

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)
25011900003

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

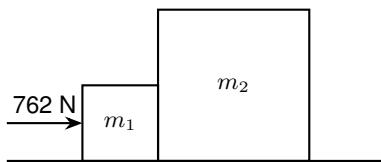
	a	b	c	d
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	a	b	c	d



1. True or false? If an object is in equilibrium (i.e. all the forces on it are balanced), then the object must be at rest.
 - 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 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 63 kg pushes on a wall with 94 N of force. What is the magnitude of the force that the wall exerts on the person?
 - a. 920 N
 - b. 9.6 N
 - c. 94 N
 - d. 620 N
6. A rocket moves through outer space with a constant velocity of 9.8 m/s toward the Andromeda galaxy. What is the net force acting on the rocket?
 - a. The net force is zero.
 - b. A force equal to its weight on Earth, mg .
 - c. A force equal to the gravity acting on it.
 - d. Cannot be determined without more information.
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 table pushing up on the book 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. 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 76.89-kg object on a spring scale. If the scale reads 1268 N, what is the acceleration of gravity at that location?
- 23.21 m/s²
 - 17.79 m/s²
 - 16.49 m/s²
 - 21.72 m/s²
10. An object of mass 19.0 kg accelerates at 5.0 m/s². What is the magnitude of the net force on the object?
- 95 N
 - 50 N
 - 62 N
 - 73 N
11. A box is at rest on an inclined plane. The angle of incline is increased slowly. When the angle reaches 49.0°, the box begins to slide. What is the coefficient of static friction between the box and the inclined plane?
- 0.057
 - 0.617
 - 1.150
 - 0.913
12. What force is needed to keep a 17-kg box moving at a constant velocity across a warehouse floor if the coefficient of kinetic friction between the box and the floor is 0.25?
- 52 N
 - 42 N
 - 18 N
 - 4.2 N
13. Two forces act on an object. A 14-N force acts at 0° and a 25-N force acts at 90°. What is the magnitude of the equilibrant?
- 36.7 N
 - 17.7 N
 - 26.7 N
 - 28.7 N
14. Carly pulls on a box with 19.0 N of force. Debby pulls on the same box at a right angle to Carly. How hard must Debby pull to make the resultant force on the box 20.0 N?
- 6.2 N
 - 4.4 N
 - 7.4 N
 - 5.4 N
15. Charlie pulls on a box with 20.0 N of force at 127°. Dan pulls on the same box with 46.0 N of force at -91°. What is the angle of the net force on the box?
- 113.2°
 - 104.5°
 - 10.7°
 - 161.2°

16. Two boxes are in contact with each other on a frictionless table as shown in the diagram. The masses are $m_1 = 27 \text{ kg}$ and $m_2 = 135 \text{ kg}$. The first box (m_1) is pushed with a horizontal force of 762 N to the right. What is the net force on the second box (m_2)?



- a. 910 N
 - b. 635 N
 - c. 365 N
 - d. 484 N
17. Two forces act on an object. A 18.0-N force acts at -28° . A 96.0-N force acts at -175° . What is the angle of their equilibrant?
- a. -56.2°
 - b. 11.9°
 - c. -52.2°
 - d. -19.6°
18. A box of mass 28 kg slides down a frictionless inclined plane. The angle of incline is 22° from the horizontal. What is the acceleration of the box?
- a. 3.7 m/s^2
 - b. 3.0 m/s^2
 - c. 2.2 m/s^2
 - d. 3.4 m/s^2
19. A box of mass 12 kg slides down an inclined plane with friction. The angle of incline is 48° and $\mu_k = 0.55$. What is the acceleration of the box?
- a. 3.7 m/s^2
 - b. 2.6 m/s^2
 - c. 3.4 m/s^2
 - d. 4.7 m/s^2
20. An 4.5-kg box slides down a 44° inclined plane with constant acceleration. The box starts from rest at the top. At the bottom, its velocity reaches 4.61 m/s. The length of the incline is 2.75 m. What is the coefficient of kinetic friction between the box and the plane?
- a. 0.623
 - b. 0.474
 - c. 0.418
 - d. 0.541