1 pt ec printing

ISAAC NEWTON

Date:_____
Name:_____
Class:_____

1 How did Newton's invention of the reflecting telescope affect the field of astronomy?

A It allowed astronomers to see clearer images, without distorted or lost colors
B It allowed astronomers to discover the existence of Jupiter and Saturn
C It made astronomers realize that sunlight contains different colors
D It allowed astronomers to realize that the earth revolves around the sun

2 According to Newton, what kinds of objects are affected by gravity?

A Only objects inside the earth's atmosphere, like apples
B Only objects that orbit the sun, like planets
C Only objects with a lot of mass, like human beings
D All objects in the universe

3 What can you infer from the fact that Newton was elected President of the Royal Society?

A His personality made him popular among his fellow scientists
B His fellow scientists understood the importance of his scientific achievements
C His fellow scientists appreciated the work he'd done for the Royal Mint
D He was a good friend of the King of England

4 What type of object could you best measure using calculus?

A A very large geometric object, like an Egyptian pyramid
B An object with curves and irregular surfaces
C A object so distant you need binoculars to see it
D A very close object, like anything under a microscope

5  **How is the moon's orbit around the earth related to an apple falling from a tree?**

A The earth's gravity keeps the moon in orbit, and also pulls objects toward the ground
B The earth, the moon, and an apple are all spherical, so they all have gravity
C The moon's gravity holds apples on tree branches, while the earth's gravity pulls apples toward the ground
D The moon's gravity affects bodies of water; the earth's gravity affects solid objects

6 At the Royal Mint, Isaac Newton helped catch and punish counterfeiters. What is a counterfeiter?

A Someone who breaks the laws of physics
B Someone who criticizes the king
C Someone who publishes inaccurate scientific theories
D Someone who prints fake money

7 Legend has it that a fallen apple was key to Newton's ideas on gravity. What term could you use to describe the apple in this capacity?

A Dangerous
B Omen
C Inspiration
D Delicious

8 What conclusion can you draw from the story of Isaac Newton's life?

A He wasn't nearly as smart as Einstein
B He revolutionized several different fields within math and science
C His contributions to math and science were unrecognized until after he died
D His most important contributions came with the Royal Mint

9 Isaac Newton proved himself to be a polymath. If the prefix "poly-" means "many," what can you infer about what a polymath is?

A It's someone who comes up with hundreds of scientific equations over his lifetime
B It's someone who is interested in many different fields of study
C It's someone who develops mathematical proofs about polynomials
D It's someone who memorizes the multiplication tables

10 Sir Isaac Newton is buried at Westminster Abbey in London. Which of these other famous people is most likely to also be buried there?

A George Washington
B King Louis XIV of France
C Queen Elizabeth I
D Albert Einstein

NEWTON'S LAWS OF MOTION

Date:_____
Name:_____
Class:_____

1 What will happen if you're in a car, and the driver slams on the brake?

A You will stop moving
B You will continue moving forward
C You will gradually slow down
D You will speed up

2 According to Newton's first law, an object in motion will stay in motion unless:

A An unbalanced force acts on it
B A balanced force acts on it
C It stops
D It remains at rest

3 What might happen if you were in a braking car, and you weren't wearing your seat belt?

A You'd fly backward through the rear window
B You'd be pressed backward into your seat
C You'd fly forward through the windshield
D You'd move sideways through the passenger door

4 What causes a ball rolling across a rug to slow to a stop?

A The rug doesn't have enough force to hold the ball
B Friction resists the ball's forward motion
C The rug doesn't have enough momentum to keep the ball moving
D The ball isn't moving fast enough

5 What part(s) of a moving car experience the most friction? Choose the best answer.

A 
B 
C 
D 

6 Which of the following is an opinion about friction?

A It occurs any time two objects are in contact
B It always acts in the opposite direction as motion
C It slows objects down too much
D It prevents objects on earth from staying in motion forever

7 If an unbalanced force acts on an object, what will happen?

A It will not move at all
B It will accelerate in the same direction as the force
C It will accelerate in the opposite direction to the force
D It will accelerate at an angle of 90 degrees to the force

8 Ordinarily, gravity and the normal force counterbalance each other. In other words:

A They reinforce each other
B They have no effect on one another
C They act on you at all times
D They cancel each other out

9 What is net force?

A A force associated with the Internet
B The combined forces acting on a particular object
C The same thing as inertia
D The same thing as gravity

10  **According to Newton's third law, what happens when you push against a wall?**

A The wall pushes back at you half as hard as you push against it
B The wall doesn't resist at all
C The wall pushes back at you with the same amount of force
D The wall pushes back at you twice as hard as you push against it

ALBERT EINSTEIN

Date:_____
Name:_____
Class:_____

1 Why are Einstein's findings known as theories of "relativity?"

A Because they show how the stars and planets are related to one another
B Because they show that the perception of space and time is related to the position of the observer
C Because these findings were a relatively important achievement
D Because Einstein's calculations weren't very exact

2 Place the following events in sequence: A) Einstein wins the Nobel Prize; B) Einstein describes the photoelectric effect; C) Einstein moves to America

A C, B, A
B B, C, A
C B, A, C
D A, C, B

3 Which of these is an opinion about Einstein's famous E=mc squared equation?

A It demonstrates the relationship between mass and energy
B It helped inspire the development of nuclear technology
C It is the most important discovery in the history of science
D It set the speed of light at close to 300,000 meters per second

4 Which of the following best describes Einstein's abilities as a student?

A Einstein was bad at math but good at physics
B Einstein failed a large number of his high school and college math exams
C Einstein was the highest-ranked student in his graduating class
D Einstein was not a diligent student, but still got good grades

5 The photoelectric effect describes how light is both a particle and a(n):

A Wave
B Gas
C Liquid
D Element

6 How does the theory of general relativity compare to the theory of special relativity?

A General relativity describes gravity; special relativity says that mass equals energy
B Both describe gravity, but special relativity focuses on Earth's gravity
C Special relativity deals with the speed of light; general relativity deals with E=mc squared
D Special relativity deals with the origins of the universe; general relativity deals with how the universe operates

7  **What can you conclude from the fact that young Einstein would cut science class to practice the violin?**

A He hated his teachers
B He thought he could be a professional violinist
C He never learned as much about physics as he should have
D He preferred doing his own thing to following other people's rules

8 Which of the following sets of words applies best to Albert Einstein?

A Confused, gifted, follower
B Genius, hermit, belligerent
C Independent, intuitive, renowned
D Powerful, arrogant, unpleasant

9 Why did Einstein move from Europe to America in 1933?

A He was nervous about Hitler's rise to power
B He got a job offer that he couldn't pass up
C Only the American scientific establishment accepted his theories
D He had just gotten divorced and wanted to start a new life

10 How might modern life be different if Einstein hadn't made his discoveries?

A We might not have electricity in our homes
B We might not be able to travel in space
C We might not have cars
D We might not have to attend physics classes in high school

RELATIVITY

Date:_____
Name:_____
Class:_____

1 In a nutshell, what does the equation E = mc2 mean?

A Electricity travels at the speed of light squared
B The fastest matter can travel is the speed of light squared
C Energy and matter are equivalent
D All matter in the universe is expanding at the speed of light squared

2 You spend six hours on a supersonic jet. Afterward, you compare your watch to a clock at the airport. Which of the following will be true?

A Your watch will be several hours ahead of the clock on the ground
B Your watch will be a few seconds ahead of the clock on the ground
C Your watch will be several hours behind the clock on the ground
D Your watch will be a few seconds behind the clock on the ground.

3  **Which of the following statements is true?**

A Isaac Newton's laws do not adequately explain how gravity works on earth
B Isaac Newton's laws were based on the belief that the sun revolves around the earth
C Isaac Newton's laws do not apply to many objects and phenomena in outer space
D Isaac Newton's laws are rarely studied in today's science classes

4 Which travels fastest: Light from a lightbulb, light from the sun, or light from a laser beam?

A Light from a lightbulb
B Light from the sun
C Light from a laser beam
D They all travel at the same speed

5  **Which event occurred at roughly the same time that Albert Einstein published his theory of general relativity?**

A World War I
B The American Civil War
C The first space mission to the moon
D The development of the Internet

6 How did the theory of relativity get its name?

A It showed that the speed of light is related to space travel
B It showed that time and distance can only be measured relative to other objects
C It was relatively difficult for physicists in Einstein's day to understand
D It showed that traveling at the speed of light would be relatively impossible

7 Massive objects bend spacetime in the same way that:

A A mountain road bends to the left and right
B A bowling ball bends the surface of a mattress
C Your arm bends at your elbow
D A curveball bends when it's thrown through the air

8 How is special relativity different from general relativity? Choose the best answer.

A Special relativity deals with matter and energy; general relativity deals with gravity
B Special relativity deals with objects in motion; general relativity deals with objects at rest
C Special relativity explains the physical laws of the universe; general relativity explains the physical laws that exist on earth
D Special relativity deals with space travel; general relativity deals with the speed of light

9 According to Einstein, gravity is equivalent to:

A Acceleration
B The speed of light
C Mass
D Energy

10 You return home from a space voyage to find that all your friends are 50 years older than you. Roughly how fast were you traveling?

A 3,000,000 miles per hour
B 386,000 m/s
C 3,000,000 km/s
D 300,000,000 m/s