McRoberts Secondary

Dynamics Unit Test 2025-11-12

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

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Type: 020

Exam ID(Physics 11): 25111200002

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

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Answers 1 - 15

	a	b	c	d
1	☐	☐		
2	☐	☐		
3	☐	☐		
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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? The mass of an object on the moon is the same as its mass on earth.
    a. True
    b. False
3. True or false? If an object is moving to the left, then the net force on it must point to the left.
    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 weight 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 45 kg pushes on a wall with 79 N of force. What is the magnitude of the force that the wall exerts on the person?
    a. 8.1 N
    b. 79 N
    c. 770 N
    d. 440 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. Cannot be determined without more information.
    b. A force equal to its weight on Earth, mg.
    c. A force equal to the gravity acting on it.
    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 up on the book with force mg.
    b. The table pushing down on the floor with force mg.
    c. The book pushing down on the table with force mg.
    d. The book pulling upward on the Earth with force mg.
8. The gravitational force exerted by a large body, such as the Earth, is called
    a. gravitational mass
    b. weight
    c. inertial mass
    d. gravitational field strength

9. The mass of an object is 91 kg. What is its weight on Earth?

    a. 1300 N
    b. 91 N
    c. 9.3 N
    d. 890 N

10. A net force of 943 N acts on an object, and it accelerates at 26 m/s/s in the direction of the net force. What is the mass of the object?

    a. 25000 kg
    b. 36 kg
    c. 23 kg
    d. 0.03 kg

11. A box slides on the floor in the $+\mathrm{x}$ direction. It slows down and comes to a stop with a constant acceleration of $-1.49\,\mathrm{m/s^2}$. The only force acting on the box while it is slowing down is friction between the box and the floor. What is the coefficient of kinetic friction between the box and the floor?

    a. 0.152
    b. 0.125
    c. 0.171
    d. 0.222

12. A person (mass = 128 kg) stands on top of a box (mass = 4.0 kg) on the ground. What is the magnitude of the normal force that the ground applies to the box?

    a. 1580 N
    b. 1290 N
    c. 1650 N
    d. 132 N

13. Adam pulls on a box with 19.0 N of force. Bob pulls on the the same box with 11.0 N of force, at a right angle to Adam's force. What is the magnitude of the net force on the box?

    a. 30 N
    b. 8 N
    c. 27.6 N
    d. 22 N

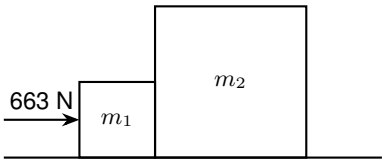
14. Xavier pulls on a box with 27.0 N of force at 0°. Yuri pulls on the the same box with 21.0 N of force, at 90°. What is the angle of the net force?

    a. 9.6°
    b. 0.2°
    c. 38.0°
    d. 13.1°

15. Charlie pulls on a box with 51.0 N of force at -153°. Dan pulls on the the same box with 76.0 N of force at -23°. What is the angle of the net force on the box?

    a. -65.1°
    b. -138.6°
    c. -118.9°
    d. -103.2°

16. Two boxes are in contact with each other on a frictionless table as shown in the diagram. The masses are $m_1 = 19$ kg and $m_2 = 47.5$ kg. The first box (m_1)is pushed with a horizontal force of 663 N to the right. What is the net force on the second box (m_2)?



    a. 240 N
    b. 549 N
    c. 474 N
    d. 308 N

17. Two forces act on an object. A 22.0-N force acts at 80°. A 88.0-N force acts at 161°. What is the angle of their equilibrant?

    a. $-32.4°$
    b. $-113.5°$
    c. $-36.4°$
    d. $-167.6°$

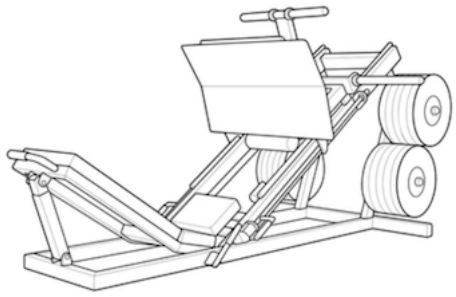
18. A box of mass 88 kg slides down a frictionless inclined plane. The angle of incline is 19° from the horizontal. What is the acceleration of the box?

    a. 3.0 m/s^2
    b. 3.2 m/s^2
    c. 2.4 m/s^2
    d. 1.9 m/s^2

19. A box of mass 45 kg slides down an inclined plane with friction. The angle of incline is 49° and $\mu_k = 0.46$. What is the acceleration of the box?

    a. 4.4 m/s^2
    b. 1.6 m/s^2
    c. 1.1 m/s^2
    d. 5.3 m/s^2

20. A leg press machine is inclined at 47.0° from the horizontal. The total mass to be pressed up is 23.0 kg. What force must the legs apply to move the mass at a constant velocity? Assume that friction is negligible.



    a. 17 N
    b. 136 N
    c. 165 N
    d. 23 N