the coefficient of kinetic friction between the box and the plane?

    a. 0.384
    b. 0.344
    c. 0.264
    d. 0.014