McRoberts Secondary

Dynamics Unit Test 2025-11-12

Personal Data

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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): 25111200005

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	☐	☐	☐	☐
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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? An object weighs less on the moon than it does 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 57 kg pushes on a wall with 63 N of force. What is the magnitude of the force that the wall exerts on the person?
    a. 63 N
    b. 560 N
    c. 620 N
    d. 6.4 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 its weight on Earth, mg.
    b. The net force is zero.
    c. Cannot be determined without more information.
    d. A force equal to the gravity acting on it.
7. An apple is falling straight down toward the ground. Take the weight of the apple to be the action force. What is the reaction force?
    a. The apple's gravity pulling upward on the Earth.
    b. There is no reaction force because the apple is not touching anything.
    c. The force of impact when the object hits the ground.
    d. The air resistance pushing up on the apples.
8. What is the net force on a person who is standing in an elevator moving up with a constant velocity of 5.00 m/s?
    a. It depends on the mass of the person.
    b. 5.00 N, down
    c. 5.00 N, up
    d. 0 N

9. An object weighs 92 N on Earth. What is its mass?

    a. 490 kg
    b. 360 kg
    c. 9.4 kg
    d. 92 kg

10. A net force of 40.0 N acts on an object of mass 9.00 kg. What is the acceleration of the object?

    a. $4.4\,\mathrm{m/s^2}$
    b. $2.3\,\mathrm{m/s^2}$
    c. $3.8\,\mathrm{m/s^2}$
    d. $3.1\,\mathrm{m/s^2}$

11. An box is at rest on an inclined plane. The angle of incline is increased slowly. When the angle reaches 14.0°, the box begins to slide. What is the coefficient of static friction between the box and the inclined plane?

    a. 0.070
    b. 0.249
    c. 0.170
    d. 0.277

12. A person (mass = 101 kg) stands on top of a box (mass = 3.0 kg) on the ground. What is the magnitude of the normal force that the ground applies to the box?

    a. 1400 N
    b. 227 N
    c. 990 N
    d. 1020 N

13. Adam pulls on a box with 13.0 N of force. Bob pulls on the the same box with 12.0 N of force, at a right angle to Adam's force. What is the magnitude of the net force on the box?

    a. 17.7 N
    b. 10.8 N
    c. 1 N
    d. 25 N

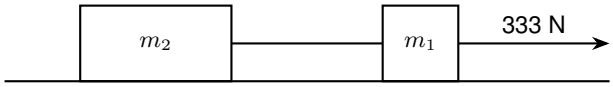
14. Xavier pulls on a box with 17.0 N of force at 0°. Yuri pulls on the the same box with 25.0 N of force, at 90°. What is the angle of the net force?

    a. 56.0°
    b. 84.7°
    c. 57.4°
    d. 6.7°

15. Charlie pulls on a box with 59.0 N of force at 154°. Dan pulls on the the same box with 30.0 N of force at -66°. What is the angle of the net force on the box?

    a. -89.6°
    b. -95.5°
    c. -177.8°
    d. -156.2°

16. Two boxes connected by a light cord are on a frictionless table as shown in the diagram. The masses are $\mathrm{m_1} = 58$ kg and $\mathrm{m_2} = 348$ kg. A 333-N force is applied horizontally on the right box. What is the tension in the cord?



    a. 340 N
    b. 153 N
    c. 285 N
    d. 190 N

17. Two forces act on an object. A 19.0-N force acts at $-170°$. A 44.0-N force acts at $66°$. What is the angle of their equilibrant?

    a. $34.2°$
    b. $-13.2°$
    c. $-88.7°$
    d. $116.7°$

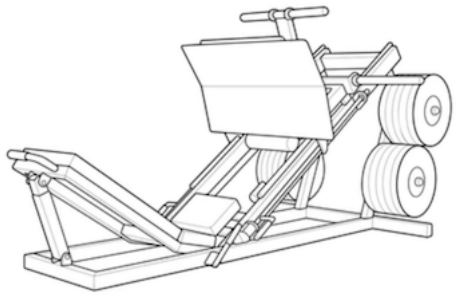
18. A box of mass 32 kg slides down a frictionless inclined plane. The angle of incline is $24°$ from the horizontal. What is the acceleration of the box?

    a. $5.8\,\mathrm{m/s^2}$
    b. $4.0\,\mathrm{m/s^2}$
    c. $3.5\,\mathrm{m/s^2}$
    d. $5.0\,\mathrm{m/s^2}$

19. A box of mass 67 kg slides down an inclined plane with friction. The angle of incline is $65°$ and $\mu_\mathrm{k} = 0.018$. What is the acceleration of the box?

    a. $9.3\,\mathrm{m/s^2}$
    b. $0.2\,\mathrm{m/s^2}$
    c. $4.1\,\mathrm{m/s^2}$
    d. $8.8\,\mathrm{m/s^2}$

20. A leg press machine is inclined at $40.0°$ from the horizontal. The total mass to be pressed up is 53.0 kg. What force must the legs apply to move the mass at a constant velocity? Assume that friction is negligible.



    a. 334 N
    b. 359 N
    c. 34 N
    d. 261 N