

**EXAMINATION HIGH SCHOOL**

# **STUDY GUIDE**

**2018-19**

**[DETROITK12.ORG/EXAMSCHOOLS](http://DETROITK12.ORG/EXAMSCHOOLS)**



Students Rise. We All Rise.

The following materials are designed to provide guidance as students prepare for the DPSCD Examination High School Placement Test. Please note that this document is not intended to be an exact replica of the test, rather to provide some structure around topics that will be addressed on the test.

## **Table of Contents**

1. Overview of topics/standards
2. Mathematics practice test items
3. Reading practice test items
4. Science practice test items

# Overview of Standards/Topics (Mathematics, Reading, & Science)

## Mathematics

### Number System

- Find factors of numbers
- Find the part using the percent proportion.
- Use fractions to represent diagrams or word problems.
- Round monetary values
- Add or subtract decimals.
- Solve word problems involving the division of decimals.
- Convert among metric units.
- Solve word problems involving the multiplication of mixed numbers.
- Solve word problems involving the multiplication of decimals.
- Add whole numbers when carrying is required.
- Add or subtract unlike fractions.
- Solve word problems involving the division of decimals.
- Solve word problems involving simple interest.
- Divide decimals by decimals.
- Convert temperatures from degrees Celsius to degrees Fahrenheit.
- Solve word problems involving sales tax and total price.
- Add integers.
- Solve word problems involving percent.
- Divide integers.
- Recognize other polygons, including regular polygons.
- Identify different types of quadrilaterals.
- Expand and evaluate whole numbers raised to positive exponents.
- Find square roots of squares.
- Write proportions.
- Find the radius and diameter of a circle.
- Write sentences as equations.
- Solve word problems involving solving linear equations in one variable.
- Interpret line graphs.
- Find the unknown number in a proportion.
- Decide whether a number is a solution to an inequality.
- Triangle comparison none specified.
- Pyramid Surfaces: Identify vertices, edges, and faces.
- Use the order of operations.
- Solve word problems involving mean and weighted mean.

# Reading

## Knowledge of Language

- Identify a main idea or summary statement, supporting details, and summarizing and paraphrasing.
- Apply other reading skills within the context of a passage.
- Differentiate between topics, main ideas, central points, and supporting details.
- Identify information that belongs in a summary.
- Identify or write an accurate paraphrase of a text.
- Demonstrate knowledge of active reading and context clues.

## Vocabulary Acquisition and Use

- Find the correct meaning, pronunciation, or spelling of a word by using a dictionary.
- Identify word meanings and clues in one or more paragraphs, such as general sense clues.

## Conventions of Standard English

- Identify and define roots, prefixes, and suffixes and know how they change a word's meaning.
- Determine the meaning and spelling of commonly misspelled words using context clues.
- Identify synonyms, antonyms, homonyms, and compound words.

## Knowledge of Language

- Identify the topic of a paragraph or passage.
- Identify the implied main idea of a paragraph.
- Differentiate between topics, main ideas, central points, and supporting details.
- Identify or write an accurate paraphrase of a text.
- Identify details and ideas in patterns of organization passages.
- Apply other reading skills within the context of a passage.
- Identify the location of people, places and things in a text.
- Identify signal words and phrases that indicate process order.
- Identify signal words and phrases that indicate cause and effect.
- Interpret literary devices, such as simile, metaphor, and figurative language.
- Infer the author's implicit idea in a paragraph of passage.
- Make inferences, draw conclusions, and summarize to make sense of texts.



# Science

## Science Process Skills

- Convert among metric units.
- Interpret line graph.
- Describe how scientists utilize the process of the Scientific Method, and apply that understanding to a new context.
- Critically analyze reading material and data to draw valid conclusions.
- Describe cause and effect relationships.

## Earth and Space Science

- Air/Elements
- Astronomy (planets, sun, space research)
- Climate Change
- Fossils
- Pollution
- Weather

## Physical Science

- Atomic Structure
- Combustion
- Force and Motion
- Plate Tectonics
- Potential, Kinetic, and Heat Energy
- Solvent, solute, and solutions
- States of Matter

## Life Science

- Cells
- Disease
- Heredity & Reproduction
- Human body
- Nutrition
- Photosynthesis

# **Mathematics**

## **Practice Test Items**

Student: \_\_\_\_\_  
Date: \_\_\_\_\_

Instructor: Detroit Public Schools  
DPSCD  
Program: Practice Test-2018

Assignment: Math Pathbuilder

1. Find the unknown number in the following proportion. Round your answer to the nearest hundredth, if necessary. Check your answer by finding the cross products.

$$\frac{104}{65} = \frac{65}{x}$$

$x =$  40.63

(Type a whole number or decimal rounded to the nearest hundredth as needed.)

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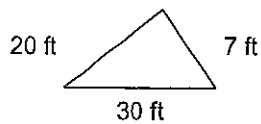
2.  $9.37 \times 2.3 =$

- A. 205.51
- B. 21.551
- C. 215.51
- D. 21.611

- 
3. Three people who work full-time are to work together on a project, but their total time on the project is to be equivalent to that of only one person working full-time. If one of the people is budgeted for one-sixth of his time to the project and a second person for one-half of her time, what part of the third worker's time should be budgeted to this project?

- A.  $\frac{1}{8}$
- B.  $\frac{1}{3}$
- C.  $\frac{1}{2}$
- D.  $\frac{3}{4}$

- 
4. Find the perimeter of the triangle. Express the perimeter using the same unit of measure that appears on the given sides.



57 ft

- 
5. Which of the following is the least?

- A. 0.071
  - B. 0.107
  - C. 0.701
  - D. 0.71
-

6. Add and simplify.

$$\frac{7}{27} + \frac{1}{6}$$

$$\frac{7}{27} + \frac{1}{6} = \frac{23}{54}$$

(Type a simplified fraction.)

7. Solve the equation and check the solution.

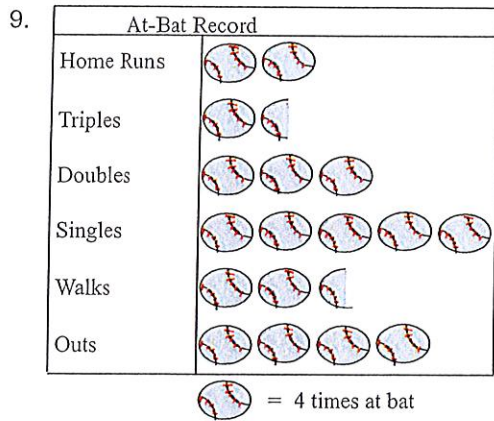
$$10x - 5x - 3x = 0$$

The solution set is { \_\_\_\_\_ }.

8. Use the formula and the values given to find the value of the remaining variable.

$$A = \frac{1}{2}bh; \quad b = 28, \quad h = 20$$

A = \_\_\_\_\_



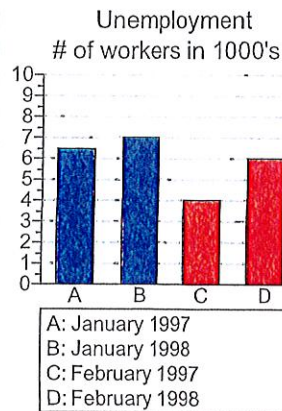
Use the pictograph at left. How many fewer Walks than Doubles did the player have?

The answer is \_\_\_\_\_.

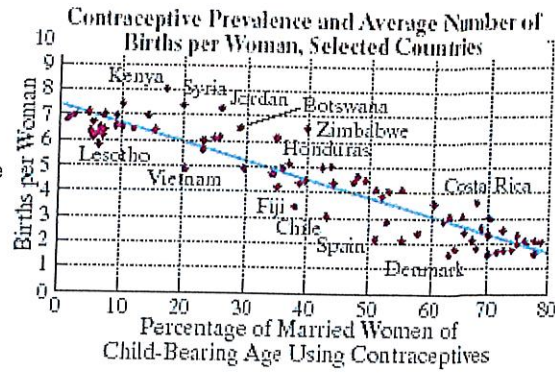
10. The bar graph shows the number of workers who were unemployed in a city during the first two months of 1997 and 1998.

How many more workers were unemployed in February of 1998 than in February of 1997?

\_\_\_\_\_ more workers were unemployed in February of 1998.  
(Round to the nearest 500 workers.)



11. The scatter plot in the figure shows the relationship between percentage of married women of child-bearing age using contraceptives and births per woman in selected countries. Use the scatter plot to determine if the following statement is true: With approximately 10% of women of childbearing age using contraceptives, there are 5 births per woman in Kenya.

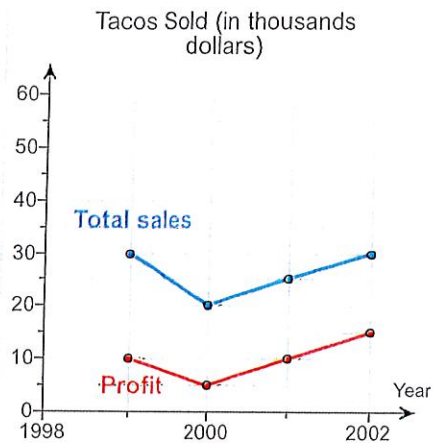


With approximately 10% of women of childbearing age using contraceptives, there are 5 births per woman in Kenya.

- True  
False

12. The comparison line graph shows the sales and profits of Tacos-To-Go for each of four years. Find the profit in 1999.

The profit in 1999 was \$ \_\_\_\_\_.



13. Use the order of operations to simplify.

$$\left(\frac{3}{4}\right)^2 \cdot 16$$

$$\left(\frac{3}{4}\right)^2 \cdot 16 = \underline{\hspace{2cm}}$$

14. A soccer team played 160 games and won 65 percent of them. How many games did it win?

- A. 124  
B. 114  
C. 104  
D. 56

15. During one semester of school, Sara Baker spent \$6200 on expenses. She spent \$1860 of that \$6200, or 30%, on rent. On a circle graph of Sara's expenses, how many degrees must represent rent?

Rent covers \_\_\_\_\_ degrees of the circle graph.  
(Simplify your answer. Type an integer or a decimal.)



16. A soccer team played 160 games and won 65 percent of them. How many games did it win?

- A. 124
- B. 104
- C. 114
- D. 56

17. Complete. When solving this problem, do as much as possible mentally. Refer to the metric conversion line shown to the right.

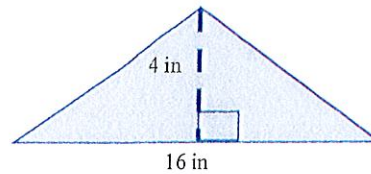
km	hm	dam	m	dm	cm	mm
1000	100	10	1	0.1	0.01	0.001

3870 mm = ? cm

3870 mm = \_\_\_\_\_ cm

(Simplify your answer. Type an integer or a decimal.)

18. Find the area of the triangle.



The area is \_\_\_\_\_ in<sup>2</sup>.

19.  $4\frac{2}{3} - 3\frac{4}{5} =$

- A.  $1\frac{2}{15}$
- B.  $\frac{2}{15}$
- C.  $\frac{13}{15}$
- D. 2

20.  $2.95 + 0.003 + 0.173 =$

- A. 4.71
- B. 0.471
- C. 3.126
- D. 3.153

21. Determine whether or not the following dosage is reasonable.

Take 3 L of cough syrup twice a day.

Is the dosage reasonable?

- No
- Yes

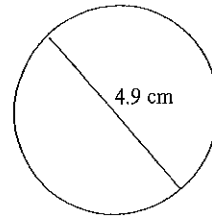
22. Solve the equation below, and check the solution.

$$4x - (3x + 5) = -2$$

The solution set is { \_\_\_\_\_ }.

---

23. Find the circumference and area of the circle. Use 3.14 as the approximate value for  $\pi$ .



The circumference is approximately \_\_\_\_\_ cm.  
(Simplify your answer. Type a whole number or decimal rounded to the nearest hundredth as needed.)

The area is approximately \_\_\_\_\_  $\text{cm}^2$ .  
(Simplify your answer. Type a whole number or decimal rounded to the nearest hundredth as needed.)

---

24. Round 0.13875 to the nearest hundredth.  $0.13875 \approx$  \_\_\_\_\_

---

25. Which of the following is closest to  $27.8 \times 9.9$ ?

- A. 2800
  - B. 280
  - C. 3000
  - D. 300
- 

26. All of the following are ways to write 10 percent of N EXCEPT

- A.  $\frac{1}{10}N$
  - B.  $10N$
  - C.  $0.1N$
  - D.  $\frac{10N}{100}$
- 

27. Convert the measurement. The answer is \_\_\_\_\_ L.  
107 mL to L

---

28. Convert to Celsius.  $-4^\circ\text{F}$  is approximately \_\_\_\_\_  $^\circ\text{C}$ .  
Use the formula  $C = \frac{5(F - 32)}{9}$ .  
(Round to the nearest degree.)  
 $-4^\circ\text{F}$

---

29.  $\frac{7}{50} =$

---

- A. 0.014
  - B. 0.14
  - C. 0.143
  - D. 1.4
- 

30. Solve and check your solution.

$$\frac{1}{8}x = -10$$

---

The solution set is {  }.

Student: \_\_\_\_\_  
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Instructor: Detroit Public Schools  
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Program: Practice Test-2018

Assignment: Math Pathbuilder

1. Find the unknown number in the following proportion. Round your answer to the nearest hundredth, if necessary. Check your answer by finding the cross products.

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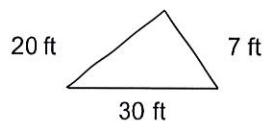
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6. Add and simplify.

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$$\frac{7}{27} + \frac{1}{6} = \frac{23}{54}$$

(Type a simplified fraction.)

7. Solve the equation and check the solution.

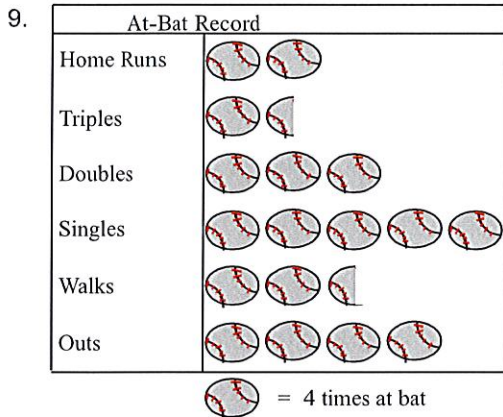
$$10x - 5x - 3x = 0$$

The solution set is { 0 }.

8. Use the formula and the values given to find the value of the remaining variable.

$$A = \frac{1}{2}bh; \quad b = 28, \quad h = 20$$

A = 280



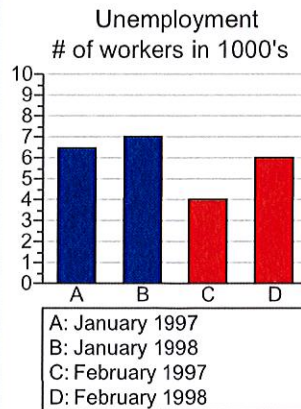
Use the pictograph at left. How many fewer Walks than Doubles did the player have?

The answer is 2.

10. The bar graph shows the number of workers who were unemployed in a city during the first two months of 1997 and 1998.

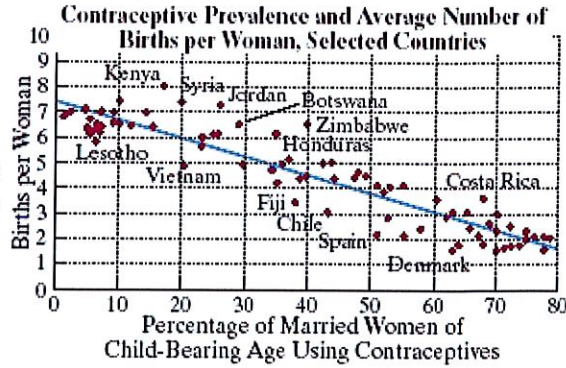
How many more workers were unemployed in February of 1998 than in February of 1997?

2000 more workers were unemployed in February of 1998.  
(Round to the nearest 500 workers.)





11. The scatter plot in the figure shows the relationship between percentage of married women of child-bearing age using contraceptives and births per woman in selected countries. Use the scatter plot to determine if the following statement is true: With approximately 10% of women of childbearing age using contraceptives, there are 5 births per woman in Kenya.

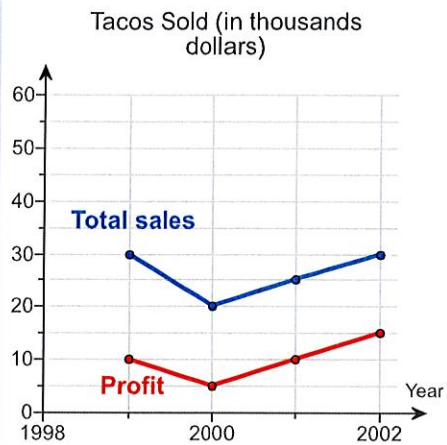


With approximately 10% of women of childbearing age using contraceptives, there are 5 births per woman in Kenya.

- True  
 False

12. The comparison line graph shows the sales and profits of Tacos-To-Go for each of four years. Find the profit in 1999.

The profit in 1999 was \$ 10,000 .



13. Use the order of operations to simplify.

$$\left(\frac{3}{4}\right)^2 \cdot 16$$

$$\left(\frac{3}{4}\right)^2 \cdot 16 = \underline{9}$$

14. A soccer team played 160 games and won 65 percent of them. How many games did it win?

- A. 124  
 B. 114  
 C. 104  
 D. 56

15. During one semester of school, Sara Baker spent \$6200 on expenses. She spent \$1860 of that \$6200, or 30%, on rent. On a circle graph of Sara's expenses, how many degrees must represent rent?

Rent covers 108 degrees of the circle graph.  
 (Simplify your answer. Type an integer or a decimal.)

16. A soccer team played 160 games and won 65 percent of them. How many games did it win?

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17. Complete. When solving this problem, do as much as possible mentally. Refer to the metric conversion line shown to the right.

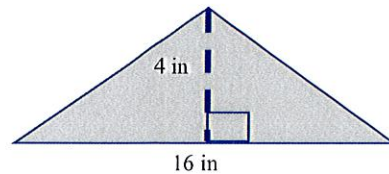
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3870 mm = ? cm

3870 mm = 387 cm

(Simplify your answer. Type an integer or a decimal.)

18. Find the area of the triangle.



The area is 32 in<sup>2</sup>.

19.  $4\frac{2}{3} - 3\frac{4}{5} =$

- A.  $1\frac{2}{15}$
- B.  $\frac{2}{15}$
- C.  $\frac{13}{15}$
- D. 2

20.  $2.95 + 0.003 + 0.173 =$

- A. 4.71
- B. 0.471
- C. 3.126
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21. Determine whether or not the following dosage is reasonable.

Take 3 L of cough syrup twice a day.

Is the dosage reasonable?

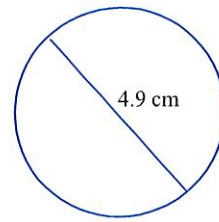
- No
- Yes

22. Solve the equation below, and check the solution.

$$4x - (3x + 5) = -2$$

The solution set is { 3 }.

23. Find the circumference and area of the circle. Use 3.14 as the approximate value for  $\pi$ .



The circumference is approximately 15.39 cm.

(Simplify your answer. Type a whole number or decimal rounded to the nearest hundredth as needed.)

The area is approximately 18.85  $\text{cm}^2$ .

(Simplify your answer. Type a whole number or decimal rounded to the nearest hundredth as needed.)

24. Round 0.13875 to the nearest hundredth.

$$0.13875 \approx \underline{0.14}$$

25. Which of the following is closest to  $27.8 \times 9.9$ ?

- A. 2800
- B. 280
- C. 3000
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26. All of the following are ways to write 10 percent of N EXCEPT

- A.  $\frac{1}{10}N$
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- C.  $0.1N$
- D.  $\frac{10N}{100}$

27. Convert the measurement.

107 mL to L

The answer is 0.107 L.

28. Convert to Celsius.

Use the formula  $C = \frac{5(F - 32)}{9}$ .

$-4^\circ\text{F}$

$-4^\circ\text{F}$  is approximately -20  $^\circ\text{C}$ .  
(Round to the nearest degree.)

29.  $\frac{7}{50} =$

- A. 0.014
  - B. 0.14
  - C. 0.143
  - D. 1.4
- 

30. Solve and check your solution.

$$\frac{1}{8}x = -10$$

The solution set is  $\{ \underline{-80} \}$ .

# Reading

## Practice Test Items



Student: \_\_\_\_\_  
Date: \_\_\_\_\_

Instructor: Detroit Public Schools  
DPSCD  
Program: Practice Test-2018

Assignment: Reading: Advanced

1. **Metamorphosis**

Butterflies and moths go through a huge change called **metamorphosis** when they change from an egg into an adult butterfly or moth. The process has four stages.

First is the egg stage, which takes place when female butterflies and moths lay their eggs on plants. All butterflies and moths start as eggs. The eggs can be big or small, but they are almost all the same color: yellow or green. Some eggs hatch quickly, in a few days, while other eggs can take months to hatch.

Second is the caterpillar stage, which takes place when the egg hatches. The creature that comes out is called a caterpillar, or a larva, but no matter what it is called, the creature is very hungry, so it consumes everything in its sight! It usually starts by eating the eggshell it hatched from. Then it eats the plant it is on. Not surprisingly, female butterflies and moths lay their eggs on plants that will taste good to their caterpillars. That way, their caterpillars will have a ready source of food. As a result, the caterpillar grows very quickly, but its skin does not. Therefore, the caterpillar has to molt, or shed its skin. Most caterpillars molt four or five times as they grow, which takes about two weeks.

Third is the pupa stage, which happens when the caterpillar changes to a pupa. A chrysalis is one form that a pupa can take. Some caterpillars prepare for this process by digging deep into the earth. Others protect themselves from predators by spinning a covering of very thin threads that harden to a rigid casing called a cocoon. Regardless of how the caterpillar shelters itself, during this process it changes to an adult butterfly or moth.

Last, the adult emerges. This happens when metamorphosis is over. At this time, the adult butterfly or moth breaks out of its shell. It is soft at first. It takes about 30 minutes for the wings and body to get hard.

What happens after the pupa stage?

- A. The adult butterfly or moth emerges.
- B. The creatures protect themselves by spinning a cocoon.
- C. The egg hatches and the caterpillar or larva emerges.
- D. Female butterflies and moths lay their eggs on plants.





4.

### **Metamorphosis**

Butterflies and moths go through a huge change called **metamorphosis** when they change from an egg into an adult butterfly or moth. The process has four stages.

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According to information in the passage, which of the following words has a similar meaning as the word "larva"?

A. caterpillar

B. stage

C. egg

D. hatching

5.

## Metamorphosis

Butterflies and moths go through a huge change called **metamorphosis** when they change from an egg into an adult butterfly or moth. The process has four stages.

First is the egg stage, which takes place when female butterflies and moths lay their eggs on plants. All butterflies and moths start as eggs. The eggs can be big or small, but they are almost all the same color: yellow or green. Some eggs hatch quickly, in a few days, while other eggs can take months to hatch.

Second is the caterpillar stage, which takes place when the egg hatches. The creature that comes out is called a caterpillar, or a larva, but no matter what it is called, the creature is very hungry, so it consumes everything in its sight! It usually starts by eating the eggshell it hatched from. Then it eats the plant it is on. Not surprisingly, female butterflies and moths lay their eggs on plants that will taste good to their caterpillars. That way, their caterpillars will have a ready source of food. As a result, the caterpillar grows very quickly, but its skin does not. Therefore, the caterpillar has to molt, or shed its skin. Most caterpillars molt four or five times as they grow, which takes about two weeks.

Third is the pupa stage, which happens when the caterpillar changes to a pupa. A chrysalis is one form that a pupa can take. Some caterpillars prepare for this process by digging deep into the earth. Others protect themselves from predators by spinning a covering of very thin threads that harden to a rigid casing called a cocoon. Regardless of how the caterpillar shelters itself, during this process it changes to an adult butterfly or moth.

Last, the adult emerges. This happens when metamorphosis is over. At this time, the adult butterfly or moth breaks out of its shell. It is soft at first. It takes about 30 minutes for the wings and body to get hard.

According to the details of the passage, how many times does a caterpillar molt, or shed its skin?

- A. once
- C. twice

- B. three times
- D. four or five times



6.

## Metamorphosis

Butterflies and moths go through a huge change called **metamorphosis** when they change from an egg into an adult butterfly or moth. The process has four stages.

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Where do some caterpillars shelter themselves as they prepare for the metamorphosis from pupa or chrysalis to adult?

- A. on food                       B. on skin  
 C. underground                 D. on eggs



8.

## Pyramids

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The pyramids at the Louvre and El Castillo are similar in key ways. They are both colossal, remarkable structures widely written about and frequently visited by tourists. In addition, they both have rectangular bases and sloping sides that meet at a point. They are virtually the same height: the pyramid at the Louvre is 71 feet high; El Castillo, 79 feet high. However, these two pyramids are different in several equally significant ways, starting with their age.

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The second difference lies in their purpose. The pyramid at the Louvre was built to serve as an impressive main entrance to the renowned French art museum. In contrast, El Castillo was erected to serve as a temple to the significant Mayan god Kukulcan. It also functions as a solar calendar.

The composition of each pyramid is different, too. The pyramid at the Louvre is built of glass and steel, with hundreds of triangular-shaped panes of glass letting the optimal amount of light into the visitor center below. In contrast, El Castillo is made of stone. It has four sides, with 91 steps on each side.

Finally, the two pyramids differ in their settings. The pyramid at the Louvre is surrounded by three smaller pyramids, while El Castillo is part of an enormous complex. These include the Great North Platform (including El Castillo, Temple of Warriors, and the Great Ball Court), the Ossario Group (including the Ossario pyramid and the Temple of Xtoloc), and the Central Group (including Caracol, Las Monjas, and Akab Dzib). These buildings, as well as others, are linked by many roads.

The pyramids at the Louvre and El Castillo are similar because they

- A. are very close in height.
- B. were built by the same architect.
- C. are the same age.
- D. were designed for the same purpose.

9.

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Examine the following incomplete outline:

- I. Similarities
  - A. Size
  - B. Base
  - C. Sides
  - D. Height
- II. Differences
  - A. Age
  - B. Purpose
  - C. \_\_\_\_\_

Which of the following words or phrases should appear on the line marked C under heading II in the outline?

**A.** Glass and steel

**C.** Materials

**B.** They are made of different substances.

**D.** Stone

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10.

## Pyramids

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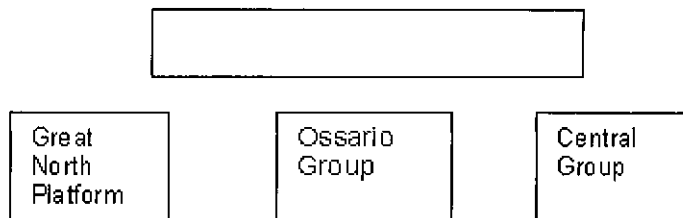
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Which of the following choices would best fit in the empty box at the top of this concept map?



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Which of the following choices best paraphrases this sentence from the passage?

“In contrast, El Castillo was erected to serve as a temple to the significant Mayan god Kukulcan.”

- A.** However, the Great Pyramid in Mexico is the only important holy place for a big Mayan god.
- B.** The important Mayan god Kukulcan built the Great Pyramid in Mexico as his temple.
- C.** On the other hand, the Great Pyramid in Mexico was built to be a temple to the significant Mayan god Kukulcan.
- D.** El Castillo was built as a place of worship for the Mayan god Kukulcan.



- A.** tourist sites
- B.** the El Castillo complex
- C.** pyramids
- D.** the pyramid at the Louvre

12.

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Readers would summarize or paraphrase this passage to

- A. remember the most important information.    B. express their opinions about the passage.
- C. look over the passage before they read it.    D. dramatize the passage.
-



## **Food Safety of Jerky**

When raw meat or poultry is dehydrated at home—either in a warm oven or a food dehydrator—to make jerky that will be stored on the shelf, pathogenic bacteria are likely to survive the dry heat of the warm oven and especially the 130° to 140° F of a food dehydrator. Included here is the scientific background behind drying food to make it safe and the safest procedure to follow when making homemade jerky.

Drying is the world's oldest and most common method of food preservation. It is both simple and readily available to most of the world's cultures. The scientific principal of preserving food by drying is that by removing moisture, enzymes cannot efficiently contact or react with the food. Preventing this enzymatic action preserves the food from biological action.

The USDA Meat and Poultry Hotline now recommends heating meat for jerky to 160° F and poultry to 165° F before the dehydrating process. This results in the bacteria being destroyed by wet heat. However, a dehydrator may not reach temperatures high enough to heat meat to 160° F.

After heating, it is important to maintain a constant dehydrator temperature of 130° to 140° F during the drying process for two reasons. First, the process must be fast enough to dry food before it spoils. Second, the process must remove enough water so that harmful germs are unable to grow.

The danger in dehydrating meat and poultry without cooking it to a safe temperature first is that the appliance will not heat the meat to 160° F and poultry to 165° F—temperatures at which bacteria are destroyed—before it dries. After drying, bacteria become much more heat resistant.

In a dehydrator or low-temperature oven, evaporating moisture absorbs most of the heat. Thus, the meat itself does not begin to rise in temperature until most of the moisture is gone. As a result, when the dried meat temperature finally begins to rise, the bacteria have become more heat resistant and are likely to survive. If these surviving bacteria are harmful, they can cause people who eat the jerky to get sick.

Also, people making jerky must handle all foods and materials safely. Here is a list of rules to follow:

- Always wash hands with soap and water before and after working with meat products.
- Use clean equipment and tools.
- Keep meat and poultry refrigerated at 40° F or slightly below.
- Use or freeze ground beef and poultry within 2 days. Use whole red meats within 3 to 5 days.
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Jerky sold in stores can be kept 12 months. Home-dried jerky can be stored for one to two months.

Which of the following words or phrases in the passage signals the cause-and-effect pattern of organization?

- A.** results in
- B.** otherwise
- C.** to follow
- D.** also
-



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What is the result of removing moisture from food by dehydrating it?

- A.** The food will become raw.
  - B.** Dehydrating is an ancient and common method of food preservation.
  - C.** The food will taste significantly better.
  - D.** Enzymes cannot efficiently contact or react with the food.
-



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What is the implied main idea of the third paragraph?

- A.** It is not worth the effort and expense to make beef jerky.
- B.** People should call the USDA Meat and Poultry Hotline before using a dehydrator to make meat jerky.
- C.** People should not rely solely on the heat from a dehydrator when making meat jerky.
- D.** People should not use dehydrators when making meat jerky because they are unsafe.
-



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What main idea is implied by the list of how to handle food and materials when making meat jerky?

- A.** Homemade meat jerky is better than commercial meat jerky.
  - B.** Cleanliness is a critical element in the successful production of meat jerky.
  - C.** It is just about impossible to make meat jerky safely.
  - D.** More people should make meat jerky because it is economical.
-





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What is the author's primary purpose in writing "Food Safety of Jerky?"

- A.** to tell a story about an ancient, useful food
- B.** to persuade readers to make meat jerky
- C.** to give instructions for making meat jerky properly
- D.** to caution people against making or eating meat jerky
-



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The tone of "Food Safety of Jerky" is best described as

- A. arrogant.
- B. uncertain.
- C. alarming.
- D. professional.
-





## Copyright Basics

### *What is a copyright?*

Copyright is a form of protection provided by the laws of the United States to the authors of “original works of authorship,” including literary, dramatic, musical, artistic, and certain other intellectual works. This protection is available to both published and unpublished works. The Copyright Act generally gives the owner of copyright the exclusive right to do—and to authorize others to do—the following things:

- To reproduce the work in copies or phonorecords (tapes, CDs, LPs);
- To prepare derivative works based upon the work;
- To distribute copies or phonorecords of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
- To perform the work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works;
- To display the copyrighted work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work; and
- To perform the work publicly by means of a digital audio transmission, in the case of sound recordings.

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What kind of evidence does the author use to support the generalizations made in the passage?

- A. examples
- B. the opinions of experts in copyright law
- C. statistics
- D. colorful descriptions



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Which generalization best supports the author's examples in the last paragraph?

- A.** Very few original works can meet the criteria to be copyrighted in the United States.
- B.** It is important for creators of original works to protect their work by obtaining a federal copyright at the Copyright Office.
- C.** People should realize that original works are automatically protected by copyright as soon as they are created.
- D.** A work cannot be copyrighted if it takes too long to create.



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What claim does the author support when he discusses the 1976 Copyright Act?

- A. The 1976 Copyright Act needs to be changed.
  - B. It is illegal to violate the rights provided by copyright law.
  - C. Copyright rights are not unlimited in scope.
  - D. Copyright protection is available to both published and unpublished works.
-





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Which of the following is a position the author takes in this passage?

- A.** Categories of copyrightable works must be interpreted broadly.
- B.** It is unfortunate that owners of copyrights frequently cannot exercise their rights.
- C.** It is usually not worth the trouble to get a copyright for an original work.
- D.** Everybody should read the 1976 Copyright Act.
-



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From the information in paragraph 1, readers can infer that

- A.** the government believes in the importance of ensuring the rights of authors and artists.
- B.** copyright protection is available to published and unpublished works.
- C.** only the United States has copyright laws.
- D.** copyright is the only protection available to authors and artists.
-



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What is the most logical inference readers can make about copyright from the second paragraph?

- A.** Many different creative works can be copyrighted.
- B.** Literary works are more difficult to copyright than any other creative works.
- C.** Copyright laws are very confusing.
- D.** More books are copyrighted than any other creative works.
-



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In the third paragraph, the author says that, “Copies are material objects from which a work can be read or visually perceived.”

Which of the following phrases provides supporting details for this statement?

- A.** motion picture soundtracks                       **B.** cassette tapes, CDs, and vinyl disks.
- C.** such as books, manuscripts, sheet music, film, videotape, or microfilm                       **D.** secured automatically

## Reading Advanced Answers

1. A
2. B
3. C
4. A
5. D
6. C
7. D
8. A
9. C
10. B
11. D
12. A
13. A
14. D
15. C
16. B
17. C
18. D
19. A
20. C
21. C
22. A
23. A
24. A
25. C

Student: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor: Detroit Public Schools

DPSCD

Program: Practice Test-2018

Assignment: Reading: Fundamentals

### **Thomas Edison's Electric Light Bulb**

1. Thomas Edison was an American inventor and scientist. The light bulb is one of his inventions. Before there were light bulbs, people used gas lamps or candles. Gas lamps were dirty and made a lot of smoke. Gas lamps were also dangerous because they started fires. Edison knew that electric lights would make life better. He wanted to make a quality light bulb. He also wanted people to be able to use electricity in their homes. His dream was for every home to have electric lights.
2. To achieve this dream, he started experimenting. First, he thought about the light bulb. He needed the best filament for his light bulb. The filament is the wire inside the bulb. It glows when the light is on. Edison needed to find the right material for the filament. He tried thousands of different materials. He even tried paper and human hair. He experimented for over a year. At last, he found the right filament and made the light bulb. Then he started improving his light bulbs so they would last longer. Finally, he made a light bulb that would glow for many hours.
3. Next, Edison worked to figure out how to move electricity from a source into people's homes. He found a way to send electricity across wires and into houses and other buildings. All people in houses connected to the wires would now be able to use the new electric lights. In 1882, the first houses got electricity.
4. Edison's work improved people's everyday lives. People no longer had to use gas lamps or candles. They could use safer, cleaner electric lights instead. Since then, people have made other kinds of light bulbs. These new light bulbs last longer. They also use less electricity. However, many light bulbs in use today are like the ones Thomas Edison invented.



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The central point of a passage is the main message of the entire passage.

What is the central point of this passage?

- A. In 1882, electricity first came to people's homes.       B. Electric light bulbs are safer and cleaner than gas lamps.
- C. Thomas Edison worked hard to make a good electric light bulb and improve       D. Electric lights have a filament inside, and the filament glows when the light is on. people's lives.

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A student prepared the following outline for this passage:

- I. Thomas Edison's dream of electricity in the home
- II. Working on the light bulb
- III. \_\_\_\_\_
- IV. Good effects of the light bulb

What should the student put on the line next to III?

- A. Dangers of gas lamps
- B. Experiments with filaments
- C. Getting electricity to people's homes
- D. Green energy

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5.

4. Edison's work improved people's everyday lives. People no longer had to use gas lamps or candles. They could use safer, cleaner electric lights instead. Since then, people have made other kinds of light bulbs. These new light bulbs last longer. They also use less electricity. However, many light bulbs in use today are like the ones Thomas Edison invented.

Which of the following is the best short description of what the passage is about?

- A. Thomas Edison was a genius. He made the best electric light bulb and he also found a way to get electricity into people's homes. Electricity makes my life much easier, so Thomas Edison is my favorite inventor.
- B. American inventor Thomas Edison wanted to make an electric light bulb because he knew gas lamps were smoky and could start fires. To make the light bulb, he had to do thousands of tests. In some, he used human hair. He finally found a filament that would glow for a long time.
- C. American inventor Thomas Edison invented the electric light bulb. He also invented a way to get electricity into homes. His inventions improved people's lives.
- D. Thomas Edison was an American inventor and scientist. The light bulb is one of his inventions. Before there were light bulbs, people used gas lamps or candles. Gas lamps were dirty and made a lot of smoke. Gas lamps were also dangerous because they started fires. Edison knew that electric lights would make life better. He wanted to make a quality light bulb. He also wanted people to be able to use electricity in their homes. His dream was for every home to have electric lights.

### Green Transportation

1. Most people know that riding trains and buses is better for the environment than driving a car. Both trains and buses save fuel and help reduce the amount of pollution in the air. However, most people do not know which is better for the environment: a train or a bus. A "green choice" is a choice that is good for the environment. Are trains or buses the greener choice? To answer this question, we need to look at three pieces of information. Specifically, we need to look at the amount of pollution, the kind of pollution, and the amount of fuel used.
2. The first piece of information is amount of pollution. Trains give off much less pollution than buses do. In fact, according to the World Resources Institute, trains release only about half of the pollution that buses release.
3. The second piece of information is kind of pollution. Some kinds of pollution from vehicles have bad effects in the areas where the vehicles are used. They can make the air in an area bad for breathing and the water bad for drinking. Other kinds over time could have bad effects on the entire Earth. These kinds of pollution are therefore especially dangerous for the environment. Buses give off more of these especially dangerous kinds of pollution than trains do.



7.

bus uses less fuel than one train. However, trains can hold many more people than buses. For this reason, trains are actually more fuel-efficient than buses.

5. In each of these three ways, trains are a greener form of transportation than buses. Our question turned out to be easy to answer: Trains are the greener choice. When possible, people should choose a train instead of a bus. However, both trains and buses are good choices for a cleaner, greener Earth. Taking a train or a bus is much greener than driving a car.

The topic of a passage is what the entire passage is about.

What is the topic of this passage?

- A. whether buses or trains are the greener choice
- B. whether trains or buses use more fuel
- C. how convenient trains and buses are
- D. why cars are such a problem for the environment

### Green Transportation

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3. The second piece of information is kind of pollution. Some kinds of pollution from vehicles have bad effects in the areas where the vehicles are used. They can make the air in an area bad for breathing and the water bad for drinking. Other kinds over time could have bad effects on the entire Earth. These kinds of pollution are therefore especially dangerous for the environment. Buses give off more of these especially dangerous kinds of pollution than trains do.

4. The final piece of information is the amount of fuel a vehicle uses. Both trains and buses run on fossil fuel, and the supply of fossil fuel is limited. A comparison of buses and trains shows that one bus uses less fuel than one train. However, trains can hold many more people than buses. For this reason, trains are actually more fuel-efficient than buses.

5. In each of these three ways, trains are a greener form of transportation than buses. Our question turned out to be easy to answer: Trains are the greener choice. When possible, people

8.

should choose a train instead of a bus. However, both trains and buses are good choices for a cleaner, greener Earth. Taking a train or a bus is much greener than driving a car.

Authors can support their main ideas with different kinds of details.

What kind of details does the author use to support the main ideas in this passage?

- A. personal feelings                       B. memories  
 C. stories                                       D. facts

### Green Transportation

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5. In each of these three ways, trains are a greener form of transportation than buses. Our question turned out to be easy to answer: Trains are the greener choice. When possible, people should choose a train instead of a bus. However, both trains and buses are good choices for a cleaner, greener Earth. Taking a train or a bus is much greener than driving a car.

A student reading this passage created the following outline to summarize the passage:

- I. Which is greener, trains or buses?  
A. Amount of pollution—less for trains  
B. \_\_\_\_\_

9.

C. Amount of fuel—trains more fuel-efficient than buses

II. The answer: trains are greener

Which of the following ideas should the student include on the blank line next to B?

- A. Green choice—good for the environment     B. Kind of pollution—more dangerous with buses
- C. Knowledge about green transportation—also questions     D. Private cars—trains and buses both better

### Green Transportation

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The central point of a passage is the main message of the entire passage.

Which of the following ideas is the central point of the passage?

- A. Trains are more comfortable than buses     B. Taking a bus is a better choice for the

10.

because they are larger and have more seats.

environment than driving a car because buses are more fuel efficient and pollute less.

C. Trains are greener than buses because they make less pollution, make less of a dangerous kind of pollution, and use less fuel.

D. The amount of pollution is important information in figuring out how green a vehicle is.

## Business Careers

1. Students who enjoy mathematics, management, or advertising can consider a career in business. An understanding of these subjects is helpful in most business jobs. Business jobs are divided into three main business careers: accounting, administration, and marketing. Jobs in each of these business careers require different skills and strengths.

2. Accounting is the recording, analyzing, and reporting of the finances of a business. Therefore, accountants are the people who keep track of a company's money. Accounting is the business field that requires the most skills in mathematics. Specific jobs in accounting include those of bookkeeper, auditor, and tax accountant. A bookkeeper is a person who records the finances of a business. An auditor checks that the accountants and bookkeepers are doing their jobs correctly and legally. Tax accountants help companies and people pay their taxes.

3. Administration is the managing or leading of a business. Administrators are people who run a business. As a result, administrators must have excellent communication skills. For example, they must be able to speak and write well. They must also understand and work well with people. Administrators must be able to manage many different projects, jobs, and details. Specific jobs in administration include those of CEO, manager, project manager, and entrepreneur. A CEO is the chief executive officer or the head of a large company. The CEO is in charge of all the managers in the company. Managers are people who run different parts of a company. They make sure people within the departments are doing their jobs. A project manager is someone who is in charge of one specific project that a company is working on. Sometimes, project managers are regular managers in the company. Other times, people from outside the company work as project managers until the project is completed. Entrepreneurs are people who start their own businesses. They have a new idea or product that they want to develop. Often, entrepreneurs start small businesses. For this reason, they must be CEO, manager, and project manager all together until their business grows.

4. Marketing is the advertising part of a business. People who work in marketing study customers (people who buy products). Marketers try to sell their company's products or services to the customers through advertising. Today, marketers often must be able to work internationally, selling products all over the world. They also must include digital advertising in their marketing plans. Digital advertising is using computers and the Internet to market products and services. As

11.

a result, marketers must understand how to use computers and the Internet to create advertisements that appeal to their customers.

5. Business careers are diverse. The skills needed to be a businessperson are also varied. Therefore, people with strengths in mathematics, management, and advertising can all consider jobs in business.

According to the following sentences in the second paragraph, what does the word "finances" mean?



“Accounting is the recording, analyzing, and reporting of the finances of a business. Therefore, accountants are people who keep track of a company's money.”

- A. recording, analyzing, and reporting       B. money
- C. activities in a company                       D. accountants
-

12.

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The central point of a passage is the most important idea in the passage.  
What is the central point of this passage?

- A. "Jobs in each of these business careers"       B. "Accounting is the recording, analyzing, require different skills and strengths."      and reporting of the finances of a business."
- C. "People who work in marketing study"       D. "For example, they must be able to speak customers (people who buy products)."      and write well."
-

13.

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Which word or words show that the fact in the second sentence is an effect of the fact in the first sentence?

“ Administrators are people who run a business. As a result, administrators must have excellent communication skills.”

- A. administrators
  - B. as a result
  - C. excellent
  - D. communication skills
-

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The following is part of an outline that a student created to summarize the main ideas and important details in the passage:

- I. Accounting -- recording, analyzing, and reporting of finances
  - A. Requires mathematics skills
  - B. Offers different jobs
    - 1. Bookkeeper (records finances)
    - 2. Auditor (checks legality)
    - 3. Tax accountant (helps companies and people pay taxes)

- II. Administration -- leading a business
  - A. Requires good communication skills
  - B. Must understand and work well with people
  - C. \_\_\_\_\_

What should the student put on the line next to C?

- |  |  |
|--|--|
| <input type="radio"/> A. Three main careers: accounting, administration, marketing | <input type="radio"/> B. Manage or run a company                                 |
| <input type="radio"/> C. Marketing is advertising products and services            | <input type="radio"/> D. Must be able to manage many projects, jobs, and details |
-

15.

## **Business Careers**

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5. Business careers are diverse. The skills needed to be a businessperson are also varied. Therefore, people with strengths in mathematics, management, and advertising can all consider jobs in business.



Which of the following choices accurately restates this sentence?

“As a result, marketers must understand how to use computers and the Internet to create advertisements that appeal to their customers.”

- A. So, marketers should be good with computers.
- B. As a result, marketers must understand how to use computers and the Internet to create advertisements that appeal to their customers
- C. As a result, people in marketing must make good commercials that will interest their customers
- D. For this reason, people in marketing should know how to make online ads that will attract their customers.

## Reading Fundamentals Answers

1. B
2. A
3. C
4. C
5. C
6. A
7. A
8. D
9. B
- 10.C
- 11.B
- 12.A
- 13.B
- 14.D
- 15.C

# Science

## Practice Test Items

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

1) During the peak of a total annular eclipse, the image of the Sun cast onto some white paper is \_\_\_\_\_

- A) not going to be seen.
- B) a circle.
- C) a crescent.
- D) a large white spot.

2) Success in science is mainly linked to emphasis on \_\_\_\_\_

- A) luck.
- B) philosophical discussions.
- C) experiments.
- D) trial and error.

3) Carbon monoxide \_\_\_\_\_.

- A) causes ozone depletion
- B) is produced by plants during photosynthesis
- C) is a major component of the atmosphere
- D) is consumed by plants for photosynthesis
- E) blocks oxygen transport in human blood

4)

The statement, "hiking up a mountain in the southwestern United States is like walking from Mexico to Canada," is meant to demonstrate that \_\_\_\_\_ change(s) rapidly as you change altitude and latitude.

- A) oxygen levels
- B) biomes
- C) human population density
- D) carbon dioxide levels
- E) levels of industrial air pollutants

5) The angle of the Sun's rays striking Earth's surface greatly affects the

- A) equatorial and polar regions.
- B) Earth's seasons.
- C) intensity of solar energy received at Earth's surface.
- D) distribution of solar energy—from the poles to the equator, hours of daylight, and the seasons.

Read the following scenario and answer the question(s) below.

Pablo and Johanna have to do a yearlong study for their biology course. After some discussion, they decide to try comparing their dogs and the diet that they feed them. Each has a dog from the pound, and both dogs are less than one year old. Pablo feeds his shepherd-mix dog a special diet of wet and dry foods from the local vet, while Johanna uses generic dry kibble from the supermarket for her bulldog. They want to see which diet results in bigger, healthier, fastergrowing dogs.

6) The independent variable in this study will be \_\_\_\_\_.

- A) the breed of the dogs
- B) the type of food the dogs receive
- C) the age of the dogs
- D) how much the dogs grow
- E) the sex of the dogs

Read the following scenario and answer the question(s) below.

Many biologists and environmental educators are interested in maintaining biodiversity in urban landscapes, where preserves or reserves are scarce unless land has been set aside for them in urban planning. Nonetheless, they have discovered that making even small changes in commercial and residential landscaping can help promote biodiversity. Some of the changes that have been recommended and are having success are using native species for street trees and for decorative landscaping, reducing pesticide use on lawns and gardens and reducing fertilizer use through composting and mulching. Also, managers of schools, larger businesses and residences are encouraged to increase habitat diversity by creating "landscape islands" that include larger trees surrounded by shrubs and herbaceous plants. Landscape islands ideally should include native species, mixed with exotic ornamentals at the discretion of the land owners.

7)

Being interested in native butterflies, you include the native caterpillar host plants of several butterflies in your annual landscape design. You are happy to see that caterpillars and butterflies appear in your yard. However, the butterflies tend to disperse out of our yard. To keep the butterflies in your garden, an urban wildlife specialist suggests you \_\_\_\_\_.

- A) place pans of honey solution around your yard to feed the butterflies
- B) introduce native flowering plants the adult butterflies need for nectar, their main food
- C) ask the neighbors to refrain from planting "butterfly plants" in their yards
- D) try to introduce predators of the butterflies
- E) use pesticides to kill off predators

Read the following scenario and answer the question(s) below.

The western United States contains a series of tall mountain ranges that also extend far down into Mexico. The largest of these ranges are the Rockies and the Sierra Madres, but they are all part of the same mountain-building event that occurred many millions of years ago, and they all have similar features. However, the biodiversity of the southernmost mountains has more connection to that of Central America, while the biodiversity of the Rockies shares more affinity with temperate North American species. Still, much of the forest vegetation on these mountaintops is the same, or very similar, and they are often referred to as the "Sky Islands" because of their similarity to each other and their isolation from the lower, often drier, areas surrounding them. With global climate change producing increasingly visible effects, conservation biologists fear that these mountaintop ecosystems will undergo major changes in temperature and humidity and that the many endemic species that live there may literally have no place to go.



8)

Large predators and omnivores, such as mountain lions and bears, roam these mountain ranges. Which of the following statements is true?

A)

Because of habitat fragmentation and alteration, the individual populations of these Sky Islands have less genetic diversity than they did in the past.

B) Because of extirpation, many of these individual populations have more biodiversity than they did in the past.

C)

Because of habitat fragmentation and alteration, the individual populations of these Sky Islands have more biodiversity than they did in the past.

D)

Because of immigration and emigration, the individual populations of these Sky Islands have less biodiversity than they did in the past.

E)

Because of immigration and emigration, the individual populations of these Sky Islands have more genetic diversity than they did in the past.

9) During the period \_\_\_\_\_ the world's population more than doubled. 10)

A) 1900-1950

B) 1950-2000

C) 1750-1800

D) 1850-1900

E) 1800-1850

10)

A 1000-kg car and a 2000-kg car are hoisted the same vertical distance in a service station. Raising the more massive car requires

- A) as much work.
- B) four times as much work.
- C) less work.
- D) more than four times as much work.
- E) twice as much work.

11) The most serious problem caused by population growth is \_\_\_\_\_.

- A) inefficient food transportation
- B) too few jobs
- C) increasing demand for resources
- D) lack of farmland to meet food needs
- E) crowding

12) Scientific equations in a conceptual course are mainly

- A) recipes for plugging in numerical data.
- B) for mathematical problem solving.
- C) guides to thinking about the relationships between concepts.
- D) unfortunately, a confusing way of explaining ideas.

13) The fossil record clearly shows that \_\_\_\_\_.

- A) several different species can hybridize to produce a single new species
- B) large complex organisms evolved long before simple organisms
- C) new species appear suddenly and fully differentiated, without an ancestral species
- D) all species evolve from pre-existing species
- E) nearly all species that have existed in the past still exist today



14)

Sound travels faster when the air is

- A) cold.
- B) warm.
- C) neither of these

15) Why is Jupiter the largest planet in the solar system?

- A) Because of its distance from the Sun, the gravitational attraction between it and the Sun is perfectly balanced so as to create a density that results in the largest size of any planet.
- B) Being the oldest planetary core, it had more time than the other planets to accumulate enough gas around itself before solar winds blew interplanetary dust away.
- C) Because that's just the way it happened.
- D) Due to a massive collision with another protoplanet.

16) Which of these is *not* a form of solar energy?

- A) fossil fuel energy
- B) geothermal energy
- C) hydroelectric power
- D) wind energy

17) Coastal lands bordering the oceans generally have

- A) colder temperatures than lands away from the ocean.
- B) tropical temperatures due to the high heat capacity of water.
- C) more moderate temperature variations than inland areas.
- D) more scenery than land in the continental interior.

18) Air pollution in Tehran \_\_\_\_\_.

- A) comes primarily from burning fuel wood
- B) is caused primarily by vehicles unequipped with pollution control technology
- C) has been reduced by 90% thanks to strict air pollution laws
- D) is caused mainly by very high levels of CFCs and acid deposition
- E) is far less serious than in Los Angeles

19) Most metals, such as iron and copper, do not occur in a pure state in Earth's crust, but occur within \_\_\_\_\_.

- A) ores
- B) igneous rocks
- C) organic materials
- D) the O horizon of the soil
- E) sediments

20)

As hot mantle rock rises, it expands. As it expands it cools. This cooler rock is

- A) more dense so it sinks. This contributes to the heat flow convection process.
- B) ocean crust.
- C) unstable and explodes in a volcano.
- D) less dense so it keeps rising to form underwater volcanoes.

21)

A black hole is

- A) likely found at the center of each spiral galaxy.
- B) a region of space that is collapsed in on itself.
- C) the result of the collapse of supergiant star.
- D) All of the above

22)

Edwin Hubble discovered that the farther away a galaxy is the

- A) more black holes it contains.
- B) more massive it is.
- C) more energetic it is.
- D) faster it is receding from us.

23) In science, a theory is

- A) less than a fact.
- B) an educated guess.
- C) unchangeable.
- D) a synthesis of a large body of well-tested knowledge.

24)

A sedimentary rock can turn into an igneous rock by

- A) compaction.
- B) melting and cooling.
- C) compaction and cementation.
- D) weathering and lithification.

25)

A probe in space continues in its motion due to

- A) very low friction.
- B) it seeking a continued state of motion.
- C) its own inertia.
- D) none of the above

26)

Pretend you are on a morning time mission on the surface of Venus. When looking out the spacepod window you are likely to see

- A) thick and still smog-like cloud cover.
- B) the Sun rising in the West.
- C) the Sun rising in the East.
- D) fierce windstorms everywhere you look.

27)

The parts of Saturn's rings with the greatest rotational speed are the

- A) outer parts.
- B) inner parts.
- C) Neither, for all parts of Saturn's rings rotate equally.

28) Sustainable development \_\_\_\_\_.

- A) ensures an economy that will decline over time
- B) is impossible to accomplish
- C) is beyond our current technology and attitudes
- D) is possible given our increased use of fertilizers and technology for agriculture
- E) means consuming resources without compromising future availability

29)

The scientific method is most effective in

- A) making hypotheses.
- B) gaining, organizing, and applying new knowledge.
- C) performing experiments.
- D) making theories.
- E) discovering new things.

30) We build dams to \_\_\_\_\_.

- A) generate electricity, prevent flooding, and provide irrigation and drinking water
- B) transform watersheds into farms, towns, and recreational areas
- C) improve habitat for native fish
- D) control the spread of water borne diseases
- E) drain wetlands for urban development

31)

We are actually looking into the past when we look at

- A) a distant star.
- B) our physics book.
- C) actually, both of these
- D) none of these

32) A migratory bat species pollinates agave plants in northern Mexico on its way to the southwestern United States where it spends the summer eating insects and reproducing. Farmers spraying pesticides affect these bats, which eat the insects and also feed them to the baby bats. This could be the start of a story about \_\_\_\_\_.

- A) an umbrella species
- B) an extirpation
- C) threats to a keystone species
- D) sustainable agriculture
- E) insect biodiversity

33)

To scale, if Earth were the size of a basketball, then the Moon would be about the size of a

- A) ping-pong ball.
- B) tennis ball.
- C) bowling ball.
- D) marble.

34)

A cat and a mouse run along a road with the same kinetic energy. The faster runner is the

- A) mouse.
- B) cat.
- C) both run at the same speed
- D) not enough information

35)

Electrons flow in a wire when there is

- A) a difference in potential energy across its ends.
- B) a potential difference across its ends.
- C) an imbalance of charges in the wire.
- D) none of the above

36) The evidence for present-day global warming include

- A) severe winter storms, and increased downpours and flooding.
- B) melting of Arctic and Antarctic sea ice and continental ice fields and glaciers.
- C) extreme weather—heat waves and droughts.
- D) all of the above.

37) Which of these forms of energy is *not* renewable?

- A) solar power
- B) wind power
- C) fossil fuel power
- D) photovoltaic power

38) The resistive force of friction occurs for

- A) solids.
- B) gases.
- C) liquids.
- D) all of the above



39)

The "Big Bang" refers to the

- A) end of the universe when simultaneous supernovae will transform the universe into a supergiant black hole.
- B) time when our Sun will become a nova, rendering Earth into molten lava.
- C) point in time in which the known (and perhaps knowable) universe came into being.
- D) phenomenon of rapid chain reaction supernovae during the first 100 seconds of the universe.

40)

Science is a body of knowledge that extends back to

- A) the time of Galileo.
- B) humankind's beginnings.
- C) Italy in the 16th century.
- D) Greece in the 7th century B.C.

41)

A cat strolls across your backyard. An hour later, a dog with its nose to the ground follows the trail of the cat. Explain what is going on from a molecular point of view.

- A) The dog is smelling atoms from the cat.
- B) The dog is smelling molecules from the cat.
- C) The dog is following the areas of increased density of the Earth.
- D) The cat is leading the dog into a trap.

42) \_\_\_\_\_ built the first offshore wind farm in 1991.

- A) Denmark
- B) The United States
- C) Mexico
- D) France
- E) Spain

- 43) Which explanation best describes why Earth observers always see the same face of the moon?
- A) Earth and Moon are partially gravity locked.
  - B) The Moon's rate of spin matches the rate at which the Moon revolves around Earth.
  - C) We tend only to observe the Moon at night, not during the day.
  - D) The Moon does not rotate as it circles Earth.

44)

Galaxies are aggregations of stars, stellar dust, and gas. Their masses

- A) depend on the rate of pulsar emissions within them.
- B) are all about the same, which is huge.
- C) vary greatly from one galaxy to the next.
- D) are small compared to blue supergiant stars.

45)

If gravity between the Sun and Earth suddenly vanished, Earth would move in

- A) a curved path.
- B) an inward spiral path.
- C) a straight-line path.
- D) an outward spiral path.

46) Which of these is a scientific hypothesis (that could be proved wrong)?

- A) an atom is the smallest bit of matter in a material
- B) atoms in proper proportions make us feel good
- C) atoms are in all the stars in the universe
- D) none of the above

47)

In science, an educated guess is a

- A) hypothesis.
- B) theory.
- C) both



48)

Whirl a rock at the end of a string and it follows a circular path. If the string breaks, the rock tends at first to

- A) continue in a circular path.
- B) fall straight downward.
- C) spiral inward.
- D) follow a straight-line path.

49)

Plate tectonics states that

- A) tectonic plates are in slow, but constant motion.
- B) earthquakes occur because tectonic plates break like a dropped dinner plate.
- C) the continents move through Earth's crust like an icebreaker through ice.
- D) tectonic plates have not moved since Pangaea broke up.

50) We lose 5 to 7 million hectares of productive cropland per year to \_\_\_\_\_.

- A) reforestation and wetland restoration
- B) erosion, over-irrigation, and overgrazing
- C) no-till cropping and shelterbelts
- D) damage from recreation activity
- E) damage from pesticides

51)

The source of all sounds is something that is

- A) vibrating.
- B) undergoing simple harmonic motion.
- C) accelerating.
- D) moving.

52)

For the astronauts inside an orbiting space vehicle the force of gravity that acts on them is

- A) mainly due to the mass of the space vehicle.
- B) mainly due to nearby planets and stars.
- C) zero.
- D) mainly due to Earth below.
- E) none of the above

53) Why isn't dirt listed in the periodic table?

A)

Dirt IS listed in the periodic table but is not easily recognized because it is listed as one of the rare earths with its old scientific name, dysprosium, symbol Dy.

- B) Elements like dirt and air are so common that there is no need to list them in the periodic table.
- C) The periodic table lists only elements made of one kind of material. Dirt is a mixture of elements and compounds.
- D) None of the above is true.

54)

When Marie pushes her desk to the right, friction between the floor and the desk acts toward

- A) the right.
- B) at right angles to her push.
- C) the left.
- D) none of the above

55) A population's age structure generally \_\_\_\_\_.

- A) cannot predict possible species declines in numbers
- B) indicates the numbers of individuals of different ages within a population
- C) has no inherent value for predicting growth
- D) will represent sizes of individuals

56)

The scientist first credited for discovering the concept of inertia was

- A) Galileo.
- B) Aristotle.
- C) Copernicus.
- D) Newton.

57)

Cloud types associated with stable air include

- A) cirrostratus, altostratus, and stratus.
- B) cumulus and cumulonimbus.
- C) cirrostratus, altocumulus, and altostratus.
- D) stratocumulus, stratus, and cirrostratus.

58)

Most of Earth's water is in the

- A) oceans.
- B) polar ice caps.
- C) ground.
- D) rivers, lakes, and stream.

59) Rocks are grouped into three classes depending on how the rock was

- A) shaped.
- B) discovered.
- C) located.
- D) formed.

60) According to the Precautionary Principle we should \_\_\_\_\_.

- A) restrict any chemical that is suspected of toxicity until it is proven safe
- B) halt the manufacture and use of synthetic chemicals
- C) levy large fines against companies that manufacture toxic substances
- D) do extensive government scientific testing before restricting a chemical for use
- E) allow industry to do their own research to determine if a chemical is safe

61)

The solar wind blows in a direction

- A) coplanar to the plane of the solar system.
- B) away from the Sun.
- C) primarily along the Sun's polar axis.
- D) toward the Sun.

62) Effects attributed to the Chernobyl nuclear plant disaster included \_\_\_\_\_.

- A) were contained within the Ukraine
- B) have not been extensively documented
- C) increased incidence of thyroid cancers
- D) increased incidence of emphysema
- E) serious respiratory illnesses but no fatalities

# Science Answers

1. B
2. C
3. E
4. B
5. D
6. B
7. B
8. A
9. B
10. E
11. C
12. C
13. D
14. B
15. B
16. B
17. C
18. B
19. A
20. A
21. D
22. D
23. D
24. B
25. C
26. A
27. B
28. E
29. B
30. A
31. C
32. C
33. B
34. A
35. B
36. D
37. C
38. D
39. C
40. B
41. B
42. A

- 43. B
- 44. C
- 45. C
- 46. A
- 47. A
- 48. D
- 49. A
- 50. B
- 51. A
- 52. D
- 53. C
- 54. C
- 55. B
- 56. A
- 57. A
- 58. A
- 59. D
- 60. A
- 61. B
- 62. C