McRoberts Secondary

Dynamics Unit Retest 2025-11-26

Personal Data

Family Name:

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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): 25112600003

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? 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 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 93 kg pushes on a wall with 40 N of force. What is the magnitude of the force that the wall exerts on the person?
    a. 4.1 N
    b. 40 N
    c. 390 N
    d. 910 N
6. Why is a greater force needed to start moving a heavy box from rest than to keep pushing it with constant velocity? In the choices below, μ_k is the coefficient of kinetic friction and μ_s is the coefficient of static friction.
    a. The inertia of the box is greater when it is at rest.
    b. $\mu_s < \mu_k$
    c. The normal force is greater when the box is at rest.
    d. $\mu_k < \mu_s$
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. There is no reaction force because the apple is not touching anything.
    b. The air resistance pushing up on the apple.
    c. The force of impact when the object hits the ground.
    d. The apple's gravity pulling upward on the Earth.
8. The gravitational force exerted by a large body, such as the Earth, is called
    a. inertial mass
    b. gravitational mass
    c. weight
    d. gravitational field strength

9. You place a 71.77-kg object on a spring scale. If the scale reads 486.5 N, what is the acceleration of gravity at that location?

    a. $5.18\,\mathrm{m/s^2}$
    b. $8.26\,\mathrm{m/s^2}$
    c. $5.78\,\mathrm{m/s^2}$
    d. $6.78\,\mathrm{m/s^2}$

10. A net force of 890 N acts on an object, and it accelerates at 95 m/s/s in the direction of the net force. What is the mass of the object?

    a. 9.4 kg
    b. 85000 kg
    c. 17000 kg
    d. 0.11 kg

11. An box is at rest on an inclined plane. The angle of incline is increased slowly. When the angle reaches 21.0°, the box begins to slide. What is the coefficient of static friction between the box and the inclined plane?

    a. 0.481
    b. 0.384
    c. 0.433
    d. 0.575

12. What force is needed to keep a 15-kg box moving at a constant velocity across a warehouse floor if the coefficient of kinetic friction between the box and the floor is 0.24?

    a. 49 N
    b. 39 N
    c. 35 N
    d. 3.6 N

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

    a. 19.7 N
    b. 11.3 N
    c. 22 N
    d. 15.7 N

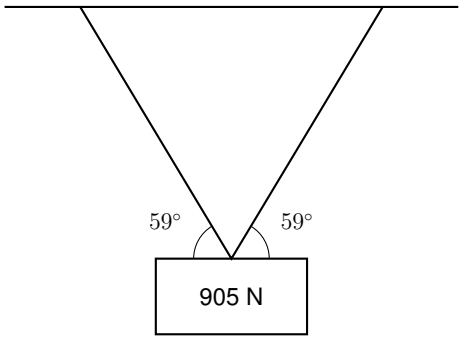
14. Xavier pulls on a box with 24.0 N of force at 0°. Yuri pulls on the the same box with 21.0 N of force, at 90°. What is the angle of the net force?

    a. 41.0°
    b. 87.0°
    c. 73.2°
    d. 1.1°

15. Charlie pulls on a box with 91.0 N of force at 67°. Dan pulls on the the same box with 65.0 N of force at -150°. What is the angle of the net force on the box?

    a. 121.8°
    b. 173.6°
    c. 112.0°
    d. -2.0°

16. A sign that weighs 905 N is supported by two ropes that each makes a 59° angle with the horizontal. The sign is not moving. What is the magnitude of the force exerted by each rope?



    a. 726 N
    b. 541 N
    c. 585 N
    d. 528 N

17. Two forces act on an object. A 37.0-N force acts at 79°. A 15.0-N force acts at 78°. What is the angle of their equilibrant?

    a. $-101.3°$
    b. $-45.7°$
    c. 56.4°
    d. $-30.6°$

18. A box of mass 59 kg slides down a frictionless inclined plane. The angle of incline is 49° from the horizontal. What is the acceleration of the box?

    a. $7.4\,\mathrm{m/s^2}$
    b. $11.1\,\mathrm{m/s^2}$
    c. $7.7\,\mathrm{m/s^2}$
    d. $8.2\,\mathrm{m/s^2}$

19. A box of mass 32 kg slides down an inclined plane with friction. The angle of incline is 40° and $\mu_\mathrm{k} = 0.25$. What is the acceleration of the box?

    a. $2.8\,\mathrm{m/s^2}$
    b. $7.7\,\mathrm{m/s^2}$
    c. $5.7\,\mathrm{m/s^2}$
    d. $4.4\,\mathrm{m/s^2}$

20. An 4.3-kg box slides down a 53° inclined plane with constant acceleration. The box starts from rest at the top. At the bottom, its velocity reaches 3.03 m/s. The length of the incline is 1.51 m. What is the coefficient of kinetic friction between the box and the plane?

    a. 0.812
    b. 0.452
    c. 1.141
    d. 1.053