

Name Key!
Chapter 2 Forces Test Review Sheet

Date _____

Test Tuesday 11/19

Define the following vocabulary words.

Force- A push or pull exerted on an object.

Newton- A unit of measure that equals the force required to accelerate 1 Kg of mass at 1 m/s^2 .

Net Force- The overall force on an object when all the individual forces acting on it are added together.

Friction- The force that two surfaces exert on each other when they rub against each other.

Sliding Friction- Friction that occurs when one solid surface slides over another.

Static Friction- Friction that acts between objects that are not moving.

Fluid Friction- Friction that occurs when objects move through a fluid.

Rolling Friction- Friction that occurs when an object rolls over a surface.

Gravity- The attractive force between objects; the force that moves objects downhill.

Mass- The amount of matter in an object.

Weight- A measure of the force of gravity acting on an object.

Inertia- The tendency of an object to resist a change in motion.

Calculate Net Force

Directions: Interpret each drawing of forces on the box. Calculate and write the resulting net force on the blank below the box (make sure to include the correct unit of measure). On the next blank, write the word balanced or unbalanced and circle the arrow for the direction of the resulting net force.

<p>1.</p> <p>Net Force <u>25 N</u></p> <p><u>unbalanced</u> → (←) left</p>	<p>2.</p> <p>Net Force <u>0 N</u></p> <p><u>balanced</u> → ← no change in motion</p>
<p>3.</p> <p>Net Force <u>192 N</u></p> <p><u>unbalanced</u> (→) ← right</p>	<p>4.</p> <p>Net Force <u>348 N</u></p> <p><u>unbalanced</u> (→) ← right</p>
<p>5.</p> <p>Net Force <u>5 N</u></p> <p><u>unbalanced</u> (→) ← right</p>	<p>6.</p> <p>Net Force <u>8732 N</u></p> <p><u>unbalanced</u> (→) ← right</p>
<p>7.</p> <p>Net Force <u>2,380 N</u></p> <p><u>unbalanced</u> → (←) left</p>	<p>8.</p> <p>Net Force <u>13 N</u></p> <p><u>unbalanced</u> → (←) left</p>

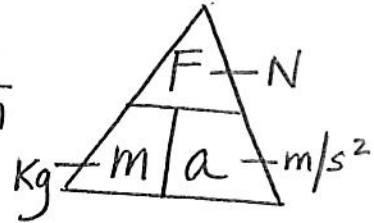
9. The acceleration due to gravity is 9.8 m/s^2 .

10. What are the three formulas which describe the relationship between mass, force and acceleration?

$$F = m \times a$$

$$m = \frac{F}{a}$$

$$a = \frac{F}{m}$$



Calculating using Newton's 2nd Law:

11. A force of 52 N acts upon a 4 kg block sitting on the ground. Calculate the acceleration of the object.

Formula	Substitution	Final Answer
$a = \frac{F}{m}$	$a = \frac{52 \text{ N}}{4 \text{ kg}}$	$a = 13.0 \text{ m/s}^2$

12. A 5 kg block is pulled across a table by a force of 61 N. Calculate the acceleration of the object.

Formula	Substitution	Final Answer
$a = \frac{F}{m}$	$a = \frac{61 \text{ N}}{5 \text{ kg}}$	$a = 12.2 \text{ m/s}^2$

13. A roller coaster pushes a 25 kg person upward with a force of 300 N. What is the acceleration?

Formula	Substitution	Final Answer
$a = \frac{F}{m}$	$a = \frac{300 \text{ N}}{25 \text{ kg}}$	$a = 12.0 \text{ m/s}^2$

14. An object of mass 10 kg is accelerated upward at 2 m/s^2 . What force is required?

Formula	Substitution	Final Answer
$F = m \times a$	$F = 10 \text{ Kg} \times 2 \text{ m/s}^2$	$F = 20.0 \text{ N}$

15. What is the mass of an object if a force of 17 N causes it to accelerate at 1.5 m/s^2 ?

Formula	Substitution	Final Answer
$m = \frac{F}{a}$	$m = \frac{17 \text{ N}}{1.5 \text{ m/s}^2}$	$m = 11.3 \text{ Kg}$

16. What is the mass of a falling rock (accelerates at 9.8 m/s^2) if it produces a force of 147 N?

Formula	Substitution	Final Answer
$m = \frac{F}{a}$	$m = \frac{147 \text{ N}}{9.8 \text{ m/s}^2}$	$m = 15.0 \text{ Kg}$

Friction: Match each definition with the correct term

<u>c</u> 17. type of friction between ice skates and ice	Terms a. friction b. static friction c. sliding friction d. fluid friction e. rolling friction
<u>a</u> 18. force that opposes motion between any two surfaces	
<u>b</u> 19. Type of friction you need to overcome to get an object to start moving.	
<u>d</u> 20. type of friction between a parachute and air	
<u>e</u> 21. type of friction between roller skates and concrete.	

Which Law is it?

22. 3 A fireman turns on a hose and is knocked backwards.
23. 2 It takes more force to move a bowling ball than a baseball.
24. 1 A soccer ball will not move until it is kicked.
25. 2 It takes less force to pull on an empty wagon than a wagon with someone in it.
26. 1 A bowling ball hits the pins and they fly backwards.
27. 3 You are pushed back into your seat when an airplane takes off.
28. 1 The law of inertia.
29. 2 It takes less force to move a bicycle than a motorcycle.
30. 3 The air is let out of a balloon and it flies around the room.
31. 3 The floor pushes up as a [person's foot pushes down.
32. 2 A car accelerates faster than a truck.
33. 1 A magician pulls a tablecloth out from under the dishes and they do not move.
34. 1 Objects in motion stay in motion, objects at rest stay at rest unless acted upon by an outside force.
35. 2 Acceleration of an object depends on the mass and size and direction of the force.
36. 3 Every action has an equal and opposite reaction.
37. 3 A rowboat is propelled forward by the force of its oars against the water.
38. 1 The car comes to a sudden stop but the passengers continue to move forward.

