

***Introduction to General, Organic & Biological Chemistry, 12e (Timberlake)***  
**Chapter 1 Chemistry in Our Lives**

1.1 Multiple-Choice Questions

1) Water, H<sub>2</sub>O, is an example of a(n) \_\_\_\_\_.

- A) chemical
- B) solid
- C) wave
- D) electric charge
- E) element

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) In this list, which substance can be classified as a chemical?

- A) salt
- B) sleep
- C) cold
- D) heat
- E) temperature

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) One example of a chemical used in toothpaste is \_\_\_\_\_.

- A) chlorine
- B) sulfur
- C) carbon dioxide
- D) calcium carbonate
- E) sugar

Answer: D

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) Which of the following is not a chemical?

- A) salt
- B) water
- C) light
- D) carbon dioxide
- E) sugar

Answer: C

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) Sodium fluorophosphate is a chemical used in toothpaste to \_\_\_\_\_.

- A) make the paste white
- B) disinfect the toothbrush
- C) keep the paste from spoiling
- D) remove plaque
- E) strengthen tooth enamel

Answer: E

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

6) When a part of the body is injured, substances called \_\_\_\_\_ are released.

- A) aspirins
- B) pain relievers
- C) nitrogen oxides
- D) chlorofluorocarbons
- E) prostaglandins

Answer: E

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) The production of smog from NO gas requires \_\_\_\_\_.

- A) nitrogen
- B) chlorine
- C) water
- D) oxygen
- E) CFCs

Answer: D

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

8) Titanium dioxide is a chemical used in toothpaste to \_\_\_\_\_.

- A) make the paste white
- B) disinfect the toothbrush
- C) keep the paste from spoiling
- D) remove plaque
- E) strengthen tooth enamel

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

9) Which of the following is a chemical?

- A) sugar
- B) heat
- C) light
- D) noise
- E) a wave

Answer: A

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

10) You notice that there is more traffic between 8 and 9 in the morning. This would be a(n)

- \_\_\_\_\_.
- A) observation
  - B) hypothesis
  - C) experiment
  - D) theory
  - E) all the above

Answer: A

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Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

11) There is more traffic between 8 and 9 in the morning because most people start work at 9. This would be a(n) \_\_\_\_\_.

- A) observation
- B) hypothesis
- C) experiment
- D) theory
- E) all the above

Answer: B

Page Ref: 1.2

Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

12) One way to enhance your learning in chemistry is to \_\_\_\_\_.

- A) study a little every day
- B) form a study group
- C) go to office hours
- D) be an active learner
- E) all the above

Answer: E

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

13) In order to enhance your learning in chemistry, you should not \_\_\_\_\_.

- A) study a little every day
- B) form a study group
- C) go to office hours
- D) be an active learner
- E) wait until the night before the exam to study

Answer: E

Page Ref: 1.3

Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

14) In the number 12.345, the 4 is in the \_\_\_\_\_ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

15) In the number 12.345, the 1 is in the \_\_\_\_\_ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: A

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

16) In the number 12.345, the 3 is in the \_\_\_\_\_ place.

- A) tens
- B) ones
- C) tenths
- D) hundredths
- E) thousandths

Answer: C

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

17) The product of  $(-4) \times (-5)$  is \_\_\_\_\_.

- A) -20
- B) +20
- C) -1
- D) +1
- E) 0

Answer: B

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

18) For the equation  $4x + 2 = 10$ , x equals \_\_\_\_\_.

- A) 8
- B) 12
- C) 3
- D) 2
- E) -2

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

19) For the equation  $-10 - (-4) = \underline{\hspace{2cm}}$ .

- A) 6
- B) -6
- C) 14
- D) -14
- E) 4

Answer: B

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

20) 12 is what percent of 36?

- A) 3%
- B) 30%
- C) 33%
- D) 330%
- E) 12%

Answer: C

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

21) Write 540 000 in scientific notation.

- A)  $0.54 \times 10^6$
- B)  $54 \times 10^8$
- C)  $5.4 \times 10^{-5}$
- D)  $5.4 \times 10^5$
- E) 5.4

Answer: D

Page Ref: 1.4

Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

22) Write 0.000 000 33 in scientific notation.

- A)  $3.3 \times 10^7$
- B)  $3.3 \times 10^{-7}$
- C)  $3.3 \times 10^{-8}$
- D)  $3.3 \times 10^8$
- E) 3.3

Answer: B

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

23) The measurement 0.000 004 3 m, expressed correctly using scientific notation, is \_\_\_\_\_.

- A)  $4.3 \times 10^{-7}$  m
- B)  $4.3 \times 10^{-6}$  m
- C)  $4.3 \times 10^6$  m
- D)  $0.43 \times 10^{-5}$  m
- E) 4.3 m

Answer: B

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

## 1.2 Short Answer Questions

1) A substance that consists of one type of matter and always has the same composition and properties is called a \_\_\_\_\_.

Answer: chemical

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) Any material used in or produced by a chemical reaction is a \_\_\_\_\_.

Answer: chemical

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) An abrasive used in toothpaste is \_\_\_\_\_.

Answer: calcium carbonate

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) The substances released when tissues are injured are \_\_\_\_\_.

Answer: prostaglandins

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

5) Substances which prevent spoilage are called \_\_\_\_\_.

Answer: antioxidants

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

6) The chemical used to make cans and foil is \_\_\_\_\_.

Answer: aluminum

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) The first step in the scientific method is to \_\_\_\_\_.

Answer: make observations

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Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

*Express each of the following numbers using scientific notation.*

8) 351 000 000 000

Answer:  $3.51 \times 10^{11}$

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

9) 0.000 860

Answer:  $8.60 \times 10^{-4}$

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

10) 5 207 000

Answer:  $5.207 \times 10^6$

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

11) 0.000 000 050

Answer:  $5.0 \times 10^{-8}$

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.



### 1.3 True/False Questions

1) Titanium dioxide in toothpaste is used as a detergent.

Answer: FALSE

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

2) Calcium carbonate is used to sweeten toothpaste.

Answer: FALSE

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Learning Obj.: 1.1

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

3) Paracelsus was a Greek philosopher.

Answer: FALSE

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Learning Obj.: 1.2

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

4) The first step in the scientific method is to draw a conclusion.

Answer: FALSE

Page Ref: 1.2

Learning Obj.: 1.2

Global Outcomes: G1 Demonstrate an understanding of the principles of scientific inquiry.

5) Working with a group of students can help you learn chemistry.

Answer: TRUE

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

6) It is a good idea to wait until the night before an exam to start to study.

Answer: FALSE

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Learning Obj.: 1.3

Global Outcomes: G7 Demonstrate the ability to make connections between concepts across chemistry.

7) In the number 123.45, the digit 5 is in the hundreds place.

Answer: FALSE

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.

8) If a negative number is divided by another negative number, the answer will be a positive number.

Answer: TRUE

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Learning Obj.: 1.4

Global Outcomes: G4 Demonstrate the quantitative skills needed to succeed in chemistry.