

Reporting
Category 1:
Matter and
Energy

Reporting Category 1: 8th Grade Science Readiness Standards

Name _____

Date _____

Class/Grade _____

1 Expectation: 8.5(B)

If an atom does not undergo fusion or fission, the number of protons within it will never change. This is why the number of protons is used to —

- A determine the amount of energy needed to split an atom.
- B determine the element of an atom.
- C determine the number of covalent bonds an atom can form.
- D determine whether an atom will be reactive.

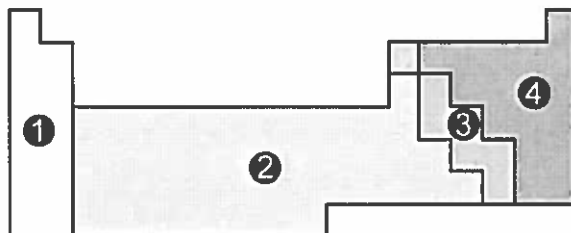
2 Expectation: 8.5(E)

A chemist added hydrochloric acid to a sample of baking soda in a beaker. Immediately the mixture of the two chemicals began to fizz and bubble. Which of the following observations about the fizzing mixture provides evidence of a chemical reaction?

- F The temperature of the beaker did not change.
- G Most of the baking soda appeared to dissolve in the acid.
- H Some of the baking soda remained in the bottom of the beaker.
- J A substance escaped from the beaker in the form of a gas.

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Directions: The diagram below shows the Periodic Table divided into four sections. Use the diagram and your knowledge of science to answer any questions that follow.



3 Expectation: 8.5(C)

An element occurs naturally as a solid with a shiny metallic appearance. It is extremely brittle and can be used to create superconductors. In which section of the diagram would the element most likely be found?

- A 4
- B 2
- C 3
- D 1

4 Expectation: 8.5(C)

An element occurs naturally as a light solid with a shiny metallic appearance. It reacts violently with water at standard temperature and pressure. In which section of the diagram would the element most likely be found?

- F 2
- G 1
- H 3
- J 4

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5 Expectation: 8.5(E)

A food scientist placed a raw egg in a pan and cooked it. The white and yolk became a thick, solid mass. What evidence indicates that a chemical reaction occurred when the egg was cooked?

- A Water vapor was released as the egg was heated.
 - B The egg changed from a liquid state to a solid state.
 - C Some of the raw egg was boiled and released as a gas.
 - D The cooked egg cannot return to its raw state.
-

6 Expectation: 8.5(C)

There are large blank spaces in the second and third horizontal rows, or periods, in the Periodic Table. These spaces allow elements —

- F with similar properties to remain in columns, or groups.
 - G that have not been discovered yet to fit in the table once they are discovered.
 - H that occur naturally as gases to remain to the left of metals in the table.
 - J with consecutive atomic numbers to remain in columns, or groups.
-

7 Expectation: 8.5(A)

Most of the mass in an atom is —

- A contained in the atom's nucleus.
- B found in the cloud surrounding the nucleus.
- C contained in the atom's neutrons.
- D in neither the nucleus nor the cloud surrounding the nucleus.

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8 Expectation: 8.5(A)

The mass of an electron is —

- F substantially less than the mass of a neutron.
 - G substantially greater than the mass of a neutron.
 - H roughly equal to the mass of a neutron.
 - J exactly equal to the mass of a neutron.
-

9 Expectation: 8.5(E)

A chemist placed a piece of pink paper in a beaker. He placed the beaker over an open gas flame produced by a Bunsen burner. As the paper was heated, it turned black and produced smoke. Later, the flakes of paper crumbled and became ash. Which of the following observations about the burning paper does NOT provide evidence of a chemical reaction?

- A As the paper burned, it became warmer.
- B As the paper burned, it transformed into ash.
- C As the paper burned, it released black smoke.
- D As the paper burned, its color changed from pink to black.

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10 Expectation: 8.5(E)

Mrs. Rosales performed a demonstration of a chemical reaction for her science students. In a well-ventilated room, she added a sulfuric acid solution to a beaker containing granulated sugar. The mixture immediately became very hot and released water vapor into the air. The sugar appeared to burn and was transformed into a rapidly growing column of solid black material. The experiment also produced a foul-smelling odor. Which observation about the demonstration does NOT provide evidence of a chemical reaction?

- F The mixture immediately became very hot.
 - G The sugar was transformed into a solid black material.
 - H The mixture released a foul-smelling odor.
 - J Water vapor was released into the air.
-

11 Expectation: 8.5(B)

An atom can become less reactive by –

- A losing or gaining electrons from its outermost shell.
 - B losing neutrons from its innermost shell.
 - C gaining protons only from its outermost shell.
 - D losing electrons from its nucleus.
-

12 Expectation: 8.5(B)

An element's identity is defined by –

- F its number of protons.
- G its number of electrons.
- H its number of neutrons.
- J its electrical charge.

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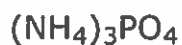
13 Expectation: 8.5(B)

An atom that has a closed shell of valence electrons is —

- A unlikely to have an atomic number.
- B likely to form bonds with other atoms.
- C unlikely to form bonds with other atoms.
- D likely to split apart.

14 Expectation: 8.5(D)

Ammonium phosphate, a chemical common in many fertilizers, has the following chemical formula:



How many hydrogen atoms are found in the most basic unit of ammonium phosphate?

				.		
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

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15 Expectation: 8.5(B)

The subatomic particles that can form chemical bonds with subatomic particles in other atoms are called —

- A valence neutrons.
- B valence protons and valence electrons.
- C valence protons.
- D valence electrons.

16 Expectation: 8.5(D)

Aspirin, or acetylsalicylic acid, has the following chemical formula:



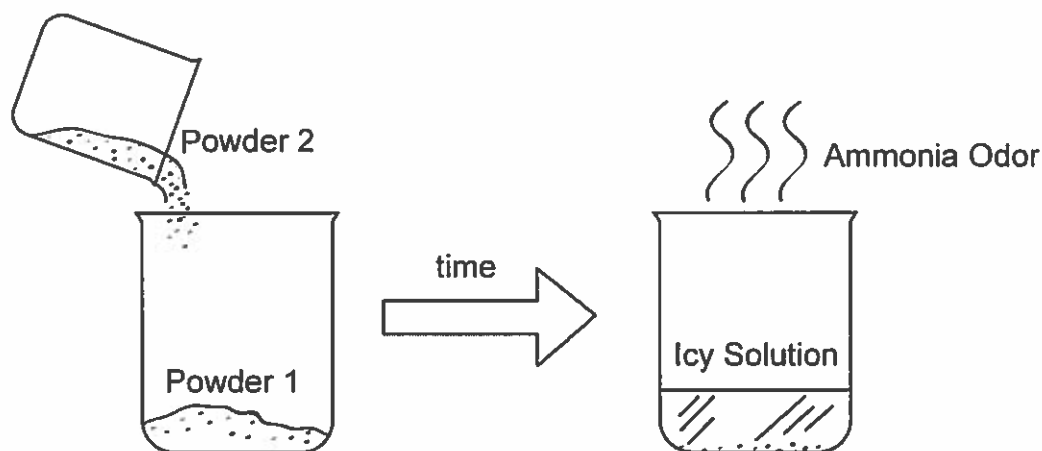
What is true of aspirin?

- F One aspirin molecule contains one carbon atom, one hydrogen atom, and four oxygen atoms.
- G One aspirin molecule contains nine carbon atoms, eight hydrogen atoms, and four oxygen atoms.
- H One aspirin molecule contains one carbon atom, nine hydrogen atoms, and eight oxygen atoms.
- J One aspirin molecule contains nine carbon atoms, one hydrogen atom, and eight oxygen atoms.

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17 Expectation: 8.5(E)

Mr. Wurtz performed a demonstration for his science students in a well-ventilated room. He mixed together two samples of different white powdery substances in an open beaker. The dry mixture soon became wet, and the students could smell ammonia. The temperature of the beaker dropped dramatically, so much so that the liquid that formed in the beaker began to freeze.



Mr. Wurtz told the class that a chemical reaction had occurred inside the beaker. Which of the following is NOT evidence that a chemical reaction occurred?

- A A liquid formed at the bottom of the beaker.
- B The temperature of the mixture dropped dramatically.
- C A gas with a strong smell was released from the mixture.
- D The powdery substances dissolved in the water.

18 Expectation: 8.5(A)

Which subatomic particle or particles have a negative charge?

- F Electron
- G Proton
- H Electron and neutron
- J Neutron

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19 Expectation: 8.5(E)

Valon cut a cold apple into slices, placed the slices on a plate, and left the plate on the kitchen counter. Over the next two hours, Valon observed that the apple slices started to dry out and turn brown. He also noted that the apple slices warmed to room temperature, and a couple of fruit flies started to fly around them. Which of Valon's observations provides evidence of a chemical reaction?

- A The apple slices attracted fruit flies.
- B The apple slices became warmer.
- C The apple slices dried out.
- D The apple slices changed color.

20 Expectation: 8.5(C)

From left to right, the elements in a row, or period, of the Periodic Table have atoms with an increasing number of protons. Similarly, the number of electrons in atoms of each kind of element increases from left to right in each period. What other left-to-right trend holds for atoms of elements in the same period?

- F Increasing reactivity
- G Increasing atomic radius
- H Decreasing reactivity
- J Decreasing atomic radius

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21 Expectation: 8.5(D)

Carbonic acid has the following chemical formula:



What is true of carbonic acid?

- A** One carbonic acid molecule contains two hydrogen atoms, three carbon atoms, and three oxygen atoms.
 - B** One carbonic acid molecule contains one hydrogen atom, three carbon atoms, and three oxygen atoms.
 - C** One carbonic acid molecule contains two hydrogen atoms, one carbon atom, and three oxygen atoms.
 - D** One carbonic acid molecule contains one hydrogen atom, two carbon atoms, and three oxygen atoms.
-

22 Expectation: 8.5(A)

How do neutrons affect the charge of an atom?

- F** Fewer neutrons than electrons will give an atom a positive charge.
- G** An atom that has more neutrons than protons and electrons will be neutral.
- H** An atom with more neutrons than electrons will have a positive charge.
- J** Neutrons do not affect the electrical charge of an atom.

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23 Expectation: 8.5(D)

Iron(III) oxalate has the following chemical formula:



What is true of the smallest unit of iron(III) oxalate?

- A It contains two iron atoms, six carbon atoms, and twelve oxygen atoms.
- B It contains three iron atoms, four carbon atoms, and eight oxygen atoms.
- C It contains two iron atoms, two carbon atoms, and twelve oxygen atoms.
- D It contains three iron atoms, two carbon atoms, and four oxygen atoms.

24 Expectation: 8.5(D)

Aluminum sulfate has the following chemical formula:



How many sulfur atoms are found in the most basic unit of aluminum sulfate?

				.		
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

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25 Expectation: 8.5(B)

Reactivity is defined as the capacity of a unit of matter, such as an atom, to undergo a chemical reaction with another unit of matter. An atom's reactivity is determined by —

- A the number of protons and electrons in its nucleus.
- B the number of electrons in its outer shell.
- C the number of protons and neutrons in its nucleus.
- D the number of protons in its outer shell.

26 Expectation: 8.5(D)

Magnesium chlorate has the following chemical formula:



How many oxygen atoms are found in the most basic unit of magnesium chlorate?

0	0	0	0	.	0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

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27 Expectation: 8.5(A)

The electrical charge of a neutron —

- A alternates between negative and positive.
- B is positive.
- C is negative.
- D is neutral.

28 Expectation: 8.5(C)

The Periodic Table contains four blocks: the *s*-block, the *p*-block, the *d*-block, and the *f*-block. Blocks contain two or more groups, or columns, of elements that have the same —

- F kind of outer valence shell.
- G atomic number.
- H level of reactivity.
- J physical properties.

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29 Expectation: 8.5(C)

The elements of a horizontal row, or period, are read left to right. Elements in the same period tend to have fewer metallic properties as —

- A** their number of valence electrons, which can bond with the electrons of other atoms, decreases.
 - B** their number of valence electrons, which cannot bond with the electrons of other atoms, increases.
 - C** their number of valence electrons, which can bond with the electrons of other atoms, increases.
 - D** their number of valence electrons, which cannot bond with the electrons of other atoms, decreases.
-

30 Expectation: 8.5(A)

The electrons of an atom can be found —

- F** within the neutrons of an atom.
- G** within the protons of an atom.
- H** in orbit around the atom's nucleus.
- J** in the center of the atom's nucleus.



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Name _____

Date _____

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DIRECTIONS FOR MARKING ANSWER SHEET

Use a #2 pencil only.

Do NOT use ink or ballpoint pens.

Make heavy black marks that fill the ovals completely.

Erase clearly any answer you wish to change.

Make no stray marks on the answer sheet.

- 1 A B C D
- 2 F G H J
- 3 A B C D
- 4 F G H J
- 5 A B C D
- 6 F G H J
- 7 A B C D
- 8 F G H J

- 9 A B C D
- 10 F G H J
- 11 A B C D
- 12 F G H J
- 13 A B C D
- 14 Respond in Test
- 15 A B C D
- 16 F G H J

- 17 A B C D
- 18 F G H J
- 19 A B C D
- 20 F G H J
- 21 A B C D
- 22 F G H J
- 23 A B C D
- 24 Respond in Test

- 25 A B C D
- 26 Respond in Test
- 27 A B C D
- 28 F G H J
- 29 A B C D
- 30 F G H J

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Instructions to read aloud to your students.

When you decide what the answer to a question is, mark your answer on your answer sheet. To do so, find the row of circles with the same number as the question. Then darken in the circle with the same letter as the answer you chose. If you don't know the answer to a question, skip it. You may return to it later if you have time. If you finish the test early, you should go back and check over your work. Do **NOT** fold your answer sheet or make any stray marks.

When marking your answer sheet:

1. Make a heavy mark. The mark should be large enough to fill the circle, but it should not go outside too much. Do not waste time making very neat marks. It is more important to make very dark marks. Be sure to use a #2 pencil.
2. Be sure that your mark for every question is placed in the row with the same number as that question.
3. Make only ONE mark in a row. If you change your mind about an answer, erase your first mark as completely as you can.

1	A	●	C	D
2	F	G	H	●
3	A	B	●	D
4	F	●	H	J
5	A	B	C	●
6	●	G	H	J
7	●	B	C	D
8	●	G	H	J

9	●	B	C	D
10	F	G	H	●
11	●	B	C	D
12	●	G	H	J
13	A	B	●	D
14	Respond in Test			
15	A	B	C	●
16	F	●	H	J

17	A	B	C	●
18	●	G	H	J
19	A	B	C	●
20	F	G	H	●
21	A	B	●	D
22	F	G	H	●
23	●	B	C	D
24	Respond in Test			

25	A	●	C	D
26	Respond in Test			
27	A	B	C	●
28	●	G	H	J
29	A	B	●	D
30	F	G	●	J

Reporting Category 1: 8th Grade Science Readiness Standards

Item Number	Reporting Category	Readiness or Supporting	Content Student Expectation	Process Student Expectation	Correct Answer
1	1	Readiness	8.5(B)		B
2	1	Readiness	8.5(E)	8.2 (B)	J
3	1	Readiness	8.5(C)	8.4 (A)	C
4	1	Readiness	8.5(C)	8.4 (A)	G
5	1	Readiness	8.5(E)	8.2 (B)	D
6	1	Readiness	8.5(C)		F
7	1	Readiness	8.5(A)		A
8	1	Readiness	8.5(A)		F
9	1	Readiness	8.5(E)	8.2 (B)	A
10	1	Readiness	8.5(E)	8.2 (B)	J
11	1	Readiness	8.5(B)		A
12	1	Readiness	8.5(B)		F
13	1	Readiness	8.5(B)		C
14	1	Readiness	8.5(D)		12
15	1	Readiness	8.5(B)		D
16	1	Readiness	8.5(D)		G
17	1	Readiness	8.5(E)	8.2 (A)	D
18	1	Readiness	8.5(A)		F
19	1	Readiness	8.5(E)	8.2 (B)	D
20	1	Readiness	8.5(C)		J
21	1	Readiness	8.5(D)		C
22	1	Readiness	8.5(A)		J
23	1	Readiness	8.5(D)		A
24	1	Readiness	8.5(D)		3
25	1	Readiness	8.5(B)		B
26	1	Readiness	8.5(D)		6
27	1	Readiness	8.5(A)		D
28	1	Readiness	8.5(C)		F
29	1	Readiness	8.5(C)		C
30	1	Readiness	8.5(A)		H