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ACT: Amecial College Test

**ENGLISH**

**Question: 301**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

**Industrial Revolution**

[§1] The Industrial Revolution was essentially a rapid change in the method of production of material goods. <1> Products once made by hand were now able to be produced by machine or by chemical processes. The Industrial Revolution transformed Western society, creating an international capitalist economy, urbanization, labor reforms, a system to educate the public, <2> and labor specialization.

[§2] (1) In the first century of the Industrial Revolution, the country undergoing the most dramatic change was England. (2) After 1850, the Industrial Revolution spread rapidly <3> throughout Europe. (3) While the pace of change during the Industrial Revolution was indeed very rapid, the Industrial Revolution itself stretched over a rather long period of time – from the middle of the 18th century in the 1700s <4> through World War I (1914).

[§3] Several key discoveries and inventions enabled the Industrial Revolution to take place included <5> machines and tools like the cotton gin, the radio, the circular saw, the cylindrical press, and the steam engine. Cement, dynamite, and aluminum were invented, as were the bleaching and paper-making processes. At the same time, there was a tremendous growth in population and urbanization. In fact, the population growth in England was so dramatic that the country's population doubled between 1750-1820. This meant a great demand for food, clothing, and shelter, demands that became the driving force behind <6> the Industrial Revolution.

[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> <6>:

**A. NO CHANGE**

**B. which had become the driving force of**

**C. that forced the driving of**

**D. that drove the force behind**

**Answer: A**

*Explanation:*

*This choice presents the correct word order and conveys the correct idea.*

**Question: 302**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

**Industrial Revolution**

[§1] The Industrial Revolution was essentially a rapid change in the method of production of material goods. <1> Products once made by hand were now able to be produced by machine or by chemical processes. The Industrial

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> <5>:

**A. NO CHANGE**

**B. place. These included**

**C. place. Thus including**

**D. place, including**

Answer: D

Explanation:

*This is the best choice. Choice B is grammatically correct, but D combines the sentences for greater sentence variety.*

Question: 303

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Industrial Revolution

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> <4>:

**A. NO CHANGE**

**B. from the middle of the century eighteen**

**C. from the mid-1700s**

**D. beginning in the middle of the 1700s, around 1750,**

Answer: C

Explanation:

*This is the most concise choice. Choices A and D are redundant; choice B has improper word order.*

Question: 304

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Industrial Revolution

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> <3>:

**A. NO CHANGE**

**B. was quickly spreading**

**C. spread with great rapidity**

**D. spread fast**

Answer: A

Explanation:

*This is the most correct and concise choice.*

Question: 305

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Industrial Revolution

[§1] The Industrial Revolution was essentially a rapid change in the method of production of material goods. <1> Products once made by hand were now able to be produced by machine or by chemical processes. The Industrial Revolution transformed Western society, creating an international capitalist economy, urbanization, labor reforms, a system to educate the public, <2> and labor specialization.

[§2] (1) In the first century of the Industrial Revolution, the country undergoing the most dramatic change was



England. (2) After 1850, the Industrial Revolution spread rapidly <3> throughout Europe. (3) While the pace of change during the Industrial Revolution was indeed very rapid, the Industrial Revolution itself stretched over a rather long period of time – from the middle of the 18th century in the 1700s <4> through World War I (1914).

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> The most logical sequence for paragraph 2 is:

**A. NO CHANGE**

**B. (2), (1), (3)**

**C. (3), (2), (1)**

**D. (3), (1), (2)**

**Answer: D**

*Explanation:*

*This is the most logical sequence: first, the sentence giving the overall timeline of the revolution, then the next two sentences in chronological order.*

### **Question: 306**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

**Industrial Revolution**

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> <2>:

**A. NO CHANGE**

**B. a public education system**

**C. systematizing education**

**D. public education**

Answer: B

Explanation:

*This choice makes the sentence parallel.*

### Question: 307

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

#### Industrial Revolution

[§1] The Industrial Revolution was essentially a rapid change in the method of production of material goods. <1> Products once made by hand were now able to be produced by machine or by chemical processes. The Industrial Revolution transformed Western society, creating an international capitalist economy, urbanization, labor reforms, a system to educate the public, <2> and labor specialization.

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[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8> The writer changed the underlined text <1> to in how material goods were produced. The result is a sentence that is:

- A. more dramatic
- B. more concise
- C. more complex
- D. more accurate

Answer: B

Explanation:

*This change would make the sentence more concise.*

### Question: 308

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

#### Bicycles

[§1] (1) Today, bicycles are so common that it's hard to believe they haven't always been around. (2) But two hundred years ago, bicycles weren't even existing, <1> and the first bicycle, invented in Germany in 1818, was nothing like our bicycles today – it was made of wood and didn't even have pedals. (3) Since then, however, numerous innovations and improvements in design have made the bicycle one of the most popular means of recreation and transportation around the world.

[§2] (4) In 1839, Kirkpatrick Macmillan a Scottish blacksmith, <2> dramatically improved upon the original bicycle

design. (5) Macmillan's machine had tires with iron rims to keep them from getting worn down. (6) He also used foot-operated cranks similar to pedals so his bicycle could be ridden at a quick pace. <3> (7) It hadn't looked <4> much like a modern bicycle, though, because its back wheel was substantially larger than its front wheel. (8) In 1861, the French Michaux brothers took the evolution of the bicycle a step further by inventing an improved crank mechanism. [§3] (9) Ten years later, James Starley, an English inventor, revolutionized bicycle design. (10) He, made <5> the front wheel many times larger than the back wheel, putting a gear on <6> the pedals to make the bicycle more efficient, and lightened the wheels by using wire spokes. (11) Although this bicycle was much lighter and less tiring to ride, it was still clumsy, extremely top-heavy, and ridden mostly for entertainment.

[§4] (12) It wasn't until 1874 that the first truly modern bicycle appeared on the scene. (13) Today their built, <7> used, and enjoyed all over the world. (14) H. J. Lawson, invented by another Englishman, <8> the "safety bicycle" would look familiar to today's cyclists. (15) This bicycle had equal sized wheels, which made it less prone to toppling over. (16) Lawson also attached a chain to the pedals to drive the rear wheel. (17) With these improvements, the bicycle became extremely popular and useful for transportation.

Which of the following sequences makes paragraph 4 most logical?

**A. NO CHANGE**

**B. (12), (13), (14), (16), (17), (15)**

**C. (12), (17), (14), (15), (16), (13)**

**D. (12), (14), (15), (16), (17), (13)**

**D. (12), (14), (15), (16), (17), (13)**

**Answer: D**

*Explanation:*

*This is the most logical sequence. The sentence about Lawson and naming the safety bicycle must come before the details of the safety bicycle. Sentence (13) is the best conclusion for the paragraph.*

**Question: 309**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

**Bicycles**

[§1] (1) Today, bicycles are so common that it's hard to believe they haven't always been around. (2) But two hundred years ago, bicycles weren't even existing, <1> and the first bicycle, invented in Germany in 1818, was nothing like our bicycles today – it was made of wood and didn't even have pedals. (3) Since then, however, numerous innovations and improvements in design have made the bicycle one of the most popular means of recreation and transportation around the world.

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If the writer were trying to convince readers to buy a bicycle, he would:



**A. NO CHANGE**

**B. Add a paragraph describing the health and environmental benefits of riding a bike.**

**C. Add a paragraph comparing the cost and quality of today's best-selling bicycles.**

**D. Add a paragraph about the Tour de France and other bicycle races.**

Answer: B

Explanation:

*This choice gives readers reasons to buy a bicycle for themselves.*

Question: 310

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Bicycles

[§1] (1) Today, bicycles are so common that it's hard to believe they haven't always been around. (2) But two hundred years ago, bicycles weren't even existing, <1> and the first bicycle, invented in Germany in 1818, was nothing like our bicycles today – it was made of wood and didn't even have pedals. (3) Since then, however, numerous innovations and improvements in design have made the bicycle one of the most popular means of recreation and transportation around the world.

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<8>:

**A. NO CHANGE**

**B. H. J. Lawson invented by another Englishman,**

**C. Invented by another Englishman, H. J. Lawson,**

**D. Another Englishman inventor, H. J. Lawson,**

Answer: C

Explanation:

*This choice presents the correct word order.*

Question: 311

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Bicycles

[§1] (1) Today, bicycles are so common that it's hard to believe they haven't always been around. (2) But two hundred years ago, bicycles weren't even existing, <1> and the first bicycle, invented in Germany in 1818, was nothing like our bicycles today – it was made of wood and didn't even have pedals. (3) Since then, however, numerous innovations and improvements in design have made the bicycle one of the most popular means of recreation and transportation around the world.

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<7>:

**A. NO CHANGE**

**B. Today there are built,**

**C. Today they, are built,**

**D. Today, they are built,**

**Answer: D**

*Explanation:*

*Comma after an introductory word or phrase and they + are contraction.*

**Question: 312**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

**Bicycles**

[§1] (1) Today, bicycles are so common that it's hard to believe they haven't always been around. (2) But two hundred years ago, bicycles weren't even existing, <1> and the first bicycle, invented in Germany in 1818, was nothing like our bicycles today – it was made of wood and didn't even have pedals. (3) Since then, however, numerous innovations and improvements in design have made the bicycle one of the most popular means of recreation and transportation around the world.

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over. (16) Lawson also attached a chain to the pedals to drive the rear wheel. (17) With these improvements, the bicycle became extremely popular and useful for transportation.

<6>:

- A. NO CHANGE
- B. putted a gear on
- C. put a gear in
- D. put a gear on

Answer: D

Explanation:

*This choice gives the sentence parallel structure.*

Question: 313

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Bicycles

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<5>:

- A. NO CHANGE
- B. He made
- C. He had made
- D. He; made

Answer: B

Explanation:

*There should not be a comma between a subject and a verb.*

Question: 314

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

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<4>:

- A. NO CHANGE**
- B. looked not**
- C. didn't look**
- D. wasn't looking**

**Answer: C**

*Explanation:*

*The verb needs to be in the past tense.*

**Question: 315**

**DIRECTIONS:** In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

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<3>:

**A. NO CHANGE**

**B. could be rode quickly**

**C. could have been ridden fast**

**D. could ride at a quick pace**

Answer: A

Explanation:

This is correct as is.

Question: 316

DIRECTIONS: In the passage below, certain phrases are underlined and numbered <x>. The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

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<2>:

**A. NO CHANGE**

**B. Macmillan was a Scottish blacksmith**

**C. Macmillan, a Scottish blacksmith,**

**D. Macmillan, he was a Scottish blacksmith,**



Answer: C

Explanation:

*The phrase a Scottish blacksmith is relevant but nonessential information and needs to be set off by commas.*

Question: 317

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<1>:

A. NO CHANGE

B. there was no such thing as a bicycle,

C. bicycles were uninvented,

D. whoever heard of a bicycle,

Answer: B

Explanation:

*This choice has the most appropriate and correct usage and word choice.*

ACT: Amecial College Test

# MATHEMATICS

Question: 263

If  $\frac{ab}{c} = d$

and  $a$  and  $c$  are doubled, what happens to the value of  $d$ ?

- A. The value of  $d$  remains the same.
- B. The value of  $d$  is doubled.
- C. The value of  $d$  is four times greater.
- D. The value of  $d$  is halved.
- E. The value of  $d$  is four times smaller.

Answer: A

Explanation:

If  $a$  and  $c$  are doubled, the fraction on the left side of the equation becomes

$$\frac{2ab}{2c}$$

. The fraction has been multiplied by  $2/2$  which is equal to 1. Multiplying a fraction by 1 does not change its value:

$$\frac{2ab}{2c} = \frac{ab}{c} = d$$

. The value of  $d$  remains the same.

Question: 264

COST OF BALLONS	
QUANTITY	PRICE PER BALLOON
1	\$1.00
10	\$0.90
100	\$0.75
1,000	\$0.60

Balloons are sold according to the chart above. If a customer buys one balloon at a time, the cost is \$1.00 per balloon. If a customer buys ten balloons at a time, the cost is \$0.90 per balloon. If Carlos wants to buy 2,000 balloons, how much money does he save by buying 1,000 balloons at a time rather than ten balloons at a time?

- A. \$200
- B. \$300
- C. \$500
- D. \$600
- E. \$800

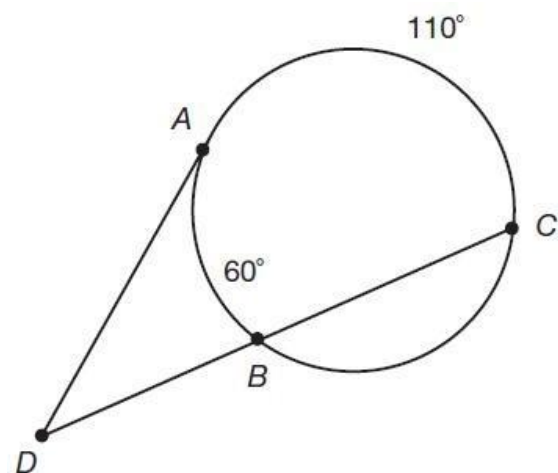
Answer: D

Explanation:

If Carlos buys ten balloons, he will pay  $10 \times \$0.90 = \$9$ . In order to total 2,000 balloons, Carlos will have to make this purchase  $2,000 \div 10 = 200$  times. It will cost him a total of  $200 \times \$9 = \$1,800$ . If Carlos buys 1,000 balloons, he will pay  $1,000 \times \$0.60 = \$600$ . In order to total 2,000 balloons, Carlos will have to make this purchase  $2,000 \div 1,000 = 2$  times. It will cost him a total of  $2 \times \$600 = \$1,200$ . It will save Carlos  $\$1,800 - \$1,200 = \$600$  to buy the balloons 1,000 at a time.

Question: 265

Given the following figure with one tangent and one secant drawn to the circle, what is the measure of  $\angle ADB$ ?

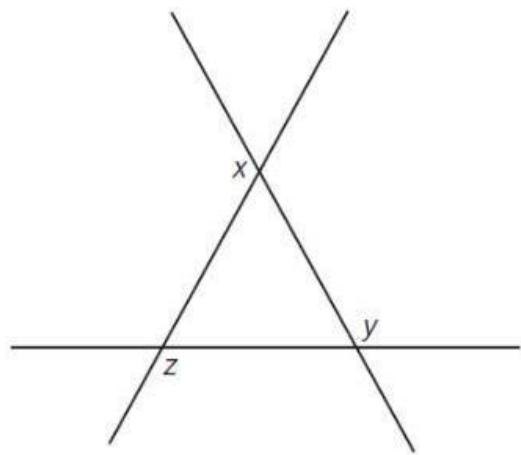


- A. 50  
 B. 85  
 C. 60  
 D. 110  
 E. 25

**Answer:** E  
**Explanation:**  
 The measure of an angle in the exterior of a circle formed by a tangent and a secant is equal to half the difference of the intercepted arcs. The two intercepted arcs are

$\widehat{AB}$   
 which is  $60^\circ$ , and  
 $\widehat{AC}$   
 which is  $110^\circ$ . Find half of the difference of the two arcs:  $\frac{1}{2} \times (110 - 60) = \frac{1}{2} \times 50 = 25^\circ$ .

**Question:** 266



In the diagram above, what is the sum of the measures of the  $\angle x$

,  $\angle y$   
and  $\angle z$   
?

- A.  $180^\circ$   
 B. 360  
 C.  $540^\circ$   
 D.  $720^\circ$   
 E. Cannot be determined.

**Answer:** B  
**Explanation:**

There are  $180^\circ$  in a line:  $(x + (\text{supplement of } \angle x$

$)) + (y + (\text{supplement of } \angle y$

$)) + (z + (\text{supplement of } \angle z$

$)) = 540$ . The supplement of  $\angle x$

, the supplement of  $\angle y$

, and the supplement of  $\angle z$

are the interior angles of a triangle. There are  $180^\circ$  in a triangle, so those supplements sum to 180. Therefore,  $x + y + z + 180 = 540$ , and  $x + y + z = 360$ .

Question: 267

If the surface area of a cube is  $384 \text{ cm}^2$ , what is the volume of the cube?

A. **64 cm<sup>3</sup>**

B. **256 cm<sup>3</sup>**

C. **512 cm<sup>3</sup>**

D. **1152 cm<sup>3</sup>**

E. **4096 cm<sup>3</sup>**

Answer: C

Explanation:

The surface area of a cube is equal to  $6 \times e^2$ , where  $e$  is the length of one edge of the cube;  $6 \times e^2 = 384 \text{ cm}$ ,  $e^2 = 64$ ,  $e = 8 \text{ cm}$ . The volume of a cube is equal to  $e^3$ ;  $(8 \text{ cm})^3 = 512 \text{ cm}^3$ .

Question: 268

Greg has nine paintings. The Hickory Museum has enough space to display three of them. From how many different sets of three paintings does Greg have to choose?

A. **27**

B. **56**

C. **84**

D. **168**

E. **504**

Answer: C

Explanation:

Be careful not to count the same set of three paintings more than once – order is not important. A nine-choose-three combination is equal to

$$\frac{9 \times 8 \times 7}{3 \times 2 \times 1} = \frac{504}{6} = 84$$

Question: 269

It takes eight people 12 hours to clean an office. How long would it take six people to clean the office?

A. **9 hours**

B. **15 hours**

C. **16 hours**

D. **18 hours**

E. **24 hours**

Answer: C,

Explanation:

There is an inverse relationship between the number of people and the time needed to clean the office. Multiply the number of people by the hours needed to clean the office:  $8 \times 12 = 96$ . Divide the total number of hours by the new number of people, 6:  $96 \div 6 = 16$ . It takes six people 16 hours to clean the office.

Question: 270

Lindsay grows only roses and tulips in her garden. The ratio of roses to tulips in her garden is 5:6. If there are 242 total flowers in her garden, how many of them are tulips?

A. **22**

B. **40**

C. **110**

D. **121**

Answer: E

Explanation:  
The number of roses,  $5x$ , plus the number of tulips,  $6x$ , is equal to 242 total flowers:  $5x + 6x = 242$ ,  $11x = 242$ ,  $x = 22$ . There are  $5 \times 22 = 110$  roses and  $6 \times 22 = 132$  tulips in Lindsay's garden.

Question: 271

The point (2, 1) is the midpoint of a line with endpoints at (-5, 3) and:

A. (-3, 4)  
B. (-7, 2)  
C. (7, 1)  
D. (9, -1)  
E. (-10, 3)

Answer: D

Explanation:  
The midpoint of a line is equal to the average  $x$ -coordinates and the average  $y$ -coordinates of the line's endpoints:  
 $(-5 + x) / 2 = 2$ ,  $-5 + x = 4$ ,  $x = 9$   
 $(3 + y) / 2 = 1$ ,  $3 + y = 2$ ,  $y = -1$   
The other endpoint of this line is at (9, -1).

Question: 272

The expression  
$$\frac{(x^2 + 2x - 15)}{(x^2 + 4x - 21)}$$
  
is equivalent to:

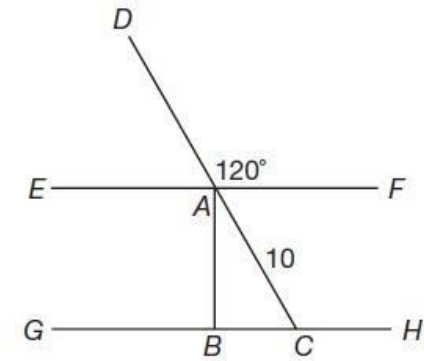
A.  $\frac{5}{7}$   
B.  $x + 5$   
C.  $(x + 5) / (x + 7)$   
D.  $-5 / (2x - 7)$   
E.  $(2x - 15) / (4x - 21)$

Answer: C

Explanation:  
Factor the numerator and denominator and cancel like factors:  $(x^2 + 2x - 15) = (x + 5) \times (x - 3)$   $(x^2 + 4x - 21) = (x + 7) \times (x - 3)$   
Cancel the  $(x - 3)$  term from the numerator and the denominator. The fraction reduces to  $(x + 5) / (x + 7)$ .

Question: 273

In the diagram above, lines EF and GH are parallel, and line AB is perpendicular to lines EF and GH. What is the length of line AB?



- A. 5  
B.  $5\sqrt{2}$   
C.  $5\sqrt{3}$   
D.  $10\sqrt{2}$



E.  $10\sqrt{3}$

Answer: C

Explanation:

Line AB is perpendicular to line BC, which makes triangle ABC a right triangle.  $\angle DAF$   
and

$\angle DHC$

are alternating angles, i.e. angles made by a pair of parallel lines cut by a transversal.  $\angle DAF \cong \angle DHC$   
, therefore,

$\angle DHC = 120^\circ$

.  $\angle DCH$  and  $\angle ACB$

form a line. There are  $180^\circ$  in a line, so the measure of  $\angle ACB = 180^\circ - 120^\circ = 60^\circ$

. Triangle ABC is a 30-60-90 right triangle, which means that the length of the hypotenuse, AC, is equal to twice the length of the leg opposite the 30-degree angle, BC. Therefore, the length of BC is  $10/2$ , or 5. The length of the leg opposite the 60-degree angle, AB, is  $\sqrt{3}$  times the length of the other leg, BC. Therefore, the length of AB is  $5\sqrt{3}$ .

Question: 274

The statement "Raphael runs every Sunday" is always true. Which of the following statements is also true?

A. If Raphael does not run, then it is not Sunday.

B. If Raphael runs, then it is Sunday.

C. If it is not Sunday, then Raphael does not run.

D. If it is Sunday, then Raphael does not run.

E. If it is Sunday, it is impossible to determine if Raphael runs.

Answer: A

Explanation:

The statement "Raphael runs every Sunday" is equivalent to "If it is Sunday, Raphael runs." The contra positive of a true statement is also true. The contra positive of "If it is Sunday, Raphael runs" is "If Raphael does not run, it is not Sunday."

Question: 275

Rob has six songs on his portable music player. How many different four-song orderings can Rob create?

A. 30

B. 60

C. 120

D. 360

E. 720

Answer: D

Explanation:

The order of the four songs is important. The orderings A, B, C, D and A, C, B, D contain the same four songs, but in different orders. Both orderings must be counted. The number of six-choose-four orderings is equal to  $6 \times 5 \times 4 \times 3 = 360$ .

Question: 276

A dormitory now houses 30 men and allows 42 square feet of space per man. If five more men are put into this dormitory, how much less space will each man have?

A. 5 square feet

B. 6 square feet

C. 7 square feet

D. 8 square feet

E. 9 square feet

Answer: B

Explanation:

$30 \text{ men} \times 42 \text{ square feet} = 1260 \text{ square feet of space}$ ;  $1260 \text{ square feet} \div 35 \text{ men} = 36 \text{ square feet}$ ;  $42 - 36 = 6$ , so each man will have 6 less square feet of space.

Question: 277

If 30% of  $r$  is equal to 75% of  $s$ , what is 50% of  $s$  if  $r = 30$ ?

- A. 4.5
- B. 6
- C. 9
- D. 12
- E. 15

Answer: B

Explanation:

If  $r = 30$ , 30% of  $r = 0.30 \times 30 = 9$ . 9 is equal to 75% of  $s$ . If  $0.75s = 9$ , then  $s = 12$ . 50% of  $s = 0.50 \times 12 = 6$ .

Question: 278

Line  $y = \frac{2}{3}x - 5$  is perpendicular to line:

- A.  $y = \frac{2}{3}x + 5$
- B.  $y = 5 - \frac{2}{3}x$
- C.  $y = -\frac{2}{3}x - 5$
- D.  $y = \frac{2}{3}x - 5$
- E.  $y = -\frac{2}{3}x + 5$

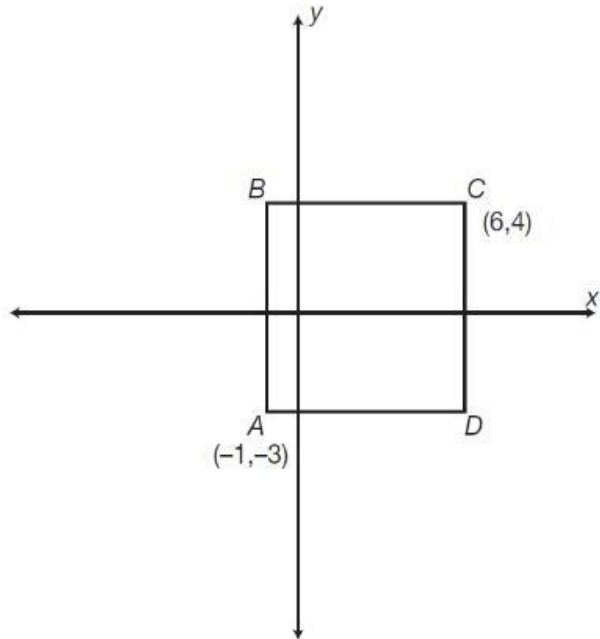
Answer: E

Explanation:

Perpendicular lines have slopes that are negative reciprocals of each other. The slope of the line given is  $\frac{2}{3}$ . The negative reciprocal of  $\frac{2}{3}$  is  $\frac{3}{2}$ . Every line with a slope of  $-\frac{3}{2}$  is perpendicular to the given line;  $y = -\frac{3}{2}x + 5$  is perpendicular to  $y = \frac{2}{3}x - 5$ .

Question: 279

In the graph above, ABCD is a square. What are the coordinates of point B?



- A. (-1, -4)
- B. (-1, 4)
- C. (-1, 6)
- D. (-3, 1)
- E. (-3, 4)

Answer: B

Explanation:

Point B is the same distance from the y-axis as point A, so the x-coordinate of point B is the same as the x-coordinate of point A (-1). Point B is the

same distance from the x-axis as point C, so the y-coordinate of point B is the same as the y-coordinate of point C (4). The coordinates of point B are (-1, 4).

Question: 280

If the expression

$$\frac{3}{2+x} = \frac{x-5}{2x}$$

, then one possible value of x could be:

- A. -1
- B. -2
- C. -5
- D. 1
- E. 2

Answer: A

Explanation:

Cross multiply and solve for x:

$$3 \times 2x = (2 + x) \times (x - 5) \quad 6x = x^2 - 3x - 10 \quad x^2 - 9x - 10 = 0 \quad (x - 10) \times (x + 1) \quad x = 10, x = -1$$

**QUESTION: 31**

If Sally can paint a house in 4 hours, and John can paint the same house in 6 hour, how long will it take for both of them to paint the house together?

- A. 2 hours and 24 minutes
- B. 3 hours and 12 minutes
- C. 3 hours and 44 minutes
- D. 4 hours and 10 minutes
- E. 4 hours and 33 minutes

**Answer: A**

**QUESTION: 32**

Employees of a discount appliance store receive an additional 20% off of the lowest price on an item. If an employee purchases a dishwasher during a 15% off sale, how much will he pay if the dishwasher originally cost \$450?

- A. \$280.90
- B. \$287
- C. \$292.50
- D. \$306
- E. \$333.89

**Answer: D**

**QUESTION: 33**

The sales price of a car is \$12,590, which is 20% off the original price. What is the original price?

- A. \$14,310.40
- B. \$14,990.90
- C. \$15,290.70
- D. \$15,737.50
- E. \$16,935.80

**Answer: D**

**QUESTION: 34**

Solve the following equation for A :  $\frac{2A}{3} = 8 + 4A$

- A. -2.4
- B. 2.4
- C. 1.3
- D. -1.3
- E. 0

**Answer: A**

**QUESTION: 35**

If Leah is 6 years older than Sue, and John is 5 years older than Leah, and the total of their ages is 41. Then how old is Sue?

- A. 8
- B. 10
- C. 14
- D. 19
- E. 21

**Answer: A**

**QUESTION: 36**

Alfred wants to invest \$4,000 at 6% simple interest rate for 5 years. How much interest will he receive?

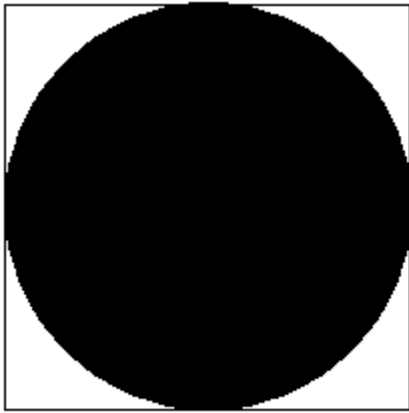
- A. \$240
- B. \$480
- C. \$720
- D. \$960
- E. \$1,200

**Answer: E**



**QUESTION:** 145

In the following figure, what is the area of the shaded circle inside of the square?



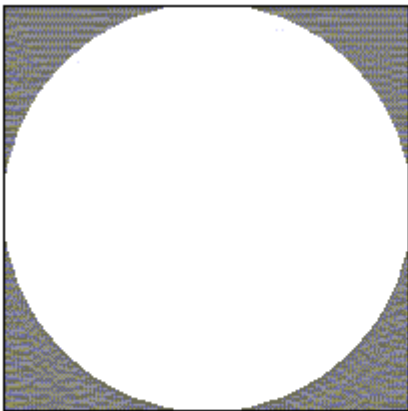
4

- A. 512
- B. 256
- C. 16
- D. 50.24
- E. 12.57

**Answer:** E

**QUESTION:** 146

In the figure below, determine the area of the shaded region of the figure.



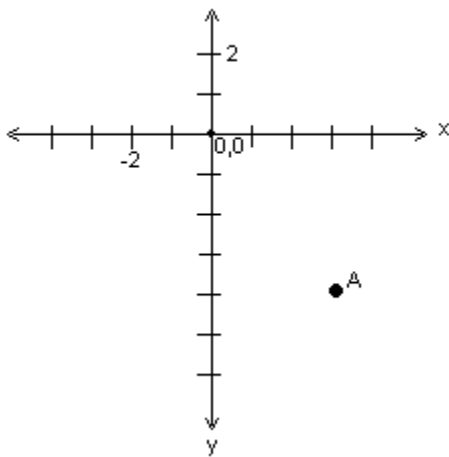
7

- A. 9.354
- B. 10.52
- C. 16.437
- D. 49
- E. 104.86

**Answer:** B

**QUESTION:** 147

What are the coordinates of point A on the following graph?



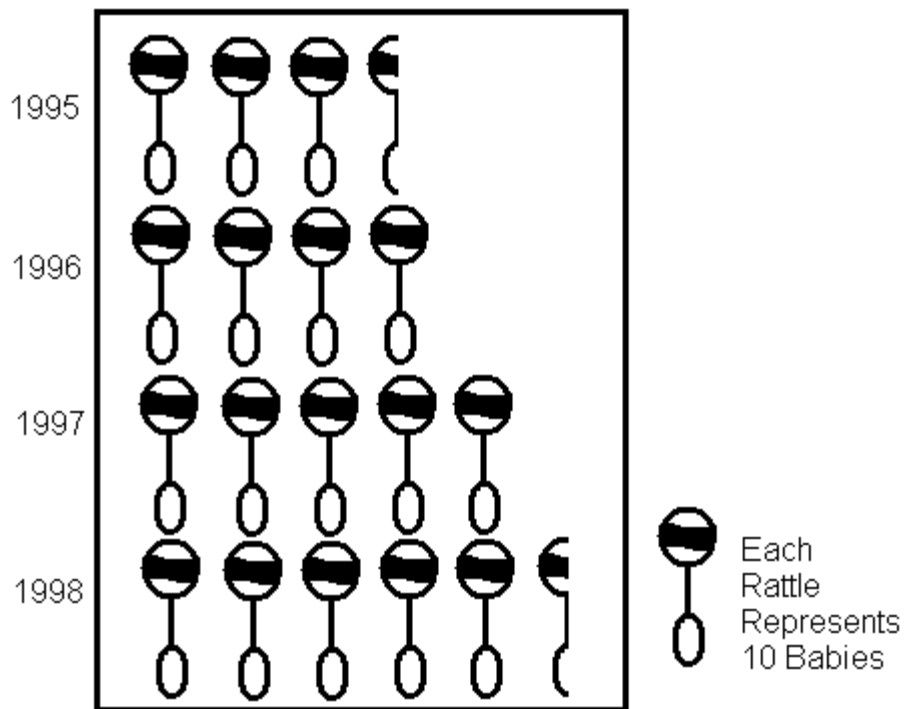
- A. (-3, -4)
- B. (-4, 3)
- C. (3, -4)
- D. (-4, -3)
- E. (3, 4)

**Answer:** C

**QUESTION:** 148

What was the average number of babies that Dr. Jones delivered each year from 1995 to 1998?

The Number of Babies Delivered By  
Dr. Jones from 1995 to 1998



- A. 35
- B. 40
- C. 45
- D. 50
- E. 55

**Answer:** C

**QUESTION:** 149

How many babies did Dr. Jones deliver in 1998?

- A. 25
- B. 35
- C. 45
- D. 55
- E. 65

**Answer:** D

**QUESTION: 150**

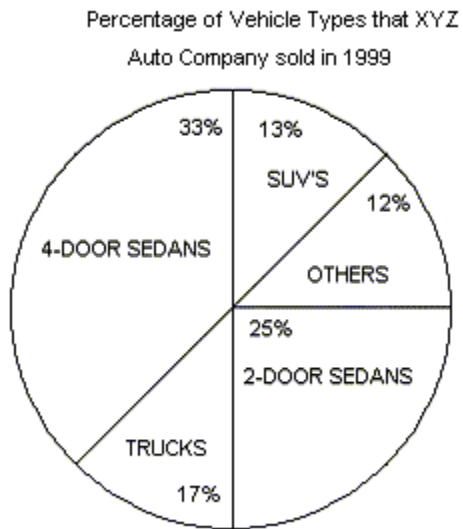
If Dr. Jones delivered 85 babies in 1999, how many rattles would represent this number?

- A.  $6\frac{1}{2}$
- B. 7
- C.  $7\frac{1}{2}$
- D. 8
- E.  $8\frac{1}{2}$

**Answer: E**

**QUESTION: 151**

If XYZ Auto Company sold 23,000 vehicles in 1999, how many were SUV's?



- A. 2,990
- B. 3,030
- C. 3,450
- D. 4,760
- E. 4,775

**Answer: A**

**QUESTION: 152**

If 7,650 trucks were sold in 1999, how many total vehicles were sold in 1999 by XYZ Auto Company?

- A. 35,000
- B. 40,000
- C. 45,000
- D. 50,000
- E. 55,000

**Answer: C**

**QUESTION: 153**

If 3,750 2-door sedans were sold in 1999, then how many 4-door sedans were sold in 1999 by XYZ Auto Company?

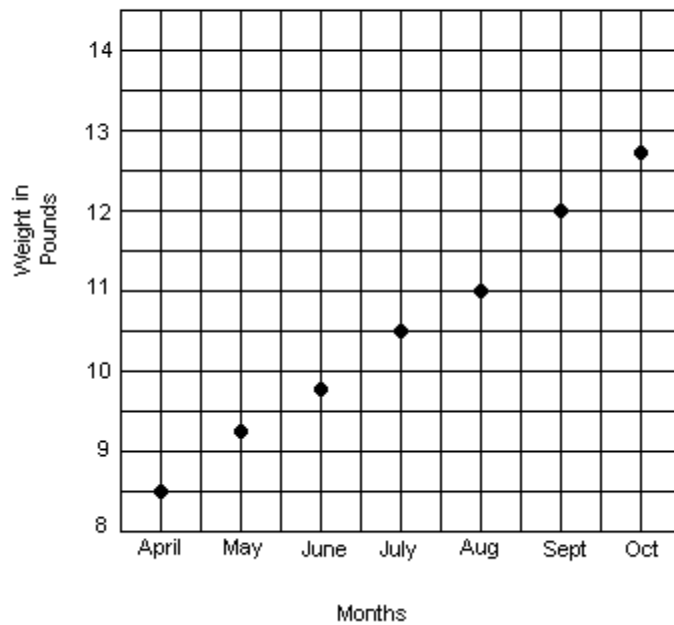
- A. 3,578
- B. 4,950
- C. 5,120
- D. 5,670
- E. 5,845

**Answer: B**

**QUESTION: 154**

How much did the infant gain in the first month of life?

Infant Weight Gain in Pounds  
Over First Six Months of Life



- A. 6 ounces
- B. 12 ounces
- C. 15 ounces
- D. 8 lbs 8 ounces
- E. 9 lbs 4 ounces

**Answer:** B

**QUESTION:** 155

What was the average weight of the infant from April to October, rounded to the nearest ounce?

- A. 10 lbs
- B. 10 lbs 5 ounces
- C. 10 lbs 9 ounces
- D. 11 lbs 5 ounces
- E. 11 lbs 9 ounces

**Answer:** C

**QUESTION:** 156

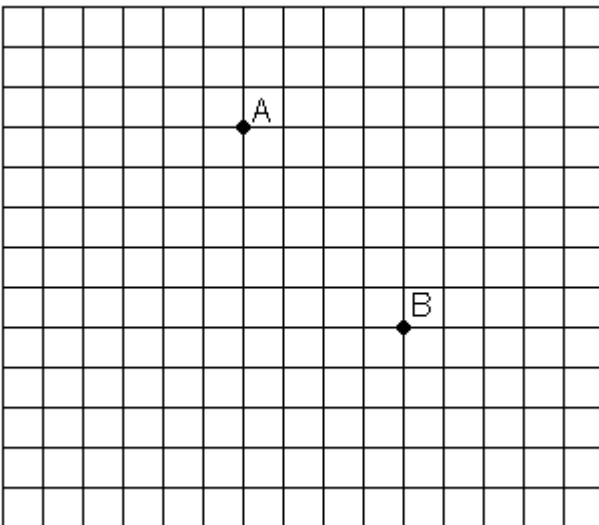
Between which two months did the infant gain the most weight?

- A. April and May
- B. June and July
- C. July and August
- D. August and September
- E. September and October

**Answer:** D

**QUESTION:** 157

In the graph below, no axes or origin is shown. If point B's coordinates are (10,3), which of the following coordinates would most likely be A's?



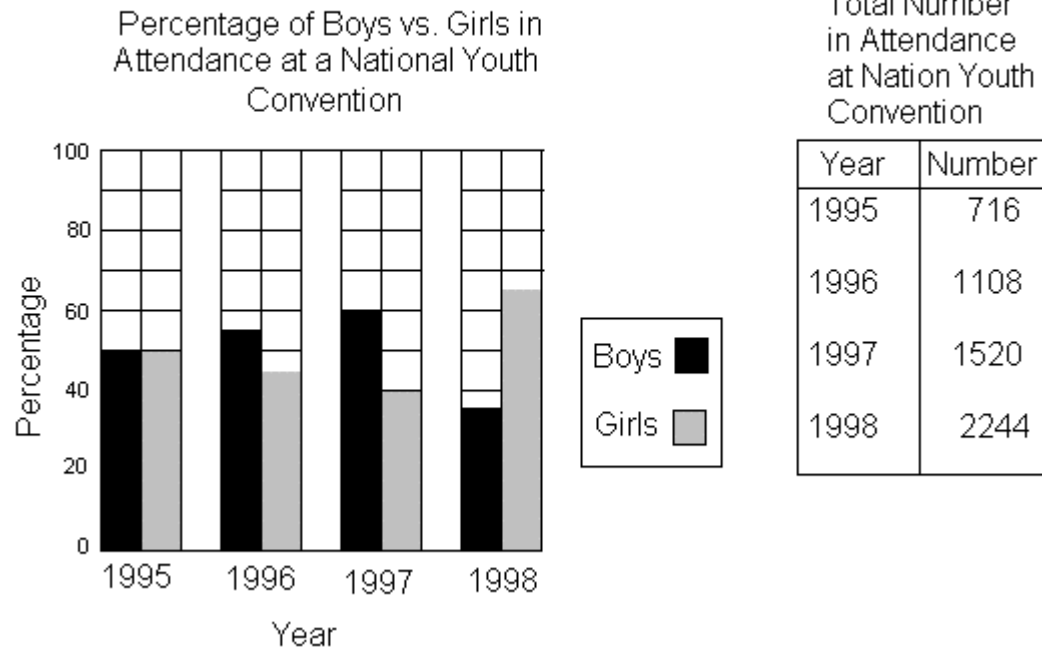
- A. (17, -2)
- B. (10, 6)
- C. (6, 8)
- D. (-10, 3)
- E. (-2, -17)

**Answer:** C



**QUESTION:** 158

How many boys attended the 1995 convention?



- A. 358
- B. 390
- C. 407
- D. 540
- E. 716

**Answer:** A

Details: Advanced Reading Practice 4

Refer to the following passage

The Galapagos Islands are in the Pacific Ocean, off the western coast of South America. They are a rocky, lonely spot, but they are also one of the most unusual places in the world. One reason is that they are the home of some of the last giant tortoises left on earth. Weighing hundreds of pounds, these tortoises, or land turtles, wander slowly around the rocks and sand of the islands. Strangely, each of these islands has its own particular kinds of tortoises. There are seven different kinds of tortoises on the eight islands, each kind being slightly different from the other. Hundreds of years ago, thousands of tortoises wandered around these islands. However, all that changed when people started landing there. When people first arrived in 1535, their ships had no refrigerators. This meant that fresh food was always a problem for the sailors on board. The giant tortoises provided an easy solution to this problem. Ships would anchor off the islands, and crews would row ashore and seize as many tortoises as they could. Once the animals were aboard the ship, the sailors would roll the tortoises onto their backs. The tortoises were completely helpless once on their backs, so they could only lie there until used for soups and stews. Almost 100,000 tortoises were carried off in this way. The tortoises faced other problems, too. Soon after the first ships, settlers arrived, bringing pigs, goats, donkeys, dogs and cats. All of these animals ruined life for the tortoises. Donkeys and goats ate all the plants that the tortoises usually fed on, while the pigs, dogs and cats consumed thousands of baby tortoises each year. Within a few years, it was hard to find any tortoise eggs-or even any baby tortoises. By the early 1900s, people began to worry that the last of the tortoises would soon die out. No one, however, seemed to care enough to do anything about the problem. More and more tortoises disappeared, even though sailors no longer needed them for food. For another 50 years, this situation continued. Finally, in the 1950s, scientists decided that something must be done. The first part of their plan was to remove as many cats, dogs and other animals as they could from the islands. Next, they tried to make sure that more baby tortoises would be born. To do this, they started looking for wild tortoise eggs. They gathered the eggs and put them in safe containers. When the eggs hatched, the scientists raised the tortoises in special pens. Both the eggs and tortoises were numbered so that the scientists knew exactly which kinds of tortoises they had and which island they came from. Once the tortoises were old enough and big enough to take care of themselves, the scientists took them back to their islands and set them loose. This slow, hard work continues today, and, thanks to it, the number of tortoises is now increasing every year. Perhaps these wonderful animals will not disappear after all.

**QUESTION:** 225

What happened first?

- A. Sailors took tortoises aboard ships.
- B. The tortoise meat was used for soups and stews.
- C. Tortoises were put onto their backs.
- D. Settlers brought other animals to the islands.
- E. Pigs had been all the sailors had to eat.

**Answer:** A

**QUESTION:** 226

What happened soon after people brought animals to the islands?

- A. Tortoise eggs were kept in safe containers.
- B. Scientists took away as many animals as they could.
- C. The animals ate the tortoises' food and eggs.
- D. The tortoises fought with the other animals.
- E. The tortoises continued to wander freely.

**Answer:** C

**QUESTION:** 227

When did people start to do something to save the tortoises?

- A. In the 1500s
- B. In the 1950s
- C. In the early 1900s
- D. In the 1960s
- E. In the 1400s

**Answer:** B

**QUESTION:** 228

What happens right after the tortoise eggs hatch?

- A. The scientists take the tortoises back to their islands.
- B. The scientists get rid of cats, dogs, and other animals.
- C. The sailors use the tortoises for food.
- D. The scientists raise the tortoises in special pens.
- E. The scientists encourage the villagers to help.

**Answer:** D

**QUESTION:** 229

What happened last?

- A. The tortoises began to disappear.
- B. The number of tortoises began to grow.
- C. Scientists took away other animals.
- D. Tortoises were taken back to their home islands.
- E. The number of tortoises began to decrease.

**Answer:** B

Section 18: Sec Eighteen (230 to 233)

Details: Advanced Reading Practice 5

The first person in the group starts off by naming anything that is geographical. It could be a city, state, country, river, lake, or any proper geographical term. For example, the person might say, "Boston." The second person has 10 seconds to think of how the word ends and come up with another geographical term starting with that letter. The second participant might say, "Norway," because the geographical term has to start with "N." The third person would have to choose a word beginning with "Y." If a player fails to think of a correct answer within the time limit, that player is out of the game. The last person to survive is the champion.

**QUESTION:** 230

This game may help you with...

- A. History.
- B. Music.
- C. Geography.
- D. Sports.
- E. Current events.

**Answer:** C

**QUESTION:** 231

The person trying to answer needs...

- A. No time limit.
- B. To know geography only.
- C. To ignore the last letters of words.
- D. To know something about spelling and geography.

**QUESTION: 274**

Mail-order shopping can be convenient and timesaving with appropriate precautions, it is safe as well.

- A. can be convenient and timesaving
- B. can be convenient and timesaving;
- C. should be convenient and time saving;
- D. could be convenient and time saving;
- E. can be convenient and time-saving;

**Answer: E**

**QUESTION: 275**

Among the many fields of science, no matter what turns you on, there are several fields of study.

- A. science, no matter what turns you on,
- B. Science, no matter what turns you on,
- C. Science, no matter which you chose,
- D. Science, no matter which of these you chose-
- E. science, no matter which you choose,

**Answer: E**

**QUESTION: 276**

The fact that boxing is known to cause head injuries and brain damage should lead us to inform the public and push for a ban on boxing.

- A. should lead us to inform
- B. could lead us to inform
- C. should of led us to inform
- D. will lead us to inform
- E. should have led us to inform,

**Answer: A**

**QUESTION: 277**

The first part of the test was on chemistry, the second on mathematics, and the third on english.

- A. on mathematics, and the third on english.
- B. on mathematics; and the third on English.
- C. on Mathematics; and the third on English.
- D. on mathematics, and the third on English.
- E. on mathematics: and the third on English.

**Answer:** A

**QUESTION:** 278

The Diary of Anne Frank showed a young girl's courage during two years of hiding.

- A. showed a young girl's courage
- B. shows a young girl's courage
- C. did show a young girls courage
- D. has shown a young girl's courage
- E. showed a young girls courage

**Answer:** B

**QUESTION:** 279

In August my parents will be married for twenty-five years.

- A. will be married for twenty-five years.
- B. shall have been married for twenty-five years.
- C. will have been married for twenty-five years.
- D. will be married for twenty five years.
- E. will have married for twenty-five years.

**Answer:** C



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