Science
Grade 3
Interim Assessment #1

1. **Four students drew particle models of water in three states: an ice cube, liquid water in a cup, and water vapor in a closed jar.**

   Which student's model correctly shows why a solid keeps its shape, a liquid flows and takes the shape of its container, and a gas spreads out to fill its container?

   A. Solid: particles close together in neat rows. Liquid: particles far apart, moving in all directions. Gas: particles close together, sliding past each other.

   B. Solid: particles close together in neat rows. Liquid: particles close together but jumbled, sliding past each other. Gas: particles far apart, moving in all directions.

   C. Solid: particles close together in neat rows. Liquid: large, soft particles that bend and stretch. Gas: no particles, because water vapor cannot be seen.

   D. Solid: particles close together in neat rows. Liquid: particles close together in neat rows. Gas: particles far apart, moving in all directions.

GO ON

2. A student does an investigation with salt and water.

Step	Observation
1. Put a spoonful of salt on a scale.	The salt has a mass of 10 grams.
2. Stir the salt into a cup of water.	No salt can be seen anywhere in the cup, even at the bottom, with a hand lens.
3. Weigh the cup of salt water.	The cup of salt water has a mass 10 grams greater than the cup of water alone.
4. Leave the cup in a sunny window for a week.	The water is gone, and a layer of white salt is left in the cup.

Which explanation is best supported by all of the observations?

A. The salt broke into particles too small to see, and those particles stayed in the water.

B. The salt changed into water, so the extra 10 grams in step 3 is new water.

C. The salt was gone once it could not be seen, and new salt formed as the water dried up.

D. The salt sank to the bottom and stayed hidden there until the water dried up.

GO ON

3. **A student pushes on the middle of a sealed beach ball filled with air. The ball bends in, and when she lets go, it pops back out. No air leaves the ball. Then she pushes just as hard on a solid rubber ball of the same size. The rubber ball barely bends.**

   Which explanation of the difference between the two balls uses the particle model correctly?

   A. The air particles are bigger and softer than the rubber particles, so the air bends more easily.

   B. The air is not made of particles, so nothing inside the beach ball pushes back on her hand.

   C. The air particles are far apart and can be pushed closer; the rubber particles hold on to their neighbors.

   D. The rubber particles are far apart and move freely, but the air particles are held in fixed places.

GO ON

4. A student heats five foods in an oven and records what happens.

Food	What Happens During Heating
chocolate bar	melts into a smooth brown liquid; no new smell
popcorn kernels	burst open, turn white and fluffy, and give off a new smell
marshmallow	puffs up, turns black, and gives off smoke
butter	melts into a yellow liquid; no new smell
pancake batter	changes from a runny liquid to a soft solid, turns brown, and gives off a new smell

Which two statements are supported by the evidence in the table?
Select the two correct answers.

A. The chocolate can become solid again after cooling, because only its state changed.

B. The popcorn can change back into kernels after cooling, because it changed only its shape.

C. The marshmallow became a new substance, because it turned black and gave off smoke.

D. The butter became a new substance, because it changed from a solid to a liquid.

E. The pancake batter can become batter again after cooling, because it turned solid like water freezing.

GO ON

5. A student heats two pans. Then she puts each pan in a freezer to cool.

Pan	What Was Heated	During Heating	After Cooling in a Freezer
1	an ice cube	melts into clear liquid water; no smoke or new smell	becomes a clear, solid ice cube again
2	a spoonful of white sugar grains	melts, turns dark brown, and gives off smoke and a burnt smell	becomes one hard, dark brown lump

A classmate claims that both changes were reversed, because both materials were solids again after cooling. Which statement best evaluates the claim?

A. The claim is correct; both materials started as solids and were solids again after cooling.

B. The claim is incorrect; the ice did not return to its starting form, because melting makes a new substance.

C. The claim is correct; each pan held only one material, so neither material could become something new.

D. The claim is incorrect; the sugar gave off smoke and a burnt smell and never became white grains again.

GO ON

6. Two students heat two different balls and write what they see in a table.

Student	What the Student Did	What the Student Saw
A	Put a ball of cookie dough in a hot oven.	The dough spread out, turned golden brown, and gave off a new smell.
B	Put a ball of candle wax in a warm pan.	The wax melted into a liquid puddle with no smoke or new smell.

Which student's material can be made back into its starting ball, and why?

A. Student A; letting the cookie cool will turn it back into soft dough.

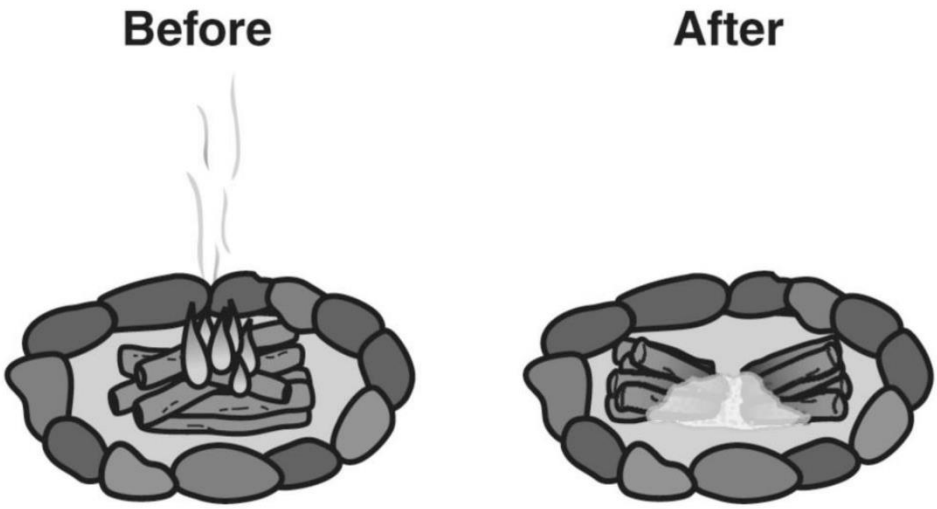
B. Student B; heating the wax longer will make it harden into a ball again.

C. Student B; pouring the liquid wax into a round mold and cooling it will make a solid ball.

D. Student A; crumbling the cookie and pressing the pieces together will make a ball of dough.

GO ON

7. **Campers burned logs in a campfire. While the logs burned, the campers saw flames and smoke and smelled a strong odor. The next morning, the logs were black, and a pile of gray ash lay under them.**



Camper 1 says the wood changed into new substances. Camper 2 says the wood only changed shape and size, like ice melting, and could be changed back. Which camper is correct, and which evidence supports that camper?

A. Camper 1; light, smoke, and an odor were given off, and ash that is not wood was left behind.

B. Camper 2; the logs only turned black, and scraping off the black would show the same wood inside.

C. Camper 2; the logs cooled down overnight, and cooling changes the wood back to how it was.

D. Camper 1; the rocks around the fire got hot during the fire and then cooled overnight.

GO ON

8. **A student finds a small silver-colored object that sinks in water. She claims the object is steel. She compares it with a table of known materials.**

Material	Color	Attracted to a Magnet?	Floats or Sinks in Water?
steel	silver	yes	sinks
aluminum	silver	no	sinks
cork	tan	no	floats
candle wax	white	no	floats

Which test would give the best evidence to support or reject her claim, and why?

A. Measure its mass, because a steel object always has more mass than an aluminum object.

B. Look at its color with a hand lens, because a closer look at the silver shows which metal it is.

C. Test whether it floats, because the table shows that steel sinks and aluminum floats.

D. Test whether a magnet attracts it, because the table shows steel is attracted and aluminum is not.

GO ON

9. A student runs two trials and records the measurements.

Trial	What the Student Did	Before	After
1	poured blue water from a tall cup into a wide bowl	volume 200 milliliters; mass 200 grams; height 12 centimeters	volume 200 milliliters; mass 200 grams; height 3 centimeters
2	pressed a ball of clay into a flat pancake	mass 150 grams; height 5 centimeters	mass 150 grams; height 1 centimeter

Which two statements are supported by the data from both trials?
Select the two correct answers.

A. In both trials, the height decreased, so the amount of material decreased.

B. In both trials, the shape changed, but the mass stayed the same.

C. The clay's mass stayed the same, but the water's mass increased as it spread out.

D. The water's volume stayed the same, even though its height changed.

E. Both materials became new materials, because their shapes and heights changed.

GO ON

10. A teacher pours a clear liquid into four measuring cups, P, Q, R, and S. A student tests the liquid in each cup.

P	Q	R	S
			
150 milliliters	50 milliliters	250 milliliters	200 milliliters

Cup	Volume	Mass of Liquid	Does Sugar Dissolve in It?
P	150 milliliters	150 grams	yes
Q	50 milliliters	50 grams	yes
R	250 milliliters	250 grams	yes
S	200 milliliters	200 grams	yes

The student claims the cups hold four different liquids because each cup has a different mass. Which statement best evaluates the claim?

A. The claim is correct; mass is a fixed property of a material, and each cup has a different mass.

B. The claim is incorrect; mass changes with the amount, and sugar dissolves the same way in every cup.

C. The claim is correct; the cup with the most liquid also has the most mass, so it is a different liquid.

D. The claim is incorrect; the cups hold the same liquid because every cup holds the same volume.

GO ON

11. A class needs to choose a material for a spoon to stir hot soup. The spoon must stay stiff, must not get hot quickly, and must not dissolve in the soup. The table shows test results for five materials.

Material	Stays Stiff or Bends?	Gets Hot Quickly in Hot Soup?	Dissolves in Soup?
wood	stays stiff	no	no
metal	stays stiff	yes	no
foam	bends	no	no
hard plastic	stays stiff	no	no
hard candy	stays stiff	no	yes

A student argues that metal is the best choice because it stays stiff and does not dissolve. Which two statements correctly evaluate the argument?
Select the two correct answers.

A. The argument leaves out a need, because metal gets hot quickly in hot soup.

B. Wood is a better choice than metal, because wood meets all three needs.

C. The argument is correct, because meeting two of the three needs is enough.

D. Foam is a better choice than metal, because foam does not get hot quickly.

E. Hard candy is a better choice than metal, because it stays stiff and stays cool.

GO ON

12. A student grinds a piece of chalk into a fine powder. The powder can be poured from one cup into another, and it forms a pile. Under a hand lens, the powder looks like many tiny pieces of chalk.

Which two statements correctly explain the powder?

Select the two correct answers.

A. The powder is a liquid, because it can be poured like water.

B. The powder is partly solid and partly liquid, because it pours but also piles up.

C. The powder is a solid, because each tiny piece keeps its own shape.

D. The powder has fewer particles than the chalk, because some pieces got too small and disappeared.

E. The powder is still chalk, made of the same kind of particles as the whole piece.

GO ON

13. Two bar magnets are placed on a table with their south poles facing each other. The table shows what happened when the magnets were placed at two distances apart.





Distance Between the Magnets	What Happened
15 centimeters	The magnets did not move.
10 centimeters	The magnets moved.

What will most likely happen if the magnets are placed 8 centimeters apart, and why?

A. The magnets will move toward each other, because the force between them is stronger when they are closer.

B. The magnets will stay in place, because the force between them is weaker when they are closer.

C. The magnets will move away from each other, because the force between them is stronger when they are closer.

D. The magnets will move away from each other only after they touch, because magnets must touch to push.

GO ON

14. Students held four magnets, one at a time, at the same height over a bowl of steel pins. They counted the pins each magnet picked up.

Magnet	Size	Number of Pins Picked Up
1	large	6
2	small	27
3	large	15
4	small	6

Which two statements are supported by the data?
Select the two correct answers.

A. Larger magnets always pull more strongly than smaller magnets.

B. Magnet 2 pulls more strongly than any of the other magnets.

C. Magnet 3 is weaker than Magnet 1, because it picked up more pins.

D. A magnet that is held over the bowl longer picks up more pins.

E. Magnet 1 and Magnet 4 pull with about the same strength.

GO ON

15. A student places a compass on a table. The needle points north. The student then does three trials.

Trial	What the Student Did	What the Needle Did
1	Held a bar magnet near the compass without touching it.	Turned to point toward the magnet.
2	Held a sheet of cardboard between the bar magnet and the compass.	Still turned to point toward the magnet.
3	Held a wooden block the same size as the magnet near the compass.	Did not move.

Which explanation best fits the results of all three trials?

A. The needle is a magnet, and the bar magnet's force turned it without touching, even through cardboard.

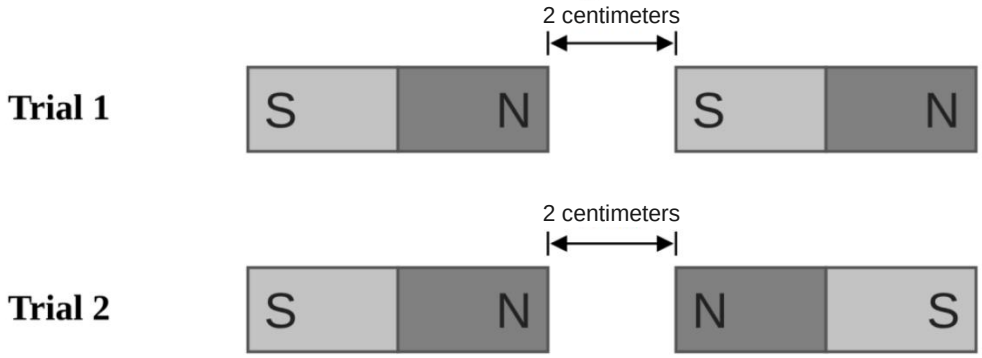
B. Air pushed by the student's moving hand turned the needle toward whatever object was held near it.

C. The bar magnet must have touched the needle through the cardboard, because forces need contact to act.

D. Gravity pulled the needle toward the object held near it, because every object pulls on the needle.

GO ON

16. A student places two bar magnets 2 centimeters apart on a smooth table. In Trial 1, the magnets move toward each other. In Trial 2, the student turns the right magnet around and places it 2 centimeters away again. This time the magnets move away from each other.



Another student says the right magnet moved away in Trial 2 because it was weaker. Which statement best evaluates this idea?

A. The idea is incorrect; the same magnets were used, and turning one around changed which poles faced each other.

B. The idea is correct; a weaker magnet always pushes another magnet away instead of pulling it closer.

C. The idea is correct; turning a magnet around uses up some of its pull, so it becomes a weaker magnet.

D. The idea is incorrect; the magnets moved apart in Trial 2 because they were placed closer together.

17. A student makes two observations.

Observation	What Happened
1	A ball tossed straight up slows down, stops for a moment at the top, and then falls back down, moving faster and faster.
2	A ball rolled off the edge of a table keeps moving forward but curves down to the floor, moving faster as it falls.

Nothing touches either ball while it is in the air. Which explanation accounts for both observations?

A. Gravity pulls on each ball only after it starts moving down toward the floor.

B. Each ball keeps moving until the push from the hand or the table runs out, and then it drops.

C. Gravity does not act on a ball while it is in the air, so the air pushes each ball down.

D. Gravity pulls each ball toward Earth the whole time, changing its motion whether it moves up or sideways.

GO ON

18. Students test four magnets, W, X, Y, and Z, one at a time. In each trial, they tape one magnet under a flat table at the same spot, 1 centimeter below the ball's path. They release the same metal ball from the same spot on the same ramp, so it rolls across the table over the magnet at the same starting speed. Only one magnet is under the table in each trial.

Trial	Magnet Under the Table	What the Ball Did
1	W	rolled over the magnet and slowed down a little
2	X	rolled over the magnet without slowing down
3	Y	rolled over the magnet and slowed down a lot
4	Z	stopped directly over the magnet

Which list shows the magnets in order from the strongest pull to the weakest pull?

A. X, W, Y, Z

B. Z, Y, W, X

C. Y, Z, W, X

D. Z, W, Y, X

GO ON

19. When Jackson takes clothes out of the dryer, some socks are stuck to shirts. He pulls a sock off a shirt and holds it near the shirt's sleeve without touching it, and the sleeve moves toward the sock. Then he holds two socks from the dryer near each other, and the socks push away from each other.

Which two statements are best supported by these observations?

Select the two correct answers.

A. The sock and shirt have the same charge, because they pulled together.

B. The two socks have the same charge, because they pushed apart.

C. Heat from the dryer made the clothes sticky, like glue that holds them together.

D. The dryer removed the air that normally keeps the clothes apart from each other.

E. Static electricity can pull or push on the clothes without them touching.

GO ON

20. A student is given two closed cardboard boxes of the same size. Box 1 has a small device inside that the student cannot see. Box 2 is empty. Both boxes sit on the same table in the same room for 10 minutes. The student records three observations.

Observation	Box 1	Box 2
Temperature of the box top after 10 minutes	27 degrees Celsius	22 degrees Celsius
Sound	a faint, steady hum	no sound
A feather laid on the box top	trembles	stays still

The student claims that energy is present in the Box 1 system. Which two statements correctly evaluate the claim?

Select the two correct answers.

A. The hum and the trembling feather together are evidence of sound and motion coming from Box 1.

B. The claim cannot be supported, because the student cannot see the device inside Box 1.

C. Box 2 in the same room stayed cooler, so the warmth of Box 1 is also evidence of energy in Box 1.

D. The warmth is not evidence of energy, because nothing in Box 1 is glowing or burning.

E. Only the hum supports the claim, because sound is the only evidence that can pass through a box.

GO ON

21. A student lets go of a wind-up toy boat in a tub of water. The boat moves across the tub. Ripples spread out from the boat to the sides of the tub. A leaf floating on the far side of the tub bobs up and down in the same spot, and a soft splashing sound can be heard.

Student	Explanation
Student 1	"Energy is present in the boat, but not in the water."
Student 2	"Energy is present in the water too, not only in the boat."

Which two statements best evaluate the students' explanations?
Select the two correct answers.

A. Student 1 is fully correct, because the water does not travel across the tub the way the boat does.

B. Student 1 is partly correct: the boat moving across the tub is evidence that energy is present in the boat.

C. Student 2 is incorrect, because the leaf only bobs up and down and never travels to a new place.

D. Student 2 is also correct: the ripples, the bobbing leaf, and the splashing are evidence of energy in the water.

E. Neither student is correct, because no heat or light is observed, so no energy is present anywhere.

GO ON

22. A class hangs wind chimes on a pole next to a small flag. They observe the chimes and the flag at three times during one day.

Time	Wind Chimes	Flag
9:00 in the morning	hang still; no sound	hangs limp
12:00 noon	swing and ring loudly	waves out straight
3:00 in the afternoon	hang still; no sound	hangs limp

Which conclusion is best supported by all of the observations?

A. At noon, energy was present in the chimes only, because the air cannot be seen and so has no energy.

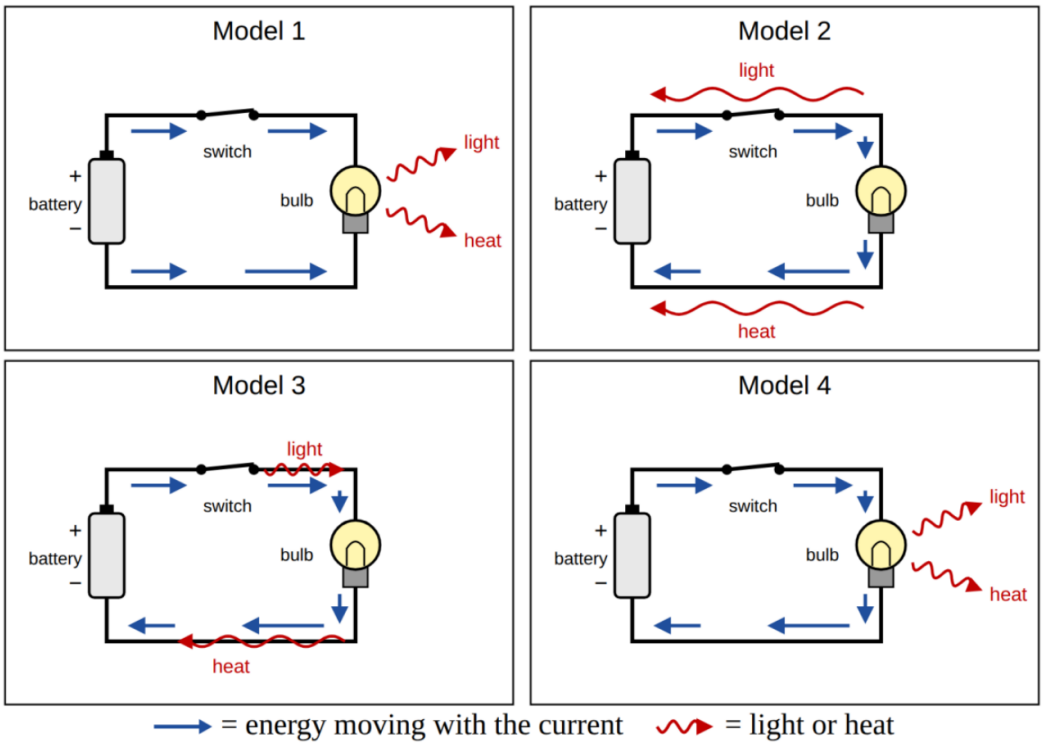
B. At 9:00 and 3:00, the chimes show the most evidence of energy, because they are resting and storing it.

C. At noon, the ringing chimes and the waving flag are evidence of energy in both the chimes and the moving air.

D. At noon, the ringing is evidence of energy, but the swinging is not, because the chimes stay on the pole.

GO ON

23. A circuit has a battery, a closed switch, and a bulb connected by wires in one loop. The bulb is lit and feels warm. Four students draw models of how energy moves in this circuit.



Which model correctly shows how energy is transferred in this circuit system?

A. Model 1, because energy flows from both ends of the battery to the bulb and then leaves as light and heat.

B. Model 2, because the light and heat from the bulb flow back into the battery to fill it up again.

C. Model 3, because the light and heat travel through the wires with the current and stay in the circuit.

D. Model 4, because current carries energy through the whole loop and energy leaves the bulb as light and heat.

GO ON

24. A student builds four circuits, each with one battery, one bulb, one buzzer, and wires. The table describes each circuit and what happened.

Circuit	How It Is Connected	Bulb	Buzzer
1	The battery, bulb, and buzzer are joined in one loop.	lights	sounds
2	The same loop as Circuit 1, but the wire between the buzzer and the battery has a gap.	dark	silent
3	The battery and bulb are joined in one loop. The buzzer is attached to the bulb by only one wire.	lights	silent
4	The battery and buzzer are joined in one loop. The bulb is attached to the buzzer by only one wire.	dark	sounds

Which rule explains the results of all four circuits?

A. A device works whenever it is joined by a wire to another device that is working.

B. A device works only when it is part of a loop from one end of the battery back to the other.

C. A device works only when it is the first device the current reaches from the battery.

D. A device works only when both devices are in the loop, because they share the current.

GO ON

25. A student puts new, identical batteries into four identical flashlights. She leaves each flashlight either switched on or switched off for a set time. Then she switches each one on and records how bright it is.

Flashlight	Switch Position	Hours Left That Way	Brightness Afterward
1	on	2	bright
2	on	4	a little dim
3	on	8	very dim
4	off	8	bright

A classmate claims that a battery loses energy just by sitting inside a flashlight for a long time. Which statement best evaluates the claim?

A. The claim is supported, because Flashlight 3 sat for 8 hours and it is the dimmest.

B. The claim is supported, because the current in every flashlight was used up in the wires over time.

C. The claim is not supported; Flashlight 4 sat 8 hours switched off and is still bright.

D. The claim is not supported; the flashlights left on trapped light in their wires, which made them dim.



You have reached the end of this test.