Bill Nye
The Science Guy
Unit

Friction

The Atmosphere

Earthquakes

Genes

Motion

Space Exploration

Pseudoscience

Storms

Magnetism

Planets

Bill Nye: Friction

Name: _____

1. Firefighters use _____ to control how fast they fall.
2. Friction can turn work into _____.
3. Friction is what holds all _____ together. (Like on your shoelaces!)
4. Your _____ help you pick up objects. The ridges on them help you grab the objects.
5. People wear spikes or cleats when playing sports so that they can get more _____, making it easier to stop.
6. Hockey skates slide because they make a layer of liquid _____ between the skate and the ice. This creates very little friction between the skate and the ice.
7. Would dancing be possible without friction? Yes or No
8. When you are on a bike, friction is what holds your _____ on the pedals.
9. Even though a bowling ball is smooth and the alley is smooth, there is still _____ between them.
10. To get something as big and heavy as a train moving, we use _____ to get it going.
11. When a spacecraft reenters Earth's atmosphere, friction causes the outside of the spacecraft to get extremely _____.
12. Our joints are _____ to reduce wear and tear on our bones.

(Turn Over)

13. Slugs produce _____ to help reduce the friction between the animal's body and the ground.

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Bill Nye: The Atmosphere Video (30 mins)

1. We live in an _____ of air in which we live on the _____.

2. Our atmosphere is very thin, about _____ km's.

3. What would to happen to our worldly temperatures if we had no air/atmosphere?

4. What is the lowest and thickest layer of our atmosphere where all of our weather takes place?

5. What layer of the atmosphere protects us from harmful UV Rays?

6. How much weight does the atmosphere push down upon objects on earth?

7. When in an airplane the lower the atmospheric pressure means the _____ you are in altitude.

8. Air pressure changes depending where you are on earth.

In Death Valley (the lowest place on earth) there is _____ of air pressure. And on the top of a mountain there is _____ air pressure.

9. The _____ is the layer of the atmosphere where we live.

The Fantastic 5

10. This is the layer of the atmosphere that is located next to outer space.
_____

11. This layer of the atmosphere may be thin, but blocks off harmful gamma radiation
_____

12. This layer of the atmosphere is the coolest layer, melts meteors and has powerful winds. _____

13. This layer of the atmosphere takes energy from the sun and converts Oxygen (O_2) in the atmosphere and turn it into Ozone (O_3) blocking UV light in the process._____

14. Lastly, this is the layer of the atmosphere that we live in, it brings us all the weather that we experience. _____

Consider the following

15. Why are Mountain tops colder than in lower elevations like the city?

16. When the atmosphere keeps the earth warm we call this the _____

17. Explain how the Greenhouse effect works. (Draw a picture if you wish)

18. What is a large source of air pollution? And what is caused when these chemicals mix with the suns rays?

19. What kind of chemical do some coal burning electric plants give off? Once this gets into the atmosphere and falls back to the earth what does it turn into?

21. What recreational activity do the 4 teenagers participate in when they drop from the airplane?

_____

22. As you get higher in the troposphere the _____ becomes less, thus harder to breathe.

Bill Nye: Earthquakes

Name _____ Date _____ Period ___

1. Earthquakes happen when the Earth's _____ move around.
2. The Earth's surface is _____ on molten rock.
3. The Earth's surface is broken into _____ plates.
4. The cracks in the plates are called _____.
5. Scientists measure movement of the Earth's surface with a device called a _____.
6. When you record the movement of the Earth's surface on paper, it's called a _____.
7. When anything is heated up, the molecules move _____.
8. Where the plates move apart, we get _____.
9. Where the plates move together, we get _____.
10. The center of the earthquake is the _____.
11. Name 3 items you need in an earthquake kit.
    a.
    b.
    c.
12. The _____ _____ is the way to compare the size of one earthquake to the size of another.
13. Each magnitude of the Richter Scale has _____ times more energy than the next smaller magnitude.

Name _____ Date _____

"Bill Nye: Genes" Video Worksheet

1. Where do your genes come from?

2. What is inside every cell in your body?

3. What does DNA stand for?

4. What did Bill climb to get out of the Nye Lab?

5. How long is the DNA string model of science?

6. How many times longer is DNA than it is wide?

7. How does Bill define a Gene?

8. Why is the white blood cell dark on the computer screen?

9. What does the nucleus of the cell contain?

10. What can you do with DNA after you take it out of an organism?
    a.
    b.

11. What 2 organisms were combined to create the message to Bill in the petri dish?

12. What do genes do?

13. Mom tells Richie: Genes are the set of _____ _____ that get passed down from _____ to child. In the process, of course, the genetic material is _____ in new ways, which is why people bear resemblance to their _____ and _____ without looking like any one relative in particular.

14. What analogy does Bill use to describe the human set of chromosomes?

15. What is each chapter analogous to?

Name: _____ Period: ____ Date: _____

Bill Nye the Science Guy - Motion

While watching the movie answer the following questions.

1. Everything in the universe is in _____.
2. If a scooter is placed on an air track, will the scooter move on its own? YES or NO
3. If something is moving, it keeps on moving unless acted on by an outside _____.
4. Inertia is a property of _____.
5. During the nifty home experiment, a playing card was placed on top of a glass and then a quarter was placed on top of the card. When the card was pushed, the quarter fell into the glass. Why did the quarter fall into the glass? _____

_____

6. Newton's first law states: things at rest _____ at rest and things in motion _____ in motion unless acted on by an outside force.
7. Newton's second law states: to move a mass, you need a _____.
8. In the formula F=ma, "F" means _____, "m" means _____ and "a" means _____.
9. Newton's third law states, for every action there is an equal and opposite _____.
10. To have motion, it takes motion. You are either going to _____ or _____.
11. Mass is measured in _____ or kilograms.
12. In zero gravity, do the laws of motion still apply? YES or NO

(Quiz on the back)

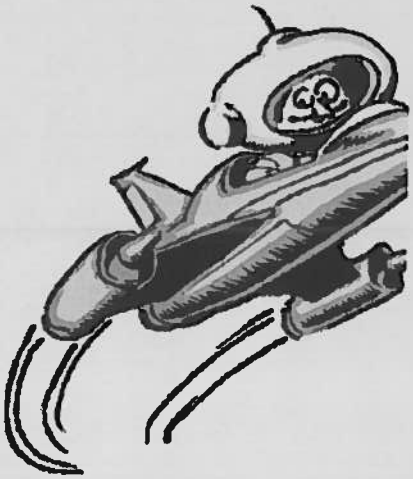
Name_____ Date_____ Period____

Bill Nye: Space Exploration

1. How did ancient astronomers have to view space without telescopes?

2. What did astronomers discover when they began using telescopes?

3. Most telescopes are used from here on the Earth's surface What is the name of the telescope that is actually <u>in space</u>



4. Since spaceships in orbit have inertia, they never fall down to Earth, they fall _____ Earth.

5. How much fuel does it take to get a rocket to orbit the Earth?

6. What is the largest rocket ever made?

7. Almost everywhere you go in space, there is _____. Space is a _____.

8. What would happen to a human if they were exposed in space?

9. It can be very _____ or very _____ in space.

10. Space suits must have their own supply of _____.

11. What is Bill Nye able to do with the special tiles after he pulls them out of the oven? does he do with them after they've sat there for a few seconds?

12. Why is the space shuttle covered with special heat dissipating tiles?

Name: _____ Period: _____ Date: _____

The Eyes of Nye: Pseudoscience

1. What is pseudoscience?

2. Science must be repeatable. What does this mean?

3. What percentage of people believe in…
   a. Magnetic Therapy:
   b. ESP:
   c. Astrology:
   d. Communication with the dead:

4. How many of the above do you believe in?

5. How do psychic readings really work?

6. How has the Zodiac of astrology changed in 2000 years?

7. Why are rhinoceros poached for their horns?

8. Does natural mean safe?

9. What are most of the herbal supplements used for?

10. How are people able to walk over hot coals?

Bill Nye Storms Video

Answer 10 of the questions below

1. What are storms? _____

_____ 2. What causes storms?

A. Water in air
B. Spin of earth
C. Heat of sun
D. All of the above

3. What is the Earth surrounded by? _____

_____ 4. What do we use to measure air pressure?

A. Thermometer
B. Psychrometer
C. Barometer
D. Meter Stick

_____ 5. What happens during El Nino?

A. Lots of fish produced, calm weather
B. Fish die, storms rage all over the globe
C. Has little or no effect
D. We do not know what happens

_____ 6. Hurricanes are big enough that they get spun by the earth. True or False?

_____ 7. What charge are electrons in lightning? Positive or negative?

_____ 8. Do the **Attract** or **Repel** each other?

_____ 9. Does lightning strike the **highest** or **lowest** point?

10. What do you do if caught in a lightning storm? _____

_____

11. Where else besides Earth are there storms? _____

Name_____

Teacher_____

Bill Nye Magnetism

1. What 3 things do you need to make an electromagnet?

2. A magnet attracts 3 types of metal: _____, _____, and _____.

3. You could take a magnet and _____ it in half and all the pieces would have _____ and _____ _____.

4. All compasses have a _____ inside that lines up with the Earth's magnetic north.

5. In *Magnetic or Not*, list 3 things in each that were tested.

Magnetic	Not
1.	1.
2.	2.
3.	3.

6. The _____'s hot churning, iron and nickel core is like a giant _____.

7. Charged particles streaming from the _____ get pulled down by the Earth's magnetic field, create the _____ and _____ Lights.

8. The Earth's not the only place with a magnetic field the _____, _____, and _____ have one also.

NAME: _____ DATE:_____ CLASS:_____

BILL NYE PLANETS

1. How many planets do we have today?
2. What is the first planet that is made up of heavy metals in our solar system called?
3. What planet is the hottest in our solar system?
4. What planet has water and an atmosphere?
5. What planet is big, red and dead?
6. What planet is the largest and is mostly a big ball of gas?
7. What planet has rings and 18 moons?
8. What planet is blue and has very thin newly discovered rings?
9. What planet is extremely cold and farthest from the sun?
10. What planet is considered no longer a planet?
11. If a rocket left Pluto traveling 1000 mph, how long would it take it to reach the Sun?
12. What is the weather like on Jupiter?
13. How many theories are there about how the moon was formed?
14. What type of pattern does the Earths' orbit take around the Sun?
15. What happens to the Eathrs' orbit speed as it gets closer to the Sun?
16. What are asteroids?
17. Which direction do planets/space particles rotate around the sun?
18. What is considered the glue that holds our Solar System together?
19. How many days does it take Mercury to orbit around the Sun?
20. How long does it take Pluto to orbit around the Sun?
21. In which direction does the Sun rotate?