

Chapter 3 Guided Reading Section 3.1

1. A _____ is a push, pull, or any action that has the ability to change motion.
2. State Newton's first law.
3. Define inertia.
4. When you measure an object's weight in pounds on a scale, you are measuring the _____ of _____ acting on the object.
5. The SI unit of force is the _____.
6. A force of 1 N is the exact amount of force needed to cause a mass of _____ to accelerate at _____ per second.
7. Define net force.

Guided Reading Section 3.2

8. State Newton's Second Law as a mathematical equation.
9. According to Newton's Second Law, acceleration depends on both _____ and _____.
10. If the net force acting on an object doubles while its mass remains constant, what happens to its acceleration?
11. If the mass of an object doubles while the net force remains constant, what happens to its acceleration?
12. List the four important guidelines for applying Newton's Second Law.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
13. If there is **no acceleration**, what must be true about the net force?
14. Explain why forces are able to transfer energy from one object to another.
15. Fill in the chart below to show the units to use when solving physics problems involving force in newtons.

measurement	unit		measurement	unit
force			time	
mass			velocity	
distance			acceleration	

16. Fill in the chart below to show the three forms of Newton's second law.

Use...	...if you want to find...	...and you know...
$a = F/m$		
	force (F)	
		acceleration (a) and force (F)

Guided Reading Section 3.3

17. What is free fall?

18. As an object falls freely, its speed changes by _____ every second.

19. In free fall and other situations when there is _____, the average velocity is the average of the starting or initial velocity and the final velocity.

20. Write the equation for average velocity *where there is constant acceleration*.

21. Write the free-fall equation used to calculate distance when an object starts from rest.

22. If the initial velocity is zero and the object falls for t seconds, then the final velocity is gt . Then average velocity is _____ the _____ velocity or, _____.

23. The force of gravity acting on an object is called its _____.

24. Weight is measured in _____, while mass is measured in _____.

25. Write the formula for weight.

26. What is air resistance?

27. Air resistance acts in what direction relative to an object's motion?

28. What is terminal velocity? And when does an object reach terminal velocity?