Grade 4 Science

MP 1 Common Assessment

Chapter 6: Earth's Resources

NEXT GENERATION STANDARDS

Plate Tectonics and Large-Scale System Interactions

4-ESS2.B The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features of Earth.

Earth Materials and Systems

4-ESS2.A Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.

Natural Hazards

4-ESS3.B A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.

Name _____ Date _____

Science Chapter 6 Test: Earth's Resources

1-6 Match each term to its correct definition. (3 points each)

_____ weathering	**a)** process of carrying away weathered bits of rock
_____ erosion	**b)** the movement of water from Earth's surface to the atmosphere and back again
_____ minerals	**c)** any form of water that falls to Earth
_____ precipitation	**d)** natural, nonliving solid crystals that make up rocks
_____ landform	**e)** a natural land feature on Earth's surface
_____ water cycle	**f)** process of rocks in Earth's crust slowly being broken into smaller pieces

7-12 Choose the best answer for each question. (4 points each)

7. A rock has layers and is made from small grains. What type of rock is it?
   - A) metamorphic
   - B) igneous
   - C) sedimentary
   - D) volcanic

8. Which is an example of liquid water on Earth's surface?

A) a glacier
B) a lake
C) water vapor
D) an ice cap

9. Which statement about minerals is true?

A) A mineral can scratch another mineral with a higher hardness.
B) A mineral always has the same color.
C) A mineral's streak can be a different color than the mineral itself.
D) Cleavage refers to the shape of a mineral's crystal.

10. What is the sun's role in the water cycle?

A) Water evaporates in the sun's warmth.
B) The sun makes water particles slow down.
C) Water condenses when it is warmed by the sun.
D) The sun's warmth changes water from a gas to a liquid.

11. Which of the following can rapidly change Earth's surface?

A) canyons
B) chemical weathering
C) physical weathering
D) volcanoes

12. Where do earthquakes occur?

A) near an epicenter
B) in the mountains
C) along a fault
D) in a river

13-18 Circle the correct answer. (4 points each)

13. When lava cools quickly, _____ crystals form.
small **or** large

14. When magma cools slowly, _____ crystals form.
small **or** large

Circle the correct type of weathering for each example.

15. acids in rainwater — physical **or** chemical

16. water freezing in cracks in rock — physical **or** chemical

17. flowing water — physical **or** chemical

18. chemicals from plants — physical **or** chemical

Write in complete sentences. (5 points)

19. Explain how Earth's surface changes slowly.

_____

_____

_____

_____

20. Explain how Earth's surface changes rapidly.

_____

_____

_____

_____

21-26 Choose a word from the box to complete each sentence. (4 points each)

sedimentary	igneous	metamorphic
landslide	earthquake	volcano

21. Rocks that form from molten rock are called _____ rocks.

22. Rocks that form when layers of sediment settle on top of one another and harden are called _____ rocks.

23. Rocks that have changed as a result of heat and pressure are called _____ rocks.

24. A _____ is a landform that forms at an opening at Earth's crust where magma reaches the surface.

25. The sudden movement that causes Earth's crust to shake is an _____.

26. The rapid downhill movement of a large amount of rock and soil is a _____.

Grade 4 Science

MP 2 Common Assessment

Chapter 5: Ecosystems

NEXT GENERATION STANDARDS

The History of Planet Earth

4-ESS1.C Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.

Biogeology

4-ESS2.E Living things affect the physical characteristics of their regions.

Natural Resources

4-ESS3.A Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.

Structure and Function

4-LS1.A Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Information Processing

4-LS1.D Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.

Name _____ Date _____

Science Chapter 5 Test: Ecosystems

1-6 Match each term to its correct definition. (3 points each)

_____ ecosystem	**a)** no longer existing as a species
_____ population	**b)** a scientist who studies fossils
_____ paleontologist	**c)** all the members of one species that live within an area of an ecosystem
_____ habitat	**d)** remains or mark of an animal or plant that lived long ago
_____ fossil	**e)** area or place where an organism lives in an ecosystem
_____ extinct	**f)** all the living and nonliving things in an environment and the many ways they interact

7-14 Choose the best answer for each question. (4 points each)

7. Invasive plants that do not have competitors in their habitats can cause change by...
   A) growing so large they block out other plants' sunlight.
   B) absorbing more water than other plants.
   C) providing food for animals.
   D) all of the above

8. Which kind of fossil preserves the hard and soft parts of an animal?

A) a trace fossil
B) a cast fossil
C) a fossil from a tar pit
D) a fossil in amber

9. Why are fossil fuels considered nonrenewable resources?

A) They are found in the ground.
B) They cannot be replaced as fast as humans can use them.
C) They are not made from living things.
D) They create pollution when burned.

10. Which resource would plants **not** compete for?

A) sunlight
B) water
C) insects
D) space

11. Renewable resources...

A) can run out.
B) are not usable unless processed by humans.
C) are not able to be used again.
D) can be replaced.

12. What might finding a fish fossil in a desert tell paleontologists?

A) how plants have changed
B) how Earth's environment has changed
C) how animals once got enough to eat
D) how animals once attracted mates

13. What is conservation of resources?

A) not using fuels
B) not using fossil fuels
C) using only recycled fossil fuels
D) efficiently using only what you need

14. How do solar cells support the need for energy?

A) They convert electricity to solar power.
B) They change solar energy to electricity.
C) They convert natural gas to solar energy.
D) They change wind and sunlight to solar energy.

15. Circle **three** natural resources below. (3 points)

plants plastic water air cardboard

16-20 Circle the correct type of resource for each. (3 points each)

16. coal renewable **or** nonrenewable

17. water renewable **or** nonrenewable

18. solar energy renewable **or** nonrenewable

19. oil renewable **or** nonrenewable

20. wind renewable **or** nonrenewable

21-25 Circle true or false for each statement. (3 points each)

21. Fossil fuels are easily replaced. true or false

22. A lion can survive in any habitat. true or false

23. Plants and animals can change the environment. true or false

24. Most of Earth's water is drinkable. true or false

25. The deeper a fossil is buried in Earth, the older it most likely is. true or false

Write in complete sentences. (6 points)

26. Some changes to the environment are harmful while others are helpful. Explain one harmful change and one helpful change.

Harmful Change _____

_____

_____

Helpful Change _____

_____

_____

Write in complete sentences. (5 points)

27. List and explain two ways we can conserve resources.

- _____

_____

- _____

_____

Write in complete sentences. (6 points)

28. We know that sharks live in the ocean. Identify and explain two different structures that help the shark to survive in this habitat.

Structure _____

_____

_____

Structure _____

_____

_____

Grade 4 Science

MP 3 Common Assessment

Chapter 1: Energy & Heat

NEXT GENERATION STANDARDS

Definitions of Energy

4-PS3.A Energy can be moved from place to place by moving objects or through sound, light, or electric currents.

Conservation of Energy and Energy Transfer

4-PS3.B Energy is present whenever there are moving objects, sound, light, or heat.

4-PS3.B When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.

4-PS3.B Light also transfers energy from place to place.

4-PS3-2 Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.

4-PS3-4 The currents may have been produced to begin with by transforming the energy of motion into electrical energy.

Energy in Chemical Processes and Everyday Life

4-PS3.D The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.

Wave Properties

4-PS4.A Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach.

4-PS4.A Waves of the same type can differ in amplitude (height of the wave) and wavelength (distance between wave crests).

Electromagnetic Radiation

4-PS4.B An object can be seen when light reflected from its surface enters the eyes.

Name _____ Date _____

Science Chapter 1 Test: Energy & Heat

1-7 Match each term to its correct definition. (3 points each)

_____ frequency	**a)** how high or low a sound is
_____ wavelength	**b)** the bending of light when it passes into a new medium
_____ pitch	**c)** distance between a point on one wave and a similar point on the next wave
_____ refraction	**d)** the height of a wave measured from its midline
_____ reflection	**e)** a measure of how strong a sound seems to us
_____ amplitude	**f)** occurs when light rays bounce off a surface
_____ volume	**g)** number of waves that pass a point in a certain amount of time

8-15 Choose the best answer for each question. (4 points each)

8. Which type of energy is formed by vibrating objects?

   A) light energy
   B) sound energy
   C) thermal energy
   D) electrical energy

9. Which is the best description of a sound wave when the pitch of the sound is very high?

   A) It has a low frequency.
   B) It has a high frequency.
   C) It has no wavelength.
   D) It has no frequency.

10. Which type of energy does moving water have?

   A) electrical
   B) kinetic
   C) thermal
   D) potential

11. A guitarist strums two strings of the same thickness on a guitar. The first string vibrates more quickly than the second string. What is true about the pitch of the strings?

   A) The first string has a higher pitch than the second string.
   B) The second string has a higher pitch than the first string.
   C) The first string and the second string have the same pitch.
   D) The pitch of the second string depends on the pitch of the first string.

12. How do white light waves act when they enter a prism?

A) They are reflected.
B) They become raindrops.
C) They bend or refract.
D) They are absorbed.

13. Which of the following can act like a prism?

A) a radio
B) a raindrop
C) a piece of paper
D) a laser

14. Which of the following shows convection?

A) The sun warms your skin.
B) You rub your hands together quickly.
C) A metal spoon in soup becomes warm.
D) A mobile turns from a candle burning below it.

15. When does light refract?

A) When light travels in a vacuum.
B) When light travels through cold air.
C) When light travels in only one medium.
D) When light moves from one medium to another.

16-20 Circle true or false for each statement. (3 points each)

16. The higher the amplitude of a wave, the quieter it sounds. true or false

17. A piece of glass reflects more light than a piece of paper. true or false

18. When convection occurs, a solid moves from place to place. true or false

19. Only sound energy travels in waves. true or false

20. There are many forms of energy. true or false

Write in complete sentences. (4 points)

21. If you want to stay cool while playing outside on a sunny day, which is better to wear: a black T-shirt or a white T-shirt? Explain your answer.

_____

_____

_____

_____

22-27 Choose a word from the box to complete each sentence. (4 points each)

electrical	thermal	sound
kinetic	light	potential

22. Energy in the form of vibrations passing through matter is called _____ energy.

23. Energy of motion is called _____ energy.

24. Energy caused by the movement of electrically charged particles is called _____ energy.

25. Energy that is stored in an object is called _____ energy.

26. Energy that travels as waves and can move through empty space is called _____ energy.

27. Energy due to randomly moving particles that make up matter is called _____ energy.

Write in complete sentences. (4 points)

28. Explain why ice might melt after you have skated on it.

_____

_____

_____

_____

Grade 4 Science

MP 4 Common Assessment

Chapter 2: Motion

NEXT GENERATION STANDARDS

Definitions of Energy

4-PS3.A The faster a given object is moving, the more energy it possesses.

4-PS3.A Energy can be moved from place to place by moving objects or through sound, light, or electric currents.

Conservation of Energy and Energy Transfer

4-PS3.B Energy is present whenever there are moving objects, sound, light, or heat.

4-PS3.B When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.

4-PS3-2 Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.

4-PS3-4 The currents may have been produced to begin with by transforming the energy of motion into electrical energy.

Relationship Between Energy and Forces

4-PS3.C When objects collide, the contact forces transfer energy so as to change the objects' motions.

Name _____ Date _____

Science Chapter 2 Test: Motion

1-6 Match each term to its correct definition. (3 points each)

_____ gravity	**a)** the rate at which an object changes position
_____ motion	**b)** any push or pull
_____ speed	**c)** the force that pulls all objects toward each other
_____ reference point	**d)** a change in the position of an object
_____ velocity	**e)** the speed and the direction an object is moving
_____ force	**f)** a place or object used to determine if an object is in motion

7-14 Choose the best answer for each question. (4 points each)

7. Which object requires the least amount of force to move it 5 m?

A) golf ball
B) soccer ball
C) bowling ball
D) ping pong ball

8. You are riding a bike down the street and the trees and houses you pass appear to be moving. What term describes why the trees and houses signal that **you** are actually in motion and they are not?

   A) velocity
   B) relative motion
   C) acceleration
   D) reference point

9. Two students push boxes with the same mass for 10 seconds. Which student moved her box a greater distance?

   A) the student who pushed with less force
   B) the student who had a lesser body mass
   C) the student who pushed with more force
   D) the student who had a greater body mass

10. On which object would the force of gravity be strongest?

   A) an apple
   B) a book
   C) a basketball
   D) a truck

11. A student wants to describe the velocity of a moving car. What information does the student need?

   A) speed and position
   B) speed and direction
   C) direction and position
   D) direction and relative motion

12. A roller coaster makes a turn as it goes around its track. What is this an example of?

A) speed
B) acceleration
C) relative motion
D) frame of reference

13. A car travels 160 km in 2 hours. What is the average speed of the car?

A) 0.01 km/hr
B) 80 km/hr
C) 160 km/hr
D) 320 km/hr

14. Two players kick a soccer ball with equal force from opposite directions. Why won't the ball move?

A) Gravity makes the ball stay on the ground.
B) The friction of the grass stops the ball.
C) Balanced forces cancel each other out so the ball stays still.
D) The players did not apply enough force.

Write in complete sentences. (4 points)

15. Describe what happens to the motion of a baseball after a pitcher throws it. **Use science vocabulary from this chapter in your answer.*

_____

_____

_____

_____

16-21 Circle true or false for each statement. (3 points each)

16. A force can make a moving object stop. true or false

17. More force is needed to change the motion of an object with more mass. true or false

18. The force of gravity increases as objects decrease in mass. true or false

19. Mass and weight are the same thing. true or false

20. The faster an object moves, the the less energy it has. true or false

21. Starting, speeding up, and slowing down are accelerations. true or false

Write in complete sentences. (4 points)

22. You are moving a heavy box across a room. You ask a friend to help you lift it. Why is it easier when your friend helps?
**Use science vocabulary from this chapter in your answer.*

_____

_____

_____

_____

23-28 Use the words to complete the paragraph. (4 points each)

direction	force	motion

Force causes a change in motion in an object. The amount of _____ acting on an object affects how that object changes speed, direction, or both. When you ride a bike, you push the pedals. If you push harder, the bike goes faster. You turn the handlebars. The bike changes _____. Pedaling and turning change the bike's _____.

energy	speed	balanced

A moving object changes its motion only when a force acts on it. If _____ forces are applied to a moving object, it will keep moving at the same speed and in the same direction. The moving object will not slow, speed up, or turn until the forces acting on it become unbalanced. An example is when you continue to pedal your bike with the same force. The bike will continue to move at the same _____ because the same force is acting on it. If the moving bike collides with another object, the bike will slow down or stop. The contact forces from the collision transfer _____ and change the bike's motion.

Grade 4 Science

MP 4 Common Assessment

Skills Handbook Part 2: Technology and Design

NEXT GENERATION STANDARDS

Optimizing The Design Solution

4-PS4.C Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

Defining and Delimiting Engineering Problems

4-ETS1.A Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

Designing Solutions To Engineering Problems

4-ETS1.B Testing a solution involves investigating how well it performs under a range of likely conditions.

Information Technologies And Instrumentation

4-PS4.C Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.