

1

Student: _____

1. Of five major gaseous components of air, which is the only one to vary significantly in concentration from place to place and from day to day?
 - A. water vapor
 - B. carbon dioxide
 - C. nitrogen
 - D. argon
2. Which two gases make up more than 95% of an inhaled breath?
 - A. NO_2 and N_2
 - B. CO_2 and O_2
 - C. O_2 and N_2
 - D. N_2 and Ar
3. What is the primary component of an exhaled breath?
 - A. N_2
 - B. O_2
 - C. CO_2
 - D. H_2O
4. Which component of the air makes up approximately 100 times more of an exhaled breath than of an inhaled breath?
 - A. Ar
 - B. O_2
 - C. O_3
 - D. CO_2
5. The _____ concentration in the air over the desert differs dramatically from that in the air in the tropical rainforest.
 - A. N_2
 - B. O_2
 - C. CO_2
 - D. H_2O
6. Which component of the air is an element?
 - A. H_2O
 - B. NO_2
 - C. O_2
 - D. CO_2
7. Air is a(n)
 - A. element.
 - B. compound.
 - C. mixture.

D. pure substance.

8. Which substance is *not* considered to be an air pollutant?

A. N₂

B. SO₂

C. NO₂

D. O₃

9. Ozone is considered an air pollutant in the _____ but is a valuable protective layer in the _____.

A. troposphere; stratosphere

B. stratosphere; mesosphere

C. stratosphere; troposphere

D. mesosphere; stratosphere

10. A particular sample of air is 2.5% water vapor. Express the concentration of water vapor in parts per million (ppm).

A. 0.0000025 ppm

B. 0.025 ppm

C. 250 ppm

D. 25000 ppm

11. The EPA limit for CO is 9 ppm. Express this number as a percentage.

A. 90%

B. 9%

C. 0.09%

D. 0.0009%

12. The quantity 0.0000064 g expressed in scientific notation is:

A. 6.4×10^6 g

B. 6.4×10^{-6} g

C. 6.4×10^7 g

D. 6.4×10^{-7} g

13. The quantity 8.7×10^5 g expressed in standard decimal notation is:

A. 0.000087 g

B. 870.000 g

C. 0.0000087 g

D. 870,000 g

14. Which pollutant is present in air as particulate matter?

A. soot

B. ozone

C. sulfur dioxide

D. carbon monoxide

15. What two factors are considered when determining the risk assessment for air pollutants?
- A. exposure and ppm
 - B. percentage and ppm
 - C. toxicity and percentage
 - D. toxicity and exposure
16. When assessing the risk of an air pollutant, which does not play a role in considering someone's exposure to the pollutant?
- A. a person's lung capacity
 - B. a person's breathing rate
 - C. the toxicity of the pollutant
 - D. the concentration in air of the pollutant
17. The burning of coal produces sulfur dioxide, SO_2 , a pollutant that slowly reacts in air to form SO_3 . Sulfur trioxide dissolves into airborne water droplets to form a very corrosive solution of sulfuric acid. Which is a product of burning coal that hastens the transformation of sulfur dioxide into sulfur trioxide?
- A. carbon dioxide
 - B. carbon monoxide
 - C. nitrogen dioxide
 - D. particles of ash
18. All of these pollutants can be detected by their odors except:
- A. CO
 - B. O_3
 - C. SO_x
 - D. NO_x
19. Which pollutant are you more likely to encounter in dangerous concentrations indoors rather than outdoors?
- A. nitrogen dioxide
 - B. carbon monoxide
 - C. ozone
 - D. sulfur dioxide
20. In general, which airborne material is not likely to be affected by the filters or indoor air handling equipment?
- A. particulates
 - B. pollen
 - C. soot
 - D. carbon monoxide
21. Which color, as used in the Air Quality Index, warns that the level of a pollutant is hazardous, the most dangerous level?
- A. orange
 - B. green
 - C. yellow
 - D. maroon
22. A substance that can be broken down into two or more simpler substances by chemical methods is called a(n)
- A. compound.
 - B. mixture.

C. element.

D. isotope.

23. On a Periodic Table, the columns of elements with similar properties are

A. periods.

B. groups.

C. rows.

D. metals.

24. The most numerous of the elements are the

A. metals.

B. non metals.

C. metalloids.

D. noble gases.

25. Which is *not* a mixture?

A. a jar filled with rocks and sand

B. sea water

C. a glass of Kool-Aid

D. sodium chloride

26. Which is *not* a pure substance?

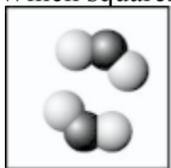
A. helium

B. copper wire

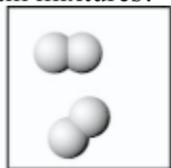
C. air

D. sucrose

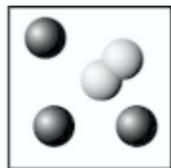
27. Which squares contain mixtures?



I



II



III



IV

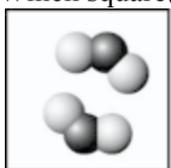
A. II and III only

B. III and IV only

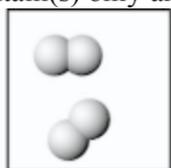
C. I, III, and IV only

D. I and IV only

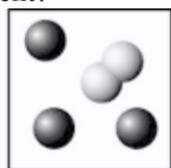
28. Which square(s) contain(s) only an element?



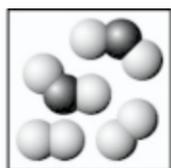
I



II



III



IV

A. I only

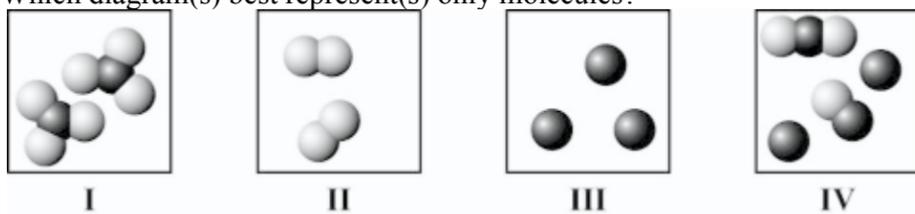
B. II only

C. I and II only

D. III and IV only

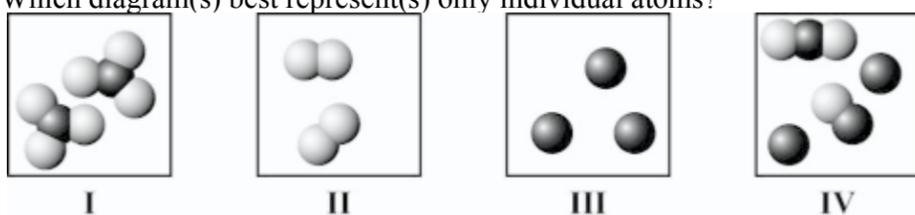
- A. I only
- B. II only
- C. I and II only
- D. II and IV only

35. Which diagram(s) best represent(s) only molecules?



- A. I only
- B. II only
- C. III only
- D. I and II only
- E. IV only

36. Which diagram(s) best represent(s) only individual atoms?



- A. I only
- B. II only
- C. III only
- D. IV only
- E. II and III only

37. Except in the case of hydrocarbons, when naming virtually all compounds made up of two elements, the second element mentioned

- A. ends in "ide."
- B. is preceded by "mono" (or occasionally "mon").
- C. is always the more metallic element.
- D. is the one present in the greater number of atoms.

38. Based on its name, which carbon compound contains the fewest carbon atoms?

- A. ethanol
- B. methane
- C. chlorobutane
- D. propyl alcohol

39. P_2O_5 is the chemical formula for

- A. pentoxygen diphosphide.
- B. diphosphorus pentoxide.
- C. dioxygen pentaphosphide.
- D. monophosphorus pentoxide.

40. The name of the compound formed by combining carbon atoms  with oxygen atoms  to form  is

A. carbon oxide.

B. monocarbon dioxide.

C. carbon dioxide.

D. carbonate.

41. During a chemical reaction,

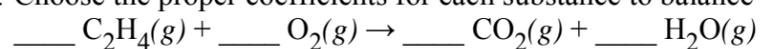
A. atoms are rearranged.

B. some atoms are destroyed and new ones are formed.

C. some elements are destroyed and new ones are formed.

D. the law of conservation of matter and mass may be briefly violated.

42. Choose the proper coefficients for each substance to balance this equation.



A. 1, 1, 2, 2

B. 1, 3, 2, 2

C. 2, 3, 4, 2

D. 2, 2, 4, 2

43. Choose the proper coefficients for each substance to yield a balanced equation.



A. 1, 1, 1

B. 2, 1, 1

C. 2, 1, 2

D. 2, 1, 1

44. Which is the balanced chemical equation showing hydrogen peroxide (H_2O_2) decomposing into hydrogen (H_2) and oxygen (O_2)?

A. $\text{H}_2\text{O}_2 \rightarrow \text{H}_2 + \text{O}_2$

B. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}_2$

C. $2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O}_2$

D. $2 \text{H}_2\text{O}_2 \rightarrow 2 \text{H}_2 + \text{O}_2$

45. Which is the balanced chemical equation for the reaction of nitrogen (N_2) with oxygen (O_2) to form NO?

A. $2 \text{NO} \rightarrow \text{N}_2 + \text{O}_2$

B. $\text{N}_2 + \text{O}_2 \rightarrow \text{NO}$

C. $\text{N}_2 + \text{O}_2 \rightarrow 2 \text{NO}$

D. $\text{NO} \rightarrow \text{N}_2 + \text{O}_2$

46. Which shows the balanced equation for the reaction of nitrogen (●●), as it is normally found in our atmosphere, with oxygen (●●), as it is normally found in our atmosphere, to form nitrogen dioxide?



D.



47. The two main products of the combustion of gasoline in an automobile engine are
- oxygen and carbon monoxide.
 - sulfur oxides and nitrogen oxides.
 - sulfur oxides and hydrogen.
 - water and carbon dioxide.
48. Green chemistry is
- the study of how to improve the production of oxygen via photosynthesis.
 - any chemistry having an agricultural base.
 - the cause of the higher temperatures and humidity typically found in greenhouses.
 - the design of products and processes that reduce hazardous substances.
49. Catalytic converters reduce the amount of _____ in car exhaust.
- O_3
 - CO_2
 - CO
 - N_2
50. Ozone is a secondary pollutant. A secondary pollutant is
- not as hazardous as a primary pollutant.
 - not produced directly but as the product of the interaction of two or more pollutants.
 - one that is naturally present in our atmosphere.
 - one that is less hazardous than a primary pollutant.
51. There are approximately 2×10^{22} molecules and atoms in each breath we take and the concentration of CO in the air is approximately 9 parts per million. Approximately how many CO molecules are in each breath we take?
- 2×10^{15}
 - 1.8×10^{17}
 - 2×10^{17}
 - 2×10^{29}
52. Which of the following would be described as "fine particles"?
- SO_x
 - NO_x
 - O₃
 - 2.5 μ m diameter soot
53. Which if the following is the chemical symbol for silver?
- Au
 - Pb
 - Ag
 - Fe

54. Which of the following is a pure substance?

- A. Lemonade
- B. Concrete
- C. Gasoline
- D. Silver wire

55. The lowest (or closest to the ground) layer of our atmosphere is the

- A. troposphere.
- B. ozone layer.
- C. stratosphere.
- D. mesosphere.

56. Which of the following *incorrectly* represents a combustion reaction?

- A. $2 \text{CH}_4 + 3 \text{O}_2 \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
- B. $\text{S}_8 + 8 \text{O}_2 \rightarrow 8 \text{SO}_2$
- C. $\text{N}_2 + 2 \text{O}_2 \rightarrow 2 \text{NO}_2$
- D. $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow 3 \text{CO}_2$

57. Balance this equation $\text{P}_4 + \text{Cl}_2 \rightarrow \text{PCl}_5$ with the smallest whole number coefficients. Choose the answer that is the sum of the coefficients. Do not forget coefficients of "one".

- A. 7
- B. 9
- C. 11
- D. 13
- E. 15

58. Which of the following are examples of technological advances that have reduced air pollution?

- Paint with reduced VOCs
- Catalytic converters
- Burning gasoline in leaf blowers
- Low sulfur Diesel fuels

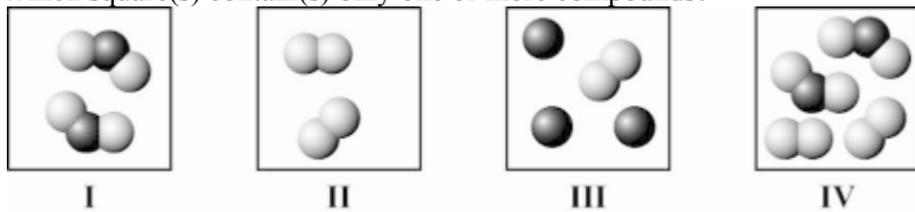
59. If 500 mL of air contains 2×10^{22} particles (atoms and molecules), how many particles do you inhale in one day if you breathe 15000 L of air?

- A. 2×10^{22}
- B. 6×10^{26}
- C. 1.2×10^{27}
- D. 5×10^{24}

60. If we assume that the top of Mt. Everest is the highest land mass on earth, hikers who scale its summit are standing in the

- A. mesosphere.
- B. stratosphere.
- C. troposphere.
- D. ozone layer.

61. Which square(s) contain(s) only one or more compounds?



- A. I only
- B. II only
- C. I and IV only
- D. II and III only

62. The chemical formula for nitrogen monoxide is:

- A. N_2O
- B. NO
- C. NO_2
- D. N_2O_3

63. Which correctly pairs an indoor pollutant with its source?

- A. formaldehyde and unvented space heaters
- B. O_3 and electrical arcing
- C. radon and glues and solvents
- D. nicotine and paint and paint thinners

1 KEY

1. Of five major gaseous components of air, which is the only one to vary significantly in concentration from place to place and from day to day?

- A.** water vapor
- B. carbon dioxide
- C. nitrogen
- D. argon

Think about differences in humidity.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.02
Testbank - Testbank Chapter... #1
Topic: Study of Chemistry*

2. Which two gases make up more than 95% of an inhaled breath?

- A. NO₂ and N₂
- B. CO₂ and O₂
- C.** O₂ and N₂
- D. N₂ and Ar

Think about the two main components of the atmosphere.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.02
Testbank - Testbank Chapter... #2
Topic: Study of Chemistry*

3. What is the primary component of an exhaled breath?

- A.** N₂
- B. O₂
- C. CO₂
- D. H₂O

The main component of an exhaled breath is the same as the main component of an inhaled breath.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.02
Testbank - Testbank Chapter... #3
Topic: Study of Chemistry*

4. Which component of the air makes up approximately 100 times more of an exhaled breath than of an inhaled breath?

- A. Ar
- B. O₂
- C. O₃
- D.** CO₂

*American - Chapter 01
Blooms Level: 2. Understand
Section: 01.02
Testbank - Testbank Chapter... #4
Topic: Study of Chemistry*

5. The _____ concentration in the air over the desert differs dramatically from that in the air in the tropical rainforest.

- A. N₂
- B. O₂
- C. CO₂
- D.** H₂O

Think about the dry air in the desert.

American - Chapter 01

Blooms Level: 2. Understand
 Section: 01.02
 Testbank - Testbank Chapter... #5
 Topic: Study of Chemistry

6. Which component of the air is an element?

- A. H_2O
- B. NO_2
- C. O_2**
- D. CO_2

Only one of these contains all the same type of atom.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.06
 Subtopic: Elements
 Subtopic: Molecules
 Testbank - Testbank Chapter... #6
 Topic: Components of Matter
 Topic: Study of Chemistry

7. Air is a(n)

- A. element.
- B. compound.
- C. mixture.**
- D. pure substance.

There are several substances in air.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.06
 Subtopic: Classification of Matter
 Testbank - Testbank Chapter... #7
 Topic: Components of Matter

8. Which substance is *not* considered to be an air pollutant?

- A. N_2**
- B. SO_2
- C. NO_2
- D. O_3

One of these is the primary component of uncontaminated air while the rest are pollutants.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.03
 Subtopic: Classification of Matter
 Testbank - Testbank Chapter... #8
 Topic: Components of Matter
 Topic: Study of Chemistry

9. Ozone is considered an air pollutant in the _____ but is a valuable protective layer in the _____.

- A. troposphere; stratosphere**
- B. stratosphere; mesosphere
- C. stratosphere; troposphere
- D. mesosphere; stratosphere

Remember that we live in the troposphere.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.02
 Testbank - Testbank Chapter... #9
 Topic: Environmental Chemistry

10. A particular sample of air is 2.5% water vapor. Express the concentration of water vapor in parts per million (ppm).

- A. 0.0000025 ppm
- B. 0.025 ppm

C. 250 ppm

D. 25000 ppm

Percent is parts per hundred. One hundred is 10,000 times less than one million.

*American - Chapter 01
Blooms Level: 3. Apply
Section: 01.02
Subtopic: Measurements
Testbank - Testbank Chapter... #10
Topic: Study of Chemistry*

11. The EPA limit for CO is 9 ppm. Express this number as a percentage.

A. 90%

B. 9%

C. 0.09%

D. 0.0009%

Percent is parts per hundred. One hundred is 10,000 times less than one million.

*American - Chapter 01
Blooms Level: 3. Apply
Section: 01.02
Subtopic: Measurements
Testbank - Testbank Chapter... #11
Topic: Study of Chemistry*

12. The quantity 0.0000064 g expressed in scientific notation is:

A. 6.4×10^6 g

B. 6.4×10^{-6} g

C. 6.4×10^7 g

D. 6.4×10^{-7} g

Negative powers of ten move the decimal to the left.

*American - Chapter 01
Blooms Level: 3. Apply
Section: 01.03
Subtopic: Scientific Notation
Testbank - Testbank Chapter... #12
Topic: Study of Chemistry*

13. The quantity 8.7×10^5 g expressed in standard decimal notation is:

A. 0.000087 g

B. 870.000 g

C. 0.0000087 g

D. 870,000 g

Positive powers of ten move the decimal to the right.

*American - Chapter 01
Blooms Level: 3. Apply
Section: 01.03
Subtopic: Measurements
Subtopic: Scientific Notation
Testbank - Testbank Chapter... #13
Topic: Study of Chemistry*

14. Which pollutant is present in air as particulate matter?

A. soot

B. ozone

C. sulfur dioxide

D. carbon monoxide

Particulate matter is solid not gaseous.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.02
Subtopic: Fundamental Definitions*

15. What two factors are considered when determining the risk assessment for air pollutants?

- A. exposure and ppm
- B. percentage and ppm
- C. toxicity and percentage
- D. toxicity and exposure**

Remember that some things are poisonous in a short time frame and others are toxic after long time frames.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.03
Testbank - Testbank Chapter... #15
Topic: Environmental Chemistry

16. When assessing the risk of an air pollutant, which does not play a role in considering someone's exposure to the pollutant?

- A. a person's lung capacity
- B. a person's breathing rate
- C. the toxicity of the pollutant**
- D. the concentration in air of the pollutant

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.03
Testbank - Testbank Chapter... #16
Topic: Environmental Chemistry

17. The burning of coal produces sulfur dioxide, SO_2 , a pollutant that slowly reacts in air to form SO_3 . Sulfur trioxide dissolves into airborne water droplets to form a very corrosive solution of sulfuric acid. Which is a product of burning coal that hastens the transformation of sulfur dioxide into sulfur trioxide?

- A. carbon dioxide
- B. carbon monoxide
- C. nitrogen dioxide
- D. particles of ash**

This transformation takes place on solid particles.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.11
Testbank - Testbank Chapter... #17
Topic: Environmental Chemistry
Topic: Study of Chemistry

18. All of these pollutants can be detected by their odors except:

- A. CO**
- B. O_3
- C. SO_x
- D. NO_x

Remember that you might need a detector for this substance in your home for protection.

American - Chapter 01
Blooms Level: 1. Remember
Section: 01.03
Testbank - Testbank Chapter... #18
Topic: Environmental Chemistry

19. Which pollutant are you more likely to encounter in dangerous concentrations indoors rather than outdoors?

- A. nitrogen dioxide
- B. carbon monoxide**
- C. ozone
- D. sulfur dioxide

This comes from the incomplete combustion of hydrocarbon fuels.

American - Chapter 01
Blooms Level: 1. Remember
Section: 01.02

Subtopic: States of Matter
 Testbank - Testbank Chapter... #19
 Topic: Environmental Chemistry

20. In general, which airborne material is not likely to be affected by the filters or indoor air handling equipment?

- A. particulates
- B. pollen
- C. soot
- D. carbon monoxide**

Filters cannot trap gases.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.02
 Subtopic: States of Matter
 Testbank - Testbank Chapter... #20
 Topic: Environmental Chemistry

21. Which color, as used in the Air Quality Index, warns that the level of a pollutant is hazardous, the most dangerous level?

- A. orange
- B. green
- C. yellow
- D. maroon**

This is similar to other color-coded warning systems.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.04
 Testbank - Testbank Chapter... #21
 Topic: Environmental Chemistry

22. A substance that can be broken down into two or more simpler substances by chemical methods is called a(n)

- A. compound.**
- B. mixture.
- C. element.
- D. isotope.

Mixtures are separable by physical means.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.06
 Subtopic: Classification of Matter
 Subtopic: Fundamental Definitions
 Testbank - Testbank Chapter... #22
 Topic: Components of Matter
 Topic: Study of Chemistry

23. On a Periodic Table, the columns of elements with similar properties are

- A. periods.
- B. groups.**
- C. rows.
- D. metals.

Periods and rows go across.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.06
 Subtopic: Periodic Table
 Testbank - Testbank Chapter... #23
 Topic: Components of Matter
 Topic: Study of Chemistry

24. The most numerous of the elements are the

- A. metals.**
- B. non metals.
- C. metalloids.

D. noble gases.

These are green in the periodic table in your textbook.

American - Chapter 01
 Blooms Level: 1. Remember
 Subtopic: Periodic Table
 Testbank - Testbank Chapter... #24
 Topic: Components of Matter

25. Which is *not* a mixture?

- A. a jar filled with rocks and sand
- B. sea water
- C. a glass of Kool-Aid
- D.** sodium chloride

Mixtures include more than one pure substance.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.06
 Subtopic: Fundamental Definitions
 Subtopic: Properties of Matter
 Testbank - Testbank Chapter... #25
 Topic: Components of Matter

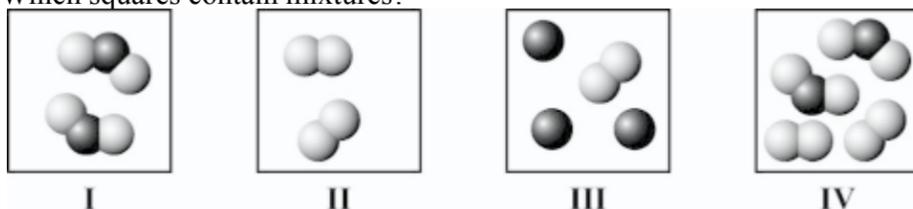
26. Which is *not* a pure substance?

- A. helium
- B. copper wire
- C.** air
- D. sucrose

Mixtures are not pure substances.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.06
 Subtopic: Properties of Matter
 Testbank - Testbank Chapter... #26
 Topic: Components of Matter

27. Which squares contain mixtures?

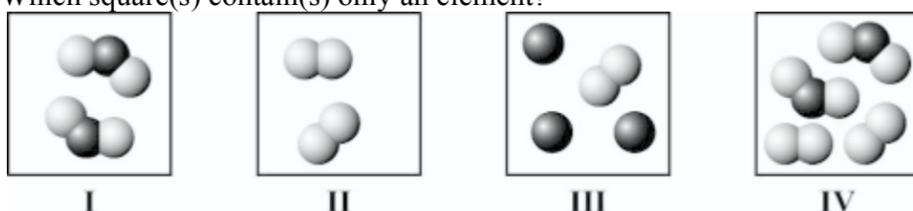


- A. II and III only
- B.** III and IV only
- C. I, III, and IV only
- D. I and IV only

Mixtures will have different substances in the same box.

American - Chapter 01
 Blooms Level: 3. Apply
 Section: 01.06
 Section: 01.07
 Subtopic: Molecules
 Subtopic: Properties of Matter
 Testbank - Testbank Chapter... #27
 Topic: Components of Matter

28. Which square(s) contain(s) only an element?



- A. I only
- B.** II only
- C. I and II only

32. Which substance is an element?

- A. NO_2
- B. NaCl
- C. N_2**
- D. CH_4

Only one has just one symbol in the formula.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.06
Section: 01.07
Subtopic: Elements
Testbank - Testbank Chapter... #32
Topic: Components of Matter

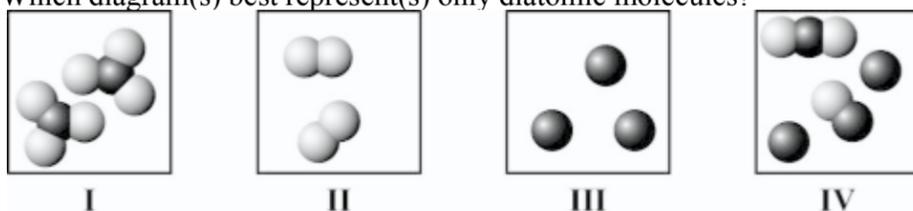
33. A(n) _____ is a fixed number of atoms held together by chemical bonds in a certain spatial arrangement.

- A. element
- B. ion
- C. molecule**
- D. mixture

Remember which of these have more than one element that are also bonded together.

American - Chapter 01
Blooms Level: 1. Remember
Section: 01.07
Subtopic: Fundamental Definitions
Subtopic: Molecules
Testbank - Testbank Chapter... #33
Topic: Components of Matter

34. Which diagram(s) best represent(s) only diatomic molecules?

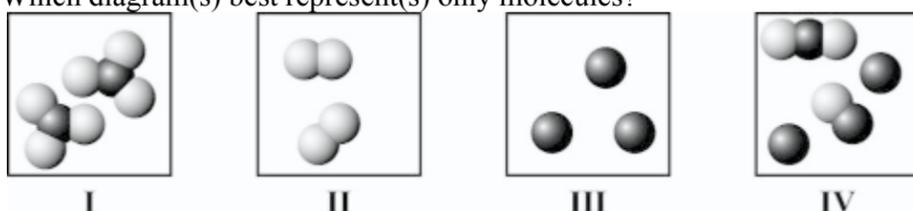


- A. I only
- B. II only**
- C. I and II only
- D. II and IV only

The prefix di- means two.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.07
Subtopic: Elements
Subtopic: Molecules
Testbank - Testbank Chapter... #34
Topic: Components of Matter

35. Which diagram(s) best represent(s) only molecules?

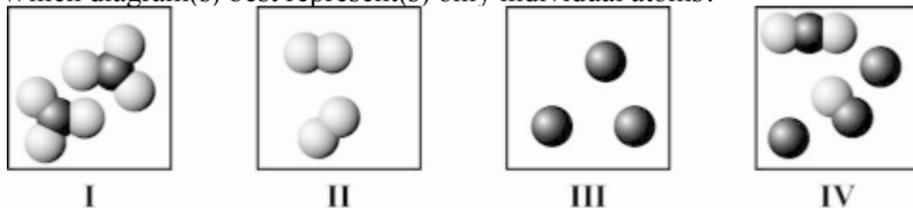


- A. I only
- B. II only
- C. III only
- D. I and II only**
- E. IV only

Molecules have multiple atom bound together.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.07
 Subtopic: Classification of Matter
 Subtopic: Elements
 Subtopic: Molecules
 Testbank - Testbank Chapter... #35
 Topic: Components of Matter

36. Which diagram(s) best represent(s) only individual atoms?



- A. I only
- B. II only
- C. III only**
- D. IV only
- E. II and III only

The atoms are not bound to other atoms.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.07
 Subtopic: Elements
 Subtopic: Molecules
 Testbank - Testbank Chapter... #36
 Topic: Components of Matter

37. Except in the case of hydrocarbons, when naming virtually all compounds made up of two elements, the second element mentioned

- A. ends in "ide."**
- B. is preceded by "mono" (or occasionally "mon").
- C. is always the more metallic element.
- D. is the one present in the greater number of atoms.

Remember that more non-metallic atoms go second and have this ending.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.08
 Subtopic: Nomenclature
 Testbank - Testbank Chapter... #37
 Topic: Components of Matter

38. Based on its name, which carbon compound contains the fewest carbon atoms?

- A. ethanol
- B. methane**
- C. chlorobutane
- D. propyl alcohol

Mother Eats Peanut Butter

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.08
 Subtopic: Nomenclature
 Testbank - Testbank Chapter... #38
 Topic: Components of Matter

39. P_2O_5 is the chemical formula for

- A. pentoxygen diphosphide.
- B. diphosphorus pentoxide.**
- C. dioxygen pentaphosphide.
- D. monophosphorus pentoxide.

See table 1.6 for the naming prefixes.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.08
 Subtopic: Nomenclature
 Testbank - Testbank Chapter... #39
 Topic: Components of Matter

40. The name of the compound formed by combining carbon atoms  with oxygen atoms  to form  is

- A. carbon oxide.
- B. monocarbon dioxide.
- C.** carbon dioxide.
- D. carbonate.

Count your atoms and remember that there is no prefix on a lone element that is named first.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.08
 Subtopic: Measurements
 Testbank - Testbank Chapter... #40
 Topic: Components of Matter

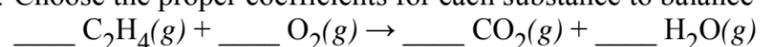
41. During a chemical reaction,

- A.** atoms are rearranged.
- B. some atoms are destroyed and new ones are formed.
- C. some elements are destroyed and new ones are formed.
- D. the law of conservation of matter and mass may be briefly violated.

Remember that the laws of conservation of mass and energy are always followed in chemical reactions.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.09
 Subtopic: Elements
 Subtopic: Molecules
 Testbank - Testbank Chapter... #41
 Topic: Components of Matter
 Topic: Study of Chemistry

42. Choose the proper coefficients for each substance to balance this equation.



- A. 1, 1, 2, 2
- B.** 1, 3, 2, 2
- C. 2, 3, 4, 2
- D. 2, 2, 4, 2

Make sure that the total number of each element is the same on both sides of the equation. The large coefficient multiplies through.

American - Chapter 01
 Blooms Level: 3. Apply
 Section: 01.09
 Subtopic: Chemical Formulas
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #42
 Topic: Chemical Reactions
 Topic: Components of Matter

43. Choose the proper coefficients for each substance to yield a balanced equation.



- A. 1, 1, 1
- B. 2, 1, 1
- C.** 2, 1, 2
- D. 2, 1, 1

Make sure that the total number of each element is the same on both sides of the equation. The large coefficient multiplies through

American - Chapter 01
 Blooms Level: 3. Apply
 Section: 01.09
 Subtopic: Chemical Formulas
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #43
 Topic: Chemical Reactions

44. Which is the balanced chemical equation showing hydrogen peroxide (H_2O_2) decomposing into hydrogen (H_2) and oxygen (O_2)?

- A.** $\text{H}_2\text{O}_2 \rightarrow \text{H}_2 + \text{O}_2$
 B. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}_2$
 C. $2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O}_2$
 D. $2 \text{H}_2\text{O}_2 \rightarrow 2 \text{H}_2 + \text{O}_2$

Make sure that the total number of each element is the same on both sides of the equation. The large coefficient multiplies through

American - Chapter 01
 Blooms Level: 3. Apply
 Section: 01.09
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #44
 Topic: Chemical Reactions

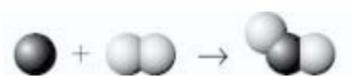
45. Which is the balanced chemical equation for the reaction of nitrogen (N_2) with oxygen (O_2) to form NO?

- A. $2 \text{NO} \rightarrow \text{N}_2 + \text{O}_2$
 B. $\text{N}_2 + \text{O}_2 \rightarrow \text{NO}$
C. $\text{N}_2 + \text{O}_2 \rightarrow 2 \text{NO}$
 D. $\text{NO} \rightarrow \text{N}_2 + \text{O}_2$

Make sure that the total number of each element is the same on both sides of the equation. The large coefficient multiplies through

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.09
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #45
 Topic: Chemical Reactions

46. Which shows the balanced equation for the reaction of nitrogen (●●), as it is normally found in our atmosphere, with oxygen (●●), as it is normally found in our atmosphere, to form nitrogen dioxide?

- A. 
 B. 
C. 
 D. 

Oxygen and nitrogen are diatomic molecules as found in nature.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.09
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #46
 Topic: Chemical Reactions

47. The two main products of the combustion of gasoline in an automobile engine are

- A. oxygen and carbon monoxide.
 B. sulfur oxides and nitrogen oxides.
 C. sulfur oxides and hydrogen.
D. water and carbon dioxide.

All hydrocarbon combustion reactions make these two products.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.10
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #47
 Topic: Chemical Reactions
 Topic: Environmental Chemistry

48. Green chemistry is

- A. the study of how to improve the production of oxygen via photosynthesis.
- B. any chemistry having an agricultural base.
- C. the cause of the higher temperatures and humidity typically found in greenhouses.
- D.** the design of products and processes that reduce hazardous substances.

This is about cleaner chemistry in all fields.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.05
Testbank - Testbank Chapter... #48
Topic: Environmental Chemistry*

49. Catalytic converters reduce the amount of _____ in car exhaust.

- A. O₃
- B. CO₂
- C.** CO
- D. N₂

Think about which is a direct tailpipe pollutant.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.10
Testbank - Testbank Chapter... #49
Topic: Environmental Chemistry*

50. Ozone is a secondary pollutant. A secondary pollutant is

- A. not as hazardous as a primary pollutant.
- B.** not produced directly but as the product of the interaction of two or more pollutants.
- C. one that is naturally present in our atmosphere.
- D. one that is less hazardous than a primary pollutant.

This has nothing to do with safety.

*American - Chapter 01
Blooms Level: 1. Remember
Section: 01.12
Testbank - Testbank Chapter... #50
Topic: Environmental Chemistry*

51. There are approximately 2×10^{22} molecules and atoms in each breath we take and the concentration of CO in the air is approximately 9 parts per million. Approximately how many CO molecules are in each breath we take?

- A. 2×10^{15}
- B. 1.8×10^{17}
- C.** 2×10^{17}
- D. 2×10^{29}

Remember that "parts per million" means one out of 1,000,000 or for CO, 9 out of 1,000,000.

*American - Chapter 01
Blooms Level: 3. Apply
Section: 01.14
Subtopic: Dimensional Analysis / Unit Conversion
Subtopic: Measurements
Subtopic: Scientific Notation
Testbank - Testbank Chapter... #51
Topic: Components of Matter*

52. (p. 23) Which of the following would be described as "fine particles"?

- A. SO_x
- B. NO_x
- C. O₃
- D.** 2.5 μm diameter soot

Remember that these are solids and not gases.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.02
 Subtopic: Classification of Matter
 Testbank - Testbank Chapter... #52
 Topic: Components of Matter
 Topic: Environmental Chemistry

53. Which of the following is the chemical symbol for silver?

- A. Au
- B. Pb
- C. Ag**
- D. Fe

Silver was known during ancient times and has an unusual symbol.

American - Chapter 01
 Blooms Level: 1. Remember
 Subtopic: Periodic Table
 Testbank - Testbank Chapter... #53
 Topic: Components of Matter

54. Which of the following is a pure substance?

- A. Lemonade
- B. Concrete
- C. Gasoline
- D. Silver wire**

Remember that pure substances have only one component.

American - Chapter 01
 Blooms Level: 2. Understand
 Section: 01.06
 Subtopic: Classification of Matter
 Testbank - Testbank Chapter... #54
 Topic: Components of Matter

55. The lowest (or closest to the ground) layer of our atmosphere is the

- A. troposphere.**
- B. ozone layer.
- C. stratosphere.
- D. mesosphere.

Think about which layer we live in and that is its relative warm.

American - Chapter 01
 Blooms Level: 1. Remember
 Section: 01.05
 Testbank - Testbank Chapter... #55
 Topic: Environmental Chemistry

56. Which of the following *incorrectly* represents a combustion reaction?

- A. $2 \text{CH}_4 + 3 \text{O}_2 \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
- B. $\text{S}_8 + 8 \text{O}_2 \rightarrow 8 \text{SO}_2$
- C. $\text{N}_2 + 2 \text{O}_2 \rightarrow 2 \text{NO}_2$
- D. $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow 3 \text{CO}_2$**

One of these is missing a product.

American - Chapter 01
 Blooms Level: 3. Apply
 Section: 01.09
 Subtopic: Writing and Balancing Chemical Equations
 Testbank - Testbank Chapter... #56
 Topic: Chemical Reactions

57. Balance this equation $\text{P}_4 + \text{Cl}_2 \rightarrow \text{PCl}_5$ with the smallest whole number coefficients. Choose the answer that is the sum of the coefficients. Do not forget coefficients of "one".

- A. 7

- B. 9
C. 11
D. 13
E. 15

Be sure to balance all elements on either side of the equation and add all the coefficients including any "ones".

American - Chapter 01
Section: 01.09
Subtopic: Writing and Balancing Chemical Equations
Testbank - Testbank Chapter... #57
Topic: Chemical Reactions

58. Which of the following are examples of technological advances that have reduced air pollution?

- Paint with reduced VOCs
 Catalytic converters
 Burning gasoline in leaf blowers

 Low sulfur Diesel fuels

One of these is a major cause of outdoor pollution while the others are improvements.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.10
Section: 01.11
Section: 01.12
Testbank - Testbank Chapter... #58
Topic: Environmental Chemistry

59. If 500 mL of air contains 2×10^{22} particles (atoms and molecules), how many particles do you inhale in one day if you breathe 15000 L of air?

- A. 2×10^{22}
B. 6×10^{26}
C. 1.2×10^{27}
D. 5×10^{24}

Remember that 500 mL is 0.5L and make sure your units cancel when you do the calculation.

American - Chapter 01
Blooms Level: 3. Apply
Section: 01.14
Subtopic: Dimensional Analysis / Unit Conversion
Subtopic: Measurements
Subtopic: Scientific Notation
Testbank - Testbank Chapter... #59
Topic: Components of Matter

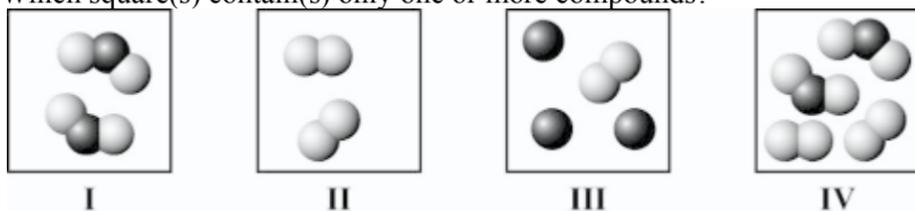
60. If we assume that the top of Mt. Everest is the highest land mass on earth, hikers who scale its summit are standing in the

- A. mesosphere.
B. stratosphere.
C. troposphere.
D. ozone layer.

Remember that they are still on land and this layer encompasses all the land.

American - Chapter 01
Blooms Level: 2. Understand
Section: 01.05
Testbank - Testbank Chapter... #60
Topic: Environmental Chemistry

61. Which square(s) contain(s) only one or more compounds?



- A.** I only
- B. II only
- C. I and IV only
- D. II and III only

Different compounds will have different combinations of different elements.

*American - Chapter 01
Blooms Level: 2. Understand
Section: 01.06
Subtopic: Elements
Subtopic: Molecules
Subtopic: States of Matter
Testbank - Testbank Chapter... #61
Topic: Components of Matter*

62. The chemical formula for nitrogen monoxide is:

- A. N_2O
- B.** NO
- C. NO_2
- D. N_2O_3

Remember your prefixes for naming molecules.

*American - Chapter 01
Blooms Level: 2. Understand
Section: 01.07
Subtopic: Nomenclature
Testbank - Testbank Chapter... #62
Topic: Components of Matter*

63. Which correctly pairs an indoor pollutant with its source?

- A. formaldehyde and unvented space heaters
- B.** O_3 and electrical arcing
- C. radon and glues and solvents
- D. nicotine and paint and paint thinners

Think about the sources of nicotine, radon and formaldehyde.

*American - Chapter 01
Blooms Level: 2. Understand
Section: 01.13
Testbank - Testbank Chapter... #63
Topic: Environmental Chemistry*

1 Summary

<u>Category</u>	<u># of Questions</u>
American - Chapter 01	63
Blooms Level: 1. Remember	19
Blooms Level: 2. Understand	30
Blooms Level: 3. Apply	13
Section: 01.02	12
Section: 01.03	6
Section: 01.04	1
Section: 01.05	3
Section: 01.06	13
Section: 01.07	8
Section: 01.08	4
Section: 01.09	8
Section: 01.10	3
Section: 01.11	2
Section: 01.12	2
Section: 01.13	1
Section: 01.14	2
Subtopic: Chemical Formulas	2
Subtopic: Classification of Matter	7
Subtopic: Dimensional Analysis / Unit Conversion	2
Subtopic: Elements	8
Subtopic: Fundamental Definitions	6
Subtopic: Measurements	6
Subtopic: Molecules	8
Subtopic: Nomenclature	4
Subtopic: Periodic Table	4
Subtopic: Properties of Matter	3
Subtopic: Scientific Method	1
Subtopic: Scientific Notation	4
Subtopic: States of Matter	3
Subtopic: Writing and Balancing Chemical Equations	8
Testbank - Testbank Chapter...	63
Topic: Chemical Reactions	8
Topic: Components of Matter	31
Topic: Environmental Chemistry	17
Topic: Study of Chemistry	16