



McRoberts Secondary

Dynamics Unit Retest 2 2025-01-19



Personal Data

Family Name:	
Given Name:	
Signature:	
	checked

Registration Number

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

Scrambling

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Type

020

Exam ID(Physics 11)

25011900002

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

This document is scanned automatically. Please keep clean and do not bend or fold. For filling in the document please use a **blue or black pen**.

Only clearly marked and positionally accurate crosses will be processed!

Answers 1 - 15

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	a	b	c	d

Answers 16 - 20

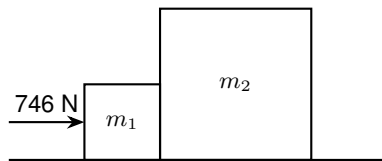
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	a	b	c	d



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? 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 golf club hits a golf ball with a force of 2400 N. The golf ball hits the club with a force
 - a. not enough information to determine
 - b. less than 2400 N
 - c. 2400 N
 - d. more than 2400 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. $\mu_k < \mu_s$
 - b. The inertia of the box is greater when it is at rest.
 - c. The normal force is greater when the box is at rest.
 - d. $\mu_s < \mu_k$
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 force of impact when the object hits the ground.
 - b. There is no reaction force because the apple is not touching anything.
 - c. The air resistance pushing up on the apple.
 - 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. gravitational field strength
 - b. gravitational mass
 - c. weight
 - d. inertial mass

9. You place a 18.53-kg object on a spring scale. If the scale reads 122.5 N, what is the acceleration of gravity at that location?
- 5.32 m/s²
 - 3.32 m/s²
 - 6.61 m/s²
 - 3.96 m/s²
10. An object of mass 20.0 kg accelerates at 2.0 m/s². What is the magnitude of the net force on the object?
- 59 N
 - 40 N
 - 35 N
 - 46 N
11. A box is at rest on an inclined plane. The angle of incline is increased slowly. When the angle reaches 35.0°, the box begins to slide. What is the coefficient of static friction between the box and the inclined plane?
- 0.966
 - 1.038
 - 0.811
 - 0.700
12. What force is needed to keep a 46-kg box moving at a constant velocity across a warehouse floor if the coefficient of kinetic friction between the box and the floor is 0.29?
- 180 N
 - 170 N
 - 130 N
 - 54 N
13. Two forces act on an object. A 46-N force acts at 0° and a 12-N force acts at 90°. What is the magnitude of the equilibrant?
- 40.6 N
 - 47.5 N
 - 35.5 N
 - 45.1 N
14. Xavier pulls on a box with 44.0 N of force at 0°. Yuri pulls on the the same box with 44.0 N of force, at 90°. What is the angle of the net force?
- 45.0°
 - 49.9°
 - 80.0°
 - 52.9°
15. Charlie pulls on a box with 45.0 N of force at -30°. Dan pulls on the the same box with 18.0 N of force at -57°. What is the angle of the net force on the box?
- 43.6°
 - 20.2°
 - 37.6°
 - 159.4°

16. Two boxes are in contact with each other on a frictionless table as shown in the diagram. The masses are $m_1 = 80 \text{ kg}$ and $m_2 = 400 \text{ kg}$. The first box (m_1) is pushed with a horizontal force of 746 N to the right. What is the net force on the second box (m_2)?



- a. 395 N
 - b. 622 N
 - c. 741 N
 - d. 529 N
17. Two forces act on an object. A 96.0-N force acts at -167° . A 36.0-N force acts at 55° . What is the angle of their equilibrant?
- a. 88.1°
 - b. -161.2°
 - c. -6.2°
 - d. 166.3°
18. A box of mass 86 kg slides down a frictionless inclined plane. The angle of incline is 53° from the horizontal. What is the acceleration of the box?
- a. 7.9 m/s^2
 - b. 10.6 m/s^2
 - c. 8.0 m/s^2
 - d. 7.8 m/s^2
19. A box of mass 20 kg slides down an inclined plane with friction. The angle of incline is 58° and $\mu_k = 0.78$. What is the acceleration of the box?
- a. 4.9 m/s^2
 - b. 4.3 m/s^2
 - c. 1.3 m/s^2
 - d. 9.0 m/s^2
20. An 3.7-kg box slides down a 51° inclined plane with constant acceleration. The box starts from rest at the top. At the bottom, its velocity reaches 4.02 m/s . The length of the incline is 1.46 m . What is the coefficient of kinetic friction between the box and the plane?
- a. 0.157
 - b. 0.426
 - c. 0.385
 - d. 0.338