

Introduction to General, Organic & Biological Chemistry, 12e (Timberlake)

Chapter 1 Chemistry in Our Lives

1.1 Multiple-Choice Questions

1) Water, H₂O, is an example of a(n) _____.

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

Answer: A

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.2

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

Page Ref: 1.3

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

Page Ref: 1.4

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

Page Ref: 1.4

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

Page Ref: 1.4

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

Page Ref: 1.4

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

Page Ref: 1.4

Learning Obj.: 1.4

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

21) Write 540 000 in scientific notation.

- A) 0.54×10^6
- B) 54×10^8
- C) 5.4×10^{-5}
- D) 5.4×10^5
- 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) 3.3×10^7
- B) 3.3×10^{-7}
- C) 3.3×10^{-8}
- D) 3.3×10^8
- E) 3.3

Answer: B

Page Ref: 1.4

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) 4.3×10^{-7} m
- B) 4.3×10^{-6} m
- C) 4.3×10^6 m
- D) 0.43×10^{-5} m
- E) 4.3 m

Answer: B

Page Ref: 1.4

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.2

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: 3.51×10^{11}

Page Ref: 1.4

Learning Obj.: 1.4

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

9) 0.000 860

Answer: 8.60×10^{-4}

Page Ref: 1.4

Learning Obj.: 1.4

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

10) 5 207 000

Answer: 5.207×10^6

Page Ref: 1.4

Learning Obj.: 1.4

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

11) 0.000 000 050

Answer: 5.0×10^{-8}

Page Ref: 1.4

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

Page Ref: 1.1

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

Page Ref: 1.1

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

Page Ref: 1.2

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

Page Ref: 1.3

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

Page Ref: 1.3

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

Page Ref: 1.4

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

Page Ref: 1.4

Learning Obj.: 1.4

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