

Unit 7 Motion Vocabulary List

Section 7-1

1. motion: _____

2. reference point: _____

3. speed: _____

4. velocity: _____

5. acceleration: _____

Section 7-2

6. force: _____

7. newton(N): _____

8. net force: _____

9. balanced forces: _____

10. unbalanced forces: _____

Section 7-3

11. friction: _____

12. kinetic friction: _____

13. static friction: _____

Section 7-4

14 gravity: _____

15. Law of universal gravitation: the law of universal gravitation states that all objects in the universe attract each other through gravitational force. Sir Isaac Newton: British scientist who figured out the relationship between force, mass, and acceleration, and summarized his ideas about gravity in a law known as "law of universal gravitation"

16. Sir Isaac Newton: _____

17. weight: _____

18. mass: _____

Name _____

Date _____

Period _____

Number _____

Measuring Motion
Unit 7 - Section 1 Notes

I. Motion

a. _____ is an object's position relative to a reference point.

b. A _____ is the object that appears to _____ when something else is moving.

1. An example would be how you can tell an air balloon is moving by looking at a motionless object next to it, like a mountain.

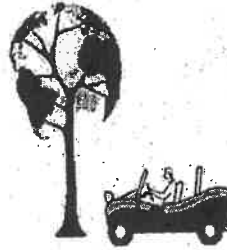
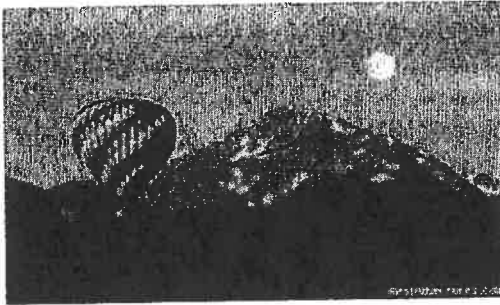


fig. 1

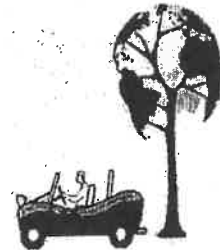


fig. 2

II. Speed

a. _____ is the distance traveled divided by the time it took to travel it.

1. **Average speed** = $\frac{\text{total distance}}{\text{total time}}$

2. Speed is usually expressed in _____ (m/s).

III. Velocity and Acceleration

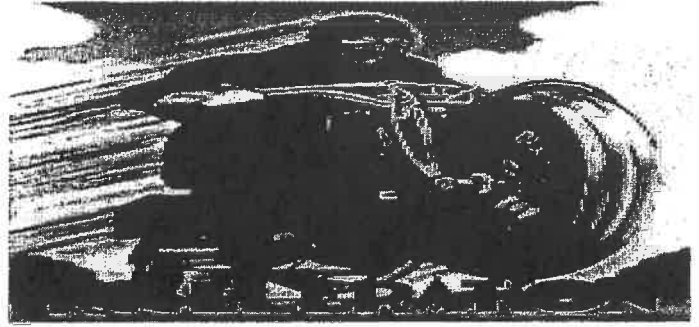
a. _____ is the **speed** of an object in a particular **direction**. It is different from speed, because it includes the direction of an object.

b. _____ is the rate at which velocity changes over time. If an object _____, _____ or _____, it is accelerating.

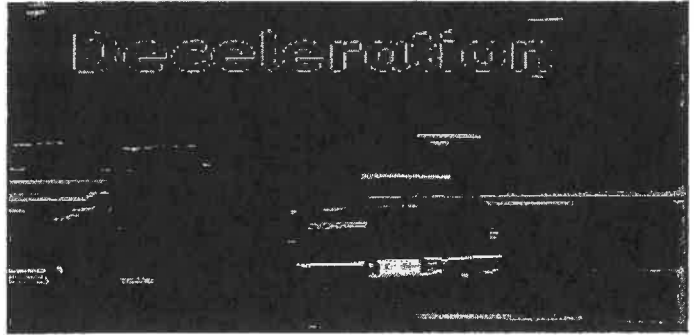
IV. Acceleration and Deceleration

○

a. An _____ in
_____ is known
as
_____ **acceleration.**



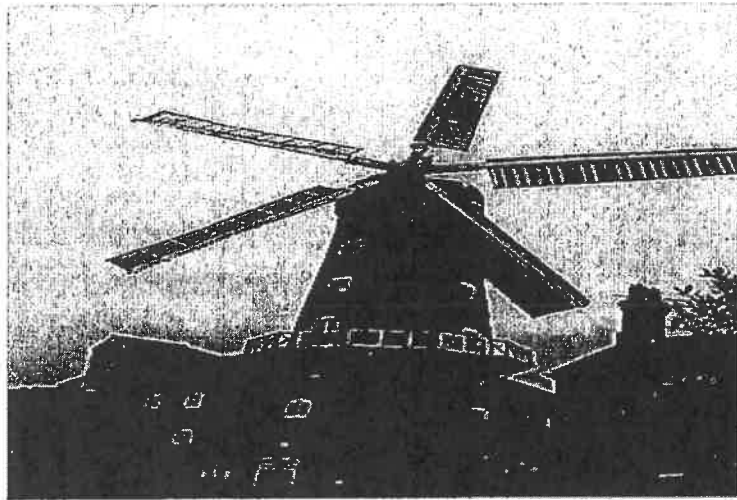
b. A _____ in
_____ is
known as
negative acceleration or
deceleration.



V. Centripetal Acceleration


○

a. When acceleration occurs in a _____ motion, such as a
windmill spinning, it is _____.



○

Speed Worksheet A.

 Directions- Calculate the average speed in each problem below. Please show all work.

1. Justin drove his car 300 miles to visit a friend in Maine. It took him 5 hours to get there. What was Justin's average speed? (Average Speed = Total distance/ Total Time)

Answer: _____

2. If you move 50 meters in 10 seconds, what is your speed?



Answer: _____

3. If a car travels 400m in 20 seconds how fast is it going?



Answer: _____

4. You arrive in my class 45 seconds after leaving math which is 90 meters away. How fast did you travel?

Answer: _____

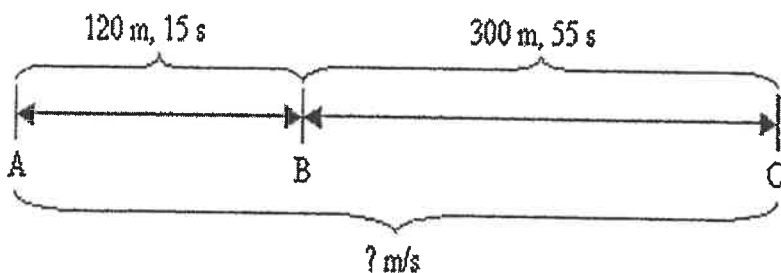
5. How much time will it take for a bug to travel 5 meters across the floor if it is traveling at 1 m/s?

Answer: _____

In a competition, an athlete threw a flying disk 139 meters through the air. While in flight, the disk traveled at an average speed of 13.0 m/s. How long did the disk remain in the air?

Answer: _____

7. Point A and Point B are 120 m apart. Point B and Point C are 300 m apart. Ben ran from Point A to Point B in 15 seconds. Then, he runs from Point B to Point C in 55 seconds. Find Ben's average speed for the distance from Point A to Point C.



Answer: _____



ACCELERATION

Date: _____

Name: _____

Class: _____

1 What does speed measure?

- A** How fast an object is going
- B** How far an object has traveled
- C** The rate at which an object slows down
- D** The rate at which an object speeds up

2 Which of the following can be used to measure an object's speed?

- A** Joules
- B** Newtons
- C** Miles per hour
- D** Kilometers per second per second

3 What does acceleration measure?

- A** How fast an object is going
- B** The fastest speed that an object can reach
- C** The force with which an object travels
- D** The rate at which speed or direction changes

4 What is the difference between positive and negative acceleration?

- A** Positive acceleration applies to fast objects; negative acceleration applies to slow objects
- B** Positive acceleration occurs when objects speed up; negative acceleration occurs when objects slow down
- C** Positive acceleration applies to objects traveling on earth; negative acceleration applies to objects traveling in space
- D** Positive acceleration is expressed in meters per second; negative acceleration is expressed in kilometers per hour

5 Which of these is an example of acceleration?

- A** A car coasts along at 40 km/hr
- B** A car is parked on the side of the road
- C** A speeding car brakes to a stop
- D** A car speeds along at 100 km/hr

6 Which of these statements is true?

- A** Acceleration in the direction of motion slows you down
- B** Acceleration in the direction of motion speeds you up
- C** Acceleration against the direction of motion has no effect on your speed
- D** Acceleration against the direction of motion speeds you up

7 If you're sitting still in a chair reading this, what is your acceleration?

- A** 0 m/s/s
- B** 1 m/s/s
- C** 2 m/s/s
- D** 3 m/s/s

8 When would acceleration increase most?

- A** Rolling along a flat plane
- B** Rolling down a steep hill
- C** Braking to a stop
- D** Rolling up a gently sloping hill

9  How does braking stop a bike?

- A** It makes the wheels turn backwards a few times
- B** It pumps up the tires slightly so they cannot roll forward
- C** It causes a quick negative acceleration against the bike's forward motion
- D** It causes a quick positive acceleration against the bike's backward motion

10 Which variables must you know to calculate acceleration?

- A** Distance and force
- B** Speed and distance
- C** Velocity and time
- D** Change in speed and time

Name _____ Date _____ Per _____ Number _____

Speed Worksheet B.

Directions- Calculate the **average speed** in each problem below. Please show all work.

(Average Speed= Total Distance/ Total time)

1. What is the speed of a car that traveled a total of 75 kilometers in 1.5 hours?

Answer: _____

2. What is the speed of a plane that traveled 3,000 miles from New York to California in 5.0 hours?

Answer: _____

3. John took 45 minutes to bicycle to his grandmother's house, a total of 1080 kilometers. What was his speed?

Answer: _____

Directions- Calculate the **velocity** in each problem below. Remember velocity shows a specific direction. Please show all work. (Velocity = Total distance/ total time)

4. What is the velocity of a train that traveled 112 miles north in 2 hours?

Answer: _____

5. What is the velocity of a car that traveled a total of 328 miles south in 8 hours?

Answer: _____

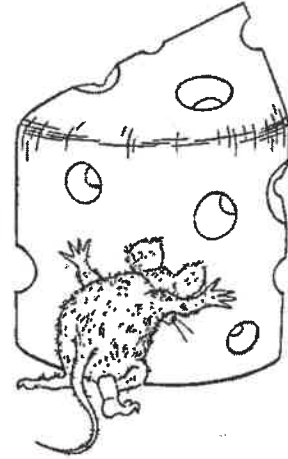
6. What is the velocity of Mr. Berman's car if he drove 114 miles north to Boston in 6 hours? (round to nearest tenth)

Answer: _____

From Here to There

Speed refers to how fast an object is moving. **Motion** is a change in the position of an object when compared to a nonmoving reference point. **Velocity** is the speed of an object and its direction of motion. A change in velocity is called **acceleration**. A decrease in velocity is called **negative acceleration** or **deceleration**. The rate of acceleration depends on both the amount of force used and the mass of the object being moved.

Force is a push or pull that is exerted on an object. When a strong enough force is applied to an object, the object's motion changes. If you apply a small force to a massive object (like a car), you will cause a small amount of acceleration. If you apply a large force to a small object (like a tennis ball), you will cause a large amount of acceleration. Any object that is moving in a straight line at a constant speed is not accelerating.



Use words from the passage above to fill in the blanks.

1. A change in an object's location is _____.
2. A push or pull that is exerted on an object is _____.
3. _____ is the speed of an object and its direction of motion.
4. The rate at which velocity changes is _____.

Circle the answer that correctly completes each sentence.

5. A car sitting at a stoplight (is / is not) accelerating.
6. A car driving at 50 miles per hour for a long time on a straight stretch of highway (is / is not) accelerating.
7. A car that begins to move after a stoplight turns green (is / is not) accelerating.
8. A car slowing down as it pulls into a parking space (is / is not) an example of negative acceleration.
9. As force increases and mass decreases, acceleration (increases / decreases).
10. As force decreases and mass increases, acceleration (increases / decreases).

Use your math skills to solve these problems.

11. A car travels 96 miles in two hours. What is its average speed?
(speed = distance ÷ time)
12. If the car continues on but increases its speed (accelerates) at a constant rate of 2 miles per hour each hour, at what speed will it be traveling after 2 hours?

Name _____

Date _____

Period _____

Number _____

Unit 7 - Section 2 Notes

What is a Force?

I. What is a Force?

- a. A **force** is a _____ or _____ on an object.
- b. Scientists express force using _____ (N).
 - i. For example-The boy pushed the desk with 20 N of force.
- c. A force changes the _____ and _____ of an object.

II. Unseen Forces

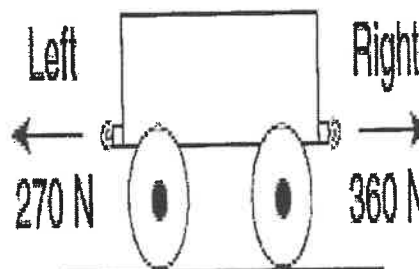
- a. Sitting on a chair is an example of an unseen force.
 - i. You are exerting a force by sitting on the chair, but the force _____ cause the chair to move.
- b. For a push or pull to occur, something must receive a _____ or a _____.
 - i. For example- typing on the keyboard: _____ are receiving a push
 - ii. Example- opening a textbook: pages are receiving _____
- c. Forces can change _____ of an object.
 - i. **Acceleration** = _____ and **direction (velocity)**.

III. **Net Force**

- a. Usually more than one _____ is acting on an object.
- b. **Net Force**-the combination of _____.
- c. If the forces applied are moving in the **same direction**- _____ the forces.
- d. If forces are pulling or pushing in **opposite directions**- _____ the forces.
- e. The net force is always in the direction of the _____ force.
- f. For example, determine the net force below.

The forces are going in opposite directions so you should subtract the forces.

$360\text{ N} - 270\text{ N} = 90\text{ N to the right}$



IV. Balanced Forces

- a. When the force on an object produces a net force of 0 N, the forces are _____, and there will be **NO MOVEMENT**.
- b. Balanced forces do not cause a nonmoving object to start moving.
- i. An example would be a desk sitting on the classroom floor. If the desk is not moving, the forces between the desk and the floor are **BALANCED**. The desk is pushing down on the floor with the same force that the floor is pushing up on the desk.



Net Force- Opposite directions, so we subtract.

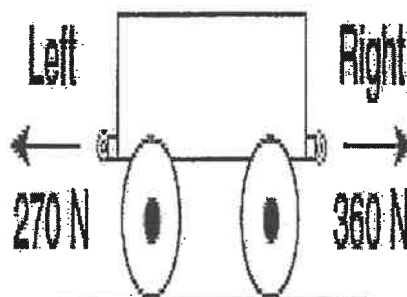
$$10N - 10N = 0N \text{ (no movement)}$$

V. Unbalanced Forces

- a. When the net force on an object is NOT 0 N, the forces are _____. There **IS** movement.
- b. Unbalanced forces produce a _____.
i. Speed
ii. _____
- c. Unbalanced forces are **NECESSARY** to cause a nonmoving object to _____ and to change _____.
- i. An example would be if you got pushed in the hallway and you fell down. The forces were unbalanced because there was movement as you fell. The person pushed you with more force than you were able to push back.
- ii. Look at the example below. The forces are going in opposite directions so we subtract.

$$360N - 270N = 90N \text{ to the right (movement)}$$

Unbalanced forces



Name _____

Date _____

Period _____

Number _____

Speed, Velocity and Force Worksheet

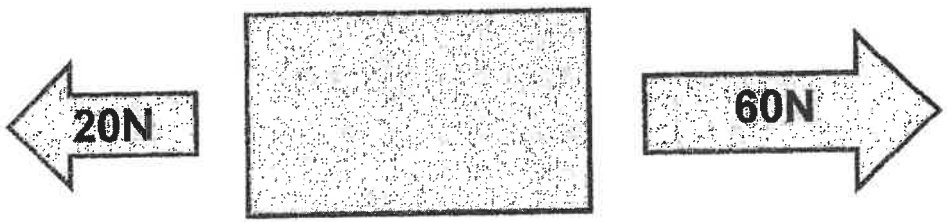
Directions: Calculate the average speed or velocity. SHOW ALL WORK.

1. Tommy swims 75 meters in 30 seconds. What is Tommy's average speed?

2. A soccer ball travels 100 meters south in 25 seconds. What is the soccer ball's velocity?

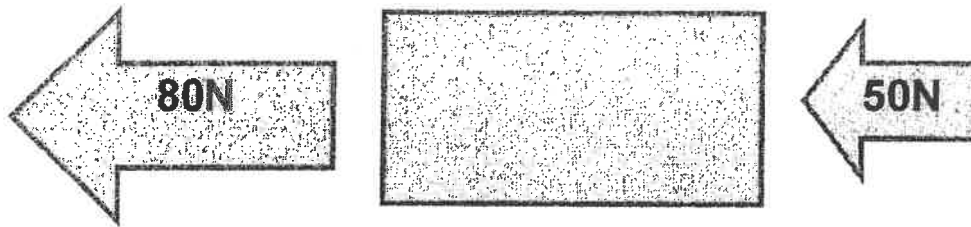
3. Jennifer runs 75 kilometers in 5 minutes. What is Jennifer's average speed?

Directions: Determine the net force of the objects below. Be sure to include your label and the direction.



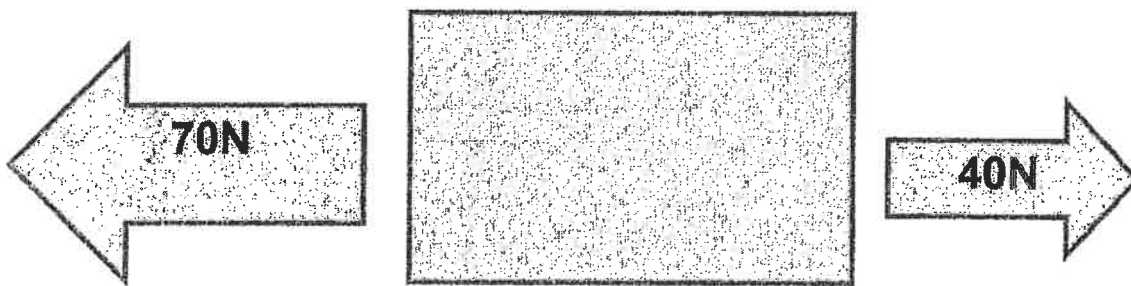
Net Force = ____ N - ____ N

Net force = _____



Net Force = ___ N + ___ N

Net force = _____



Net Force = ___ N - ___ N

Net force = _____

Name _____ Date _____ Per _____ Number _____

Net Force Worksheet

Directions- Draw a picture of each problem and calculate the net force.

1. A woman exerts 100 N of force to lift a laundry basket weighing 75 N.

Net force is _____

2. Two people are pushing a disabled car. One exerts a force of 200 N east, the other a force of 150 N east. What is the net force exerted on the car?

Net force is _____

3. Two soccer players kick a ball simultaneously (at the same time) from opposite sides. Red #3 kicks with 50 N of force to the right while Blue #5 kicks with 63 N of force to the left. What is the net force on the ball?

Net force is _____

4. Mrs. Moran and Mr. Moran decided to move the cabinet in their dining room. Mrs. Moran stood on one side, and Mr. Moran stood on the other. They each pushed with 30 N of force. What was the net force on the cabinet?

Net force is _____

5. Two teams were having a tug of war. Team A had four people on the team, and each of them pulled with 25N of force. Team B had three people on the team, and each of them pulled with 35 N of force. Which team won, and how much greater was their net force on the rope?

Net force is _____

6. (REVIEW) What is the speed of a motor boat if it traveled a distance of 3,000 meters in 24 minutes?

Average speed is _____

Date: _____

Name: _____

Class: _____

1 What happens when an unbalanced force is applied to an object at rest?

- A It accelerates
- B It remains at rest
- C It gains mass
- D It loses momentum

2 Which of the following is a unit of acceleration?

- A 40 kilometers per hour
- B 40 newtons per gram
- C 40 meters per second per second
- D 40 joules per second

3 What do measurements of velocity and acceleration have in common?

- A Mass is a factor in both measurements
- B Time is a factor in both measurements
- C Force is a factor in both measurements
- D Acceleration is factor in both measurements

4 If you were driving a car, and wanted to accelerate at a rate of -10 m/s/s , what would you do?

- A Step on the brake
- B Step on the gas
- C Open the windows
- D Shift from fourth to fifth gear

5 Which of the following can change the acceleration of a car?

- A Changing its oil
- B Changing direction
- C Turning the key in the ignition
- D Filling the tank with gas

6  Approximately how fast is this ball accelerating?

- A 2 m/s/s
- B 5 m/s/s
- C 8 m/s/s
- D 10 m/s/s

7 If a 10 kg object is accelerating at a rate of 2 m/s/s , how much force does it have?

- A 5 newtons
- B 12 newtons
- C 20 newtons
- D 8 newtons

8 Objects can easily slide past each other when the force of friction between them is low. Which of the following examples has the least amount of friction?

- A 
- B 
- C 
- D 

9 What is the mass of an object that has 50 newtons of force and is accelerating at a rate of 2 m/s/s ?

- A 100 kg
- B 25 kg
- C 48 kg
- D 52 kg

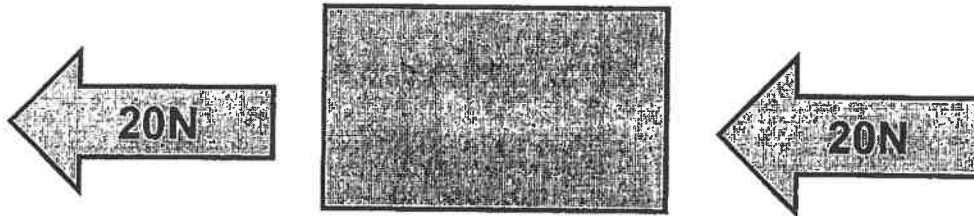
10 Why were units of force named after Sir Isaac Newton?

- A Newton was the British King when the units were named
- B Newton figured out the relationship between force, mass, and acceleration
- C Newton founded the institution that named the units
- D Newton was a very popular politician at the time

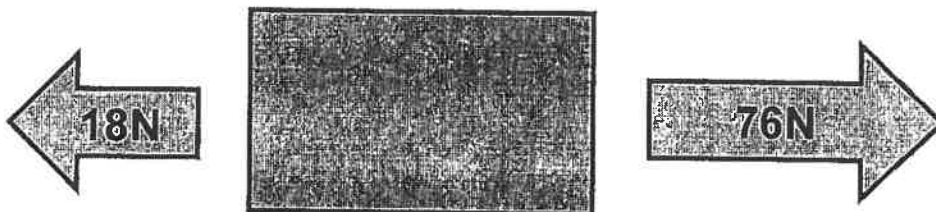
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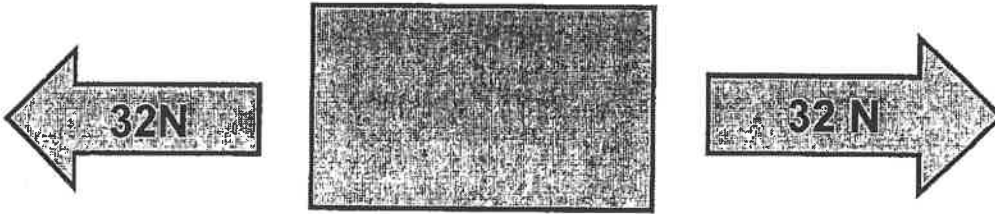
Unit 7 Section 2
Balanced and Unbalanced Forces



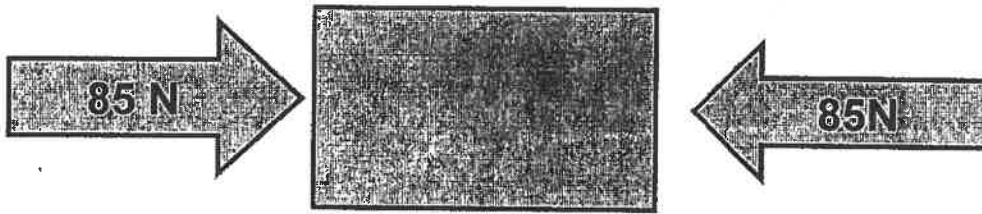
Net Force = _____
Balanced or Unbalanced



Net Force = _____
Balanced or Unbalanced



Net Force = _____
Balanced or Unbalanced



Net Force = _____
Balanced or Unbalanced

Draw your own diagram and have a buddy determine if it is balanced or unbalanced.

12-1 What is a force?

Lesson Review

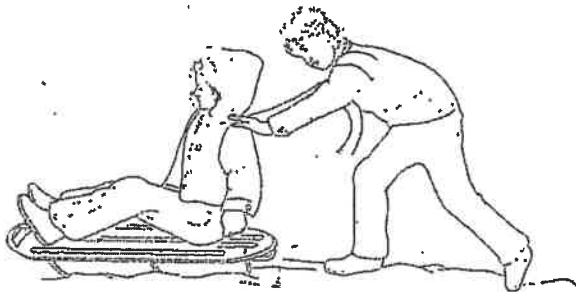
Write *true* if the statement is true. If the statement is false, change the underlined term to make the statement true.

- _____ 1. The weight of an object is a measure of the force of gravity.
- _____ 2. The force of wind keeps a kite flying.
- _____ 3. The force of a push is not in the direction of the push.
- _____ 4. Forces equal in size and opposite in direction are called unbalanced forces.
- _____ 5. Balanced forces do not cause a change of motion in an object.
- _____ 6. When unbalanced forces act on a moving object, the motion of the object will stay the same.
- _____ 7. An example of magnetic force is the attraction of a paper clip to a magnet.

Skill Challenge

Skills: classifying, interpreting a diagram

Decide whether each drawing below illustrates a force that is a push or a force that is a pull. Write *push* or *pull* to indicate your answer in the spaces provided.



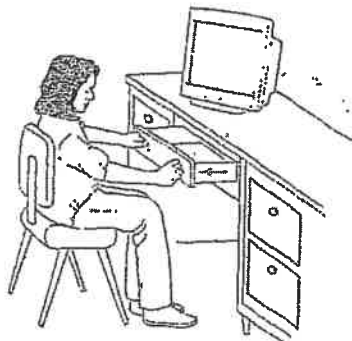
1. _____



2. _____



3. _____



4. _____

Name _____
Period _____

Date _____
Number _____

Unit 7-Section 3 Notes Friction

I. Friction

- a. _____ is a force that **opposes** motion between two surfaces that are in contact. (When two surfaces rub together).
- b. Friction can stop an object from moving, such as a ball rolling on the grass. The friction between the ball and the grass slows the ball and then stops it.

II. The Effect of Force on Friction

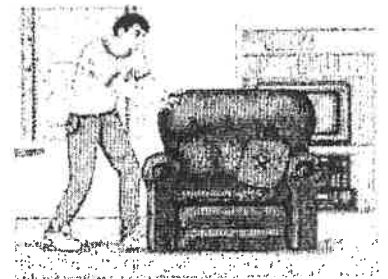
- a. The amount of friction depends on how much **force** is pushing the surfaces together.
- b. The _____ the objects, the more _____ there is between them.

III. Surfaces and Friction

- a. _____ have greater friction than smooth surfaces.
- b. The rougher the surface, the stronger the grip. A grassy field would have more friction (grip) than an ice skating rink.

IV. Kinetic Friction

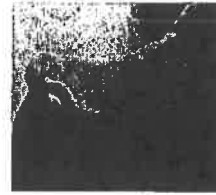
- a. **Kinetic Friction** is "_____."
- i. Example-moving a piece of furniture across a carpet.



V. Static Friction

- a. **Static Friction** is when a force is applied to an object, but the object **does not** move.
- b. **Static** means "_____."
- i. An example would be trying to move your bed but your bed does not move. Static friction has occurred.

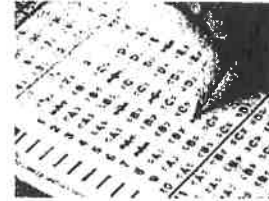
VI. Harmful Friction



a. **Harmful friction** is when **damage** is done, such as:

- _____
- _____
- _____

VII. Helpful Friction

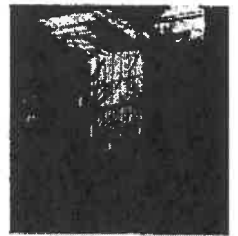


a. **Helpful friction** is when friction is **helpful** to us.

i. An example of helpful friction would be:

- _____
- being able to walk without falling
- _____

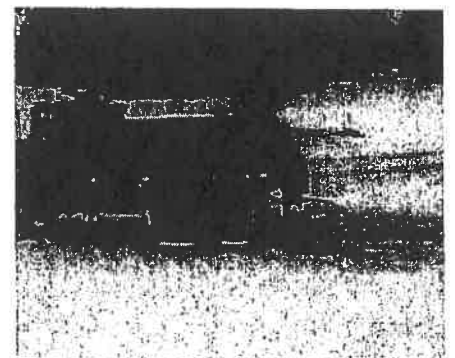
VIII. Ways to Reduce Friction (loosening the grip)



1. Use **lubricants**, such as _____, grease, _____, wax, or water.
2. Use ball bearings or _____ to turn static friction into kinetic friction.
3. Make surfaces **smoother**, such as sanding wood or polishing a floor.

IX. Ways to Increase Friction (strengthening the grip)

1. Make surfaces **rougher**, such as adding _____ to an icy road, or wearing _____ to grip a baseball bat.
2. **Increase** the force between the surfaces, such as pushing down harder when sanding wood.



Name _____ Class _____ Date _____

12-4 What is friction?

Lesson Review

PART A Complete the following.

1. What is sliding friction? _____

2. What is air resistance? _____

3. What is rolling friction? _____

PART B Decide which kind of friction has the greatest effect in each situation in the table below. Place a check mark in the correct column.

Situation	Sliding Friction	Air Resistance	Rolling Friction
1. Riding a skateboard			
2. A raindrop falling			
3. A leaf falling			
4. Pulling a wagon			
5. A wheelchair moving			
6. Pushing a book off a shelf			
7. Writing with a pencil			

Skill Challenge

Skills: organizing, classifying

List five examples of friction that affect you in everyday life. Classify each type of friction as *sliding friction*, *air resistance*, or *rolling friction*. Organize your information in a table.

1. _____
2. _____
3. _____
4. _____
5. _____

Bill Nye: Friction

1. Fire fighters use friction to control how fast they
2. It's friction that makes this wooden box stick to the table so it's hard to
3. The force between the ramp and weight get smaller and smaller, and then the
4. Friction is what keeps your bicycle from sliding out from under you as you go
5. It's your that let you hold onto smooth things, or pick up small slippery things.
6. A is a big boat that pushes air underneath it so that it floats on the water.
7. are made of rubber, and rubber has a lot of friction when it's going against the hardwood.
8. slide because they make a layer of liquid water between the metal blade and the ice.
9. A world without friction would be
10. Since a is round, when you push it, it starts to roll. It's not sliding, and that towers the friction.
11. are smooth and slippery so they can slide through the water, cutting the friction.
12. Slugs make so it can move.
13. Song: "Friction happens, it makes some"

12-5 How can friction be changed?

Lesson Review

Circle the term or phrase in parentheses that best completes each statement.

1. The oil in a car's engine (increases / decreases) friction.
2. Rolling friction is (greater / less) than sliding friction.
3. There is (more / less) resistance when walking on an icy road than on a dry road.
4. Shoes with spiked soles have (more / less) friction with the ground than normal shoes do.
5. Oil (is / is not) an example of a lubricant.
6. Sand is often put on icy driveways to (increase / decrease) the amount of friction.
7. (Increasing / Reducing) friction makes it easier to move an object.
8. The size of a frictional force (depends / does not depend) on the types of surfaces in contact with each other.

Skill Challenge

Skills: analyzing, identifying, diagramming

Complete the following.

You need to move a box full of books across a tile floor. Identify three ways in which you could reduce the amount of friction in order to move the box easily. Diagram each method.

Method 1

Method 2

Method 3

Unit 7 Section 4 Notes
Gravity: Force of Attraction

I. What is Gravity?

a. **Gravity**-a force of _____
between two objects that is due to their
_____.

b. **Mass** is the amount of _____ (or stuff) in an
object.

(Mass Always Stays Same)

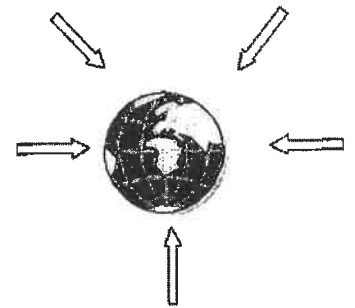
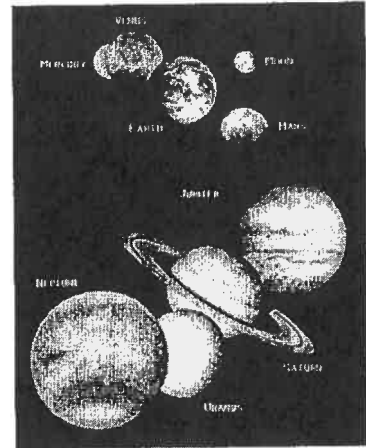
c. This means that **all objects** experience gravity
between them.

d. The _____ the objects are, the more gravity
that exists between them.

1. For example-A planet has more gravity than a person
because a planet has more mass.

e. On Earth, all objects fall toward the center of Earth's mass

f. Gravity can change the motion of an object by changing its
_____, _____ or both.



II. _____ and Gravity

a. Sir Isaac Newton was a scientist who first
recognized gravity when an apple fell from a tree.

b. Newton realized that gravity depends on the
_____ of objects and the
_____ between them.

c. This is called the **Law of Universal Gravitation.**



III. Law of Universal Gravitation

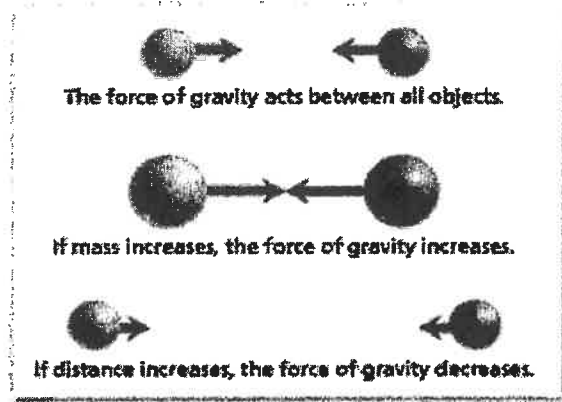
a. **Gravitational force increases as _____ increases.**

1. The sun has a stronger gravitational force than our moon because the sun has a greater mass.

b. **Gravitational force decreases as _____ increases.**

1. When we leave Earth in a space ship, we are getting further away from Earth's gravitational pull so we will float around in space.

(distance increased so gravitational pull will decrease)

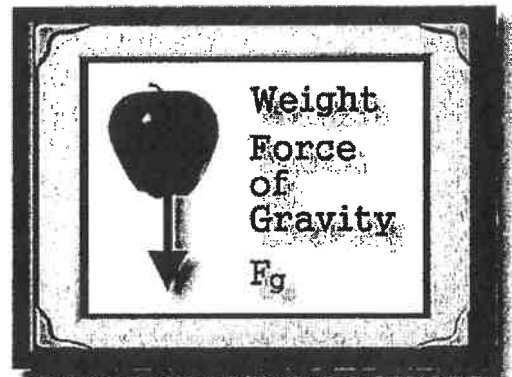


IV. Weight

a. **Weight** is a measure of the gravitational force on an object. Weight is how much

b. Weight can change, depending on where you are in the universe and how much gravity there is.

c. The bigger the planet, the more gravity there is and you will weight more.



Answer these questions....

- Explain the Law of Universal Gravitation

- Describe the difference between mass and weight

Date: _____

Name: _____

Class: _____

1 What is gravity?

- A** A type of current
- B** A type of force
- C** A type of wave
- D** A type of energy

2  According to Sir Isaac Newton, gravity depends on two factors. What are they?

- A** Mass and distance
- B** Volume and density
- C** Size and shape
- D** Mass and volume

3 The moon's gravity is one-sixth of Earth's gravity. If you weigh 100 Newtons on Earth, how much do you weigh on the moon?

- A** 1 newton
- B** 6 newtons
- C** 16.667 newtons
- D** 60 newtons

4 How does the sun's gravity compare to the earth's gravity?

- A** The sun's gravity is stronger
- B** The earth's gravity is stronger
- C** Their gravitational pull is the same
- D** Scientists aren't able to measure the sun's gravity

5 Why is the earth's gravity stronger than the moon's gravity?

- A** The earth is more massive than the moon
- B** The moon is so far away from earth
- C** The moon has no mass
- D** The earth has a larger volume than the moon

6 According to Newton's laws, what might happen to the earth if its orbit moved farther away from the sun?

- A** The sun's gravitational pull on the earth would increase
- B** The earth's gravitational pull on the moon would increase
- C** The sun's gravitational pull on the earth would stay the same
- D** The sun's gravitational pull on the earth would decrease

7  What theory did Albert Einstein introduce to challenge Newton's ideas?

- A** The theory of superlativity
- B** The theory of gravitation
- C** The theory of relativity
- D** The theory of specificity

8 According to Einstein, gravity:

- A** Makes objects fall upward
- B** Doesn't exist when masses are very large
- C** Makes objects bend in space
- D** Bends space and time

9 Which of these would have the strongest gravitational pull?

- A** A large, dense star
- B** A medium-sized planet
- C** A small moon
- D** A comet

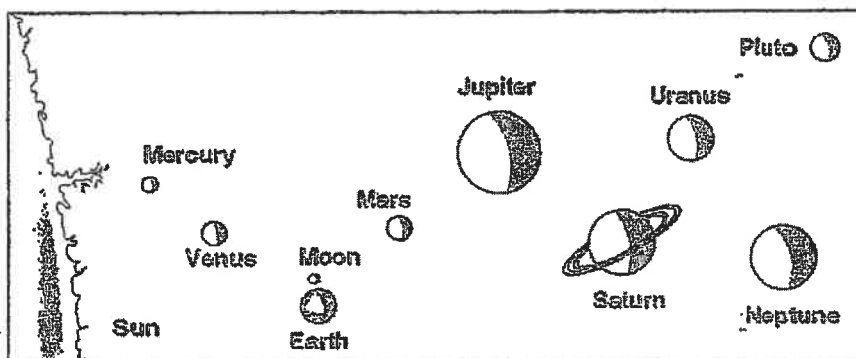
10  What effect does the moon's gravity have on the earth?

- A** It keeps the earth in orbit around the sun
- B** It causes the tides
- C** It causes space and time to bend around the earth
- D** It has no effect on the earth

12-2 What is gravity?

Lesson Review

The diagram below shows the Sun and the nine planets in the solar system, including the Moon. Use the diagram to answer the following questions.



1. Which body probably has the greatest mass? _____
2. Which body probably has the smallest mass? _____
3. Based on your answers to questions 1 and 2, which body has the strongest force of gravity?

4. Based on your answers to questions 1 and 2, which body has the weakest force of gravity?

5. On which body would you weigh the most? _____
6. On which body would you weigh the least? _____

Skill Challenge

Skills: calculating, comparing, interpreting a table

The table shows how the distance of an object from the center of Earth changes, and how this affects the force of Earth's gravity on the object. Fill in the blanks to complete the table. The first one has been done for you.

Distance (d)	Force of Gravity ($1/d^2$)
1. 3 times as far	$1/9$
2. _____	$1/25$
3. 64 times as far	_____
4. _____	$1/8,836$
5. 18 times as far	_____
6. _____	$1/625$

Name _____ Period: **Bill Nye and Gravity**

Answer these questions as you watch the video.

1. What makes the earth go around the sun? _____

2. Does gravity push or pull? _____

3. Does gravity affect the air we breathe? _____

4. _____ Where does gravity pull towards?

- A. Up
- B. Down
- C. Sideways
- D. All directions



5. When the apple and the bowling ball are dropped together: _____

- a.) they both hit the ground at the same time
- b.) the apple hit the ground first
- c.) the bowling ball hit the ground first

6. Who dropped a feather and a hammer together to see if gravity pulled on them the same amount? _____

7. What happened to the feather and hammer when dropped? _____

8. We use a _____ to measure our weight.

9. _____ As gravity pulls down on us the springs in the scale get _____.

- A. Pulled Apart
- B. Squeezed

10. True or False The more the scale's springs get squeezed, the more you weigh.

11. Weight comes from our mass, Earth's mass and _____.

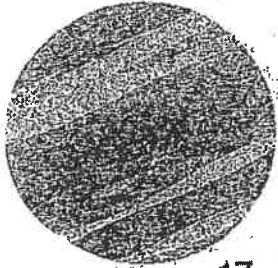
_____ All the planets in orbit around the _____ are held in place by gravity.

- A. Earth
- B. Moon
- C. Sun

13. _____ Why don't the planets get pulled into the sun?

- A. They are in motion
- B. They have anti-gravity in them
- C. They do - just slowly

14. Our Earth is going around the Sun at about _____ kilometers per hour.



15. Jupiter is larger or smaller than the Earth

16. Jupiter has more or less gravity than the Earth

17. The moon is smaller, so it has _____ gravity.

18. The pull of gravity makes the earth and all planets into this shape _____.

19. With gravity, things fall _____.

Quote from Skateboarding section:

One thing that always remains constant is gravity.

Gravity will always be the _____ no matter where you go or how you do it.

(This is true anywhere on Earth.)

21. Gravity pulls us down toward the _____ of the earth.

22. _____ Name the scientist known for dropping two bowling balls of different weights off the Leaning Tower of Pisa.

- A. Sir Isaac Newton
- B. Galileo



After the movie:

Write a one sentence definition of what gravity is.

Name _____ Date _____ Period _____ Num _____

Unit 7 Matter in Motion Review Sheet

Directions: Use your notes and worksheets to help you answer the questions. Also, be sure to study all Unit 7 vocabulary words.

7-1 Measuring Motion

1. Give an example of a reference point and explain why it is a reference point.

2. Name the 2 factors that are needed to determine speed.

3. What is the formula for speed?

4. What is the difference between speed and velocity?

5. List 3 ways an object can accelerate.

6. What kind of acceleration occurs when an object speeds up? slows down?

7-2 What is a Force? (practice how to determine net force)

7. What is a force?

8. What is the label when measuring force?

9. How do you determine net force?

10. What is a balanced force?

11. What happens to an object when there is a balanced force applied?

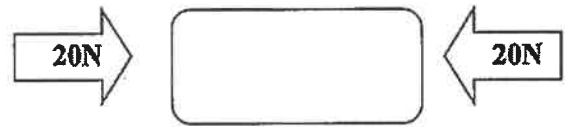
12. What is an unbalanced force?

13. What happens to an object when there is an unbalanced force?

14. Determine the net force of the objects below and determine if they are balanced or unbalanced forces.



balanced or unbalanced



balanced or unbalanced

7-3 Friction: A Force that Opposes Motion

15. When does friction occur?

16. Give 2 examples of helpful friction.

17. Give 2 examples of harmful friction.

18. Name 2 ways to increase friction (grip).

19. Name 2 ways to decrease friction (grip).

(Study our class labs on friction)

7-4 Gravity: A Force of Attraction

20. What is gravity?

21. How does gravity affect matter?

22. If your mass was 55 kg on Earth, what would your mass be on the moon?

23. Describe the difference between mass and weight.

24. As mass increases, gravity _____.

25. As distance increases, gravity _____.

