



McRoberts Secondary

Dynamics Unit Retest 2 2025-01-19



Personal Data

Family Name:	
Given Name:	
Signature:	
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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)

25011900004

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

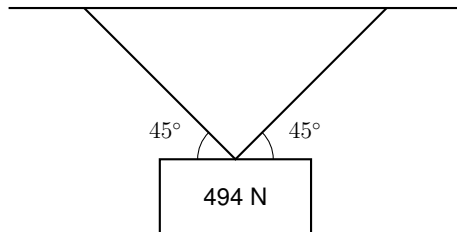
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	a	b	c	d



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? An object weighs less on the moon than it does 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 greater 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. In a rugby game, Bob (mass = 51 kg) tackles Joe (mass = 114 kg) and knocks Joe to the ground. During the collision, who applied the greater force on whom?
 - a. Bob applied a greater force on Joe (than Joe did on him).
 - b. Joe applied a greater force on Bob (than Bob did on him).
 - c. Bob and Joe applied the same magnitude force on each other.
 - d. It depends on the relative speeds of Bob and Joe.
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. Cannot be determined without more information.
 - c. A force equal to its weight on Earth, mg .
 - 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 air resistance pushing up on the apple.
 - b. The apple's gravity pulling upward on the Earth.
 - c. The force of impact when the object hits the ground.
 - d. There is no reaction force because the apple is not touching anything.
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 76.19-kg object on a spring scale. If the scale reads 185.3 N, what is the acceleration of gravity at that location?
- 2.43 m/s²
 - 3.33 m/s²
 - 1.72 m/s²
 - 2.38 m/s²
10. A net force of 93.0 N acts on an object of mass 3.00 kg. What is the acceleration of the object?
- 45.0 m/s²
 - 38.0 m/s²
 - 31.0 m/s²
 - 41.0 m/s²
11. An box slides down an inclined plane with a constant velocity. The angle of incline is 40.0°. What is the coefficient of kinetic friction between the box and the inclined plane?
- 0.522
 - 0.223
 - 0.839
 - 0.012
12. As the angle of an inclined plane increases, the parallel force _____ and the perpendicular force _____.
- decreases, decreases
 - decreases, increases
 - increases, decreases
 - increases, increases
13. Adam pulls on a box with 14.0 N of force. Bob pulls on the the same box with 2.0 N of force, at a right angle to Adam's force. What is the magnitude of the net force on the box?
- 17.3 N
 - 7.1 N
 - 20.9 N
 - 14.1 N
14. Xavier pulls on a box with 46.0 N of force at 0°. Yuri pulls on the the same box with 16.0 N of force, at 90°. What is the angle of the net force?
- 19.0°
 - 69.6°
 - 82.9°
 - 55.9°
15. Robert pulls on a box with 10.0 N of force at 113°. Steve pulls on the the same box with 21.0 N of force at 208°. What is the magnitude of the net force on the box?
- 22.5 N
 - 26.1 N
 - 30.4 N
 - 31.5 N

16. A sign that weighs 494 N is supported by two ropes that each makes a 45° angle with the horizontal. The sign is not moving. What is the magnitude of the force exerted by each rope?



- a. 349 N
b. 389 N
c. 251 N
d. 264 N
17. Two forces act on an object. A 43.0-N force acts at -148° . A 86.0-N force acts at -83° . What is the angle of their equilibrant?
- a. -125.5°
b. 76.5°
c. -64.3°
d. 147.6°
18. A box of mass 61 kg slides down a frictionless inclined plane. The angle of incline is 52° from the horizontal. What is the acceleration of the box?
- a. 8.4 m/s^2
b. 7.7 m/s^2
c. 6.4 m/s^2
d. 5.5 m/s^2
19. A box of mass 23 kg slides down an inclined plane with friction. The angle of incline is 25° and $\mu_k = 0.25$. What is the acceleration of the box?
- a. 5.3 m/s^2
b. 0.0 m/s^2
c. 1.9 m/s^2
d. 0.6 m/s^2
20. An 6-kg box slides down a 29° inclined plane with constant acceleration. The box starts from rest at the top. At the bottom, its velocity reaches 4.39 m/s. The length of the incline is 3.83 m. What is the coefficient of kinetic friction between the box and the plane?
- a. 0.261
b. 0.024
c. 0.344
d. 0.375