Question 1:

Last month a certain music club offered a discount to preferred customers. After the first compact disc purchased, preferred customers paid
(3.99 for each additional compact disc purchased. If a preferred customer purchased a total of 6 compact discs and paid
)15.95 for the first compact disc, then the dollar amount that the customer paid for the 6 compact discs is equivalent to which of the following?

(A) 5(4.00) + 15.90

(B) 5(4.00) + 15.95

(C) 5(4.00) + 16.00

(D) 5(4.00 -- 0.01) + 15.90

(E) 5(4.00 -- 0.05) + 15.95

Correct Answer:

(A) 5(4.00) + 15.90

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Question 2:

The average (arithmetic mean) of the integers from 200 to 400, inclusive, is how much greater than the average of the integers from 50 to 100, inclusive?

(A) 150

(B) 175

(C) 200

(D) 225

(E) 300

Correct Answer:

(D) 225

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Question 3:

The sequence $a_1, a_2, a_3, \ldots, a_n, \ldots$ is such that $a_n = \frac{a_{n-1}+a_{n-2}}{2}$ for all $n \geq 3$. If $a_3 = 4$ and $a_5 = 20$, what is the value of a_6?

(A) 12

(B) 16

(C) 20

(D) 24

(E) 28

Correct Answer:

(E) 28

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Question 4:

Among a group of 2,500 people, 35 percent invest in municipal bonds, 18 percent invest in oil stocks, and 7 percent invest in both municipal bonds and oil stocks. If 1 person is to be randomly selected from the 2,500 people, what is the probability that the person selected will be one who invests in municipal bonds but NOT in oil stocks?

(A) $\frac{9}{50}$

(B) $\frac{7}{25}$

(C) $\frac{7}{20}$

(D) $\frac{21}{50}$

(E) $\frac{27}{50}$

Correct Answer:

(B) $\frac{7}{25}$

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Question 5:

A closed cylindrical tank contains 36π cubic feet of water and is filled to half its capacity. When the tank is placed upright on its circular base on level ground, the height of the water in the tank is 4 feet. When the tank is placed on its side on level ground, what is the height, in feet, of the surface of the water above the ground?

(A) 2

(B) 3

(C) 4

(D) 6

(E) 9

Correct Answer:

(B) 3

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Question 6:

A marketing firm determined that, of 200 households surveyed, 80 used neither Brand A nor Brand B soap, 60 used only Brand A soap, and for every household that used both brands of soap, 3 used only Brand B soap. How many of the 200 households surveyed used both brands of soap?

(A) 15

(B) 20

(C) 30

(D) 40

(E) 45

Correct Answer:

(A) 15

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Question 7:

A certain club has 10 members, including Harry. One of the 10 members is to be chosen at random to be the president, one of the remaining 9 members is to be chosen at random to be the secretary, and one of the

remaining 8 members is to be chosen at random to be the treasurer. What is the probability that Harry will be either the member chosen to be the secretary or the member chosen to be the treasurer?

(A) $\frac{1}{720}$

(B) $\frac{1}{80}$

(C) $\frac{1}{10}$

(D) $\frac{1}{9}$

(E) $\frac{1}{5}$

Correct Answer:

(E) $\frac{1}{5}$

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Question 8:

If a certain toy store's revenue in November was $\frac{2}{5}$ of its revenue in December and its revenue in January was $\frac{1}{4}$ of its revenue in November, then the store's revenue in December was how many times the average (arithmetic mean) of its revenues in November and January?

(A) $\frac{1}{4}$

(B) $\frac{1}{2}$

(C) $\frac{2}{3}$

(D) 2

(E) 4

Correct Answer:

(E) 4

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Question 9:

A researcher computed the mean, the median, and the standard deviation for a set of performance scores. If 5 were to be added to each score, which of these three statistics would change?

(A) The mean only

(B) The median only

(C) The standard deviation only

(D) The mean and the median

(E) The mean and the standard deviation

Correct Answer:

(D) The mean and the median

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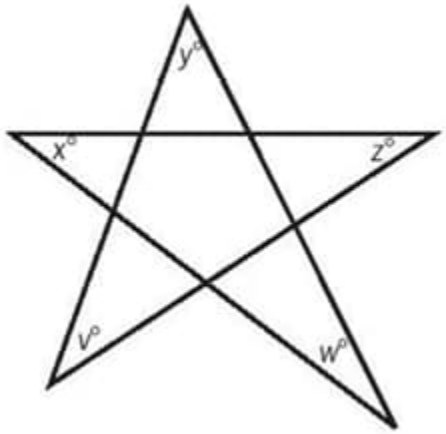
Question 10:

In the figure shown, what is the value of $v + x + y + z + w$?



(A) 45

(B) 90

(C) 180

(D) 270

(E) 360

Correct Answer:

(C) 180

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Question 11:

Of the three-digit integers greater than 700, how many have two digits that are equal to each other and the remaining digit different from the other two?

(A) 90

(B) 82

(C) 80

(D) 45

(E) 36

Correct Answer:

(C) 80

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Question 12:

Positive integer y is 50 percent of 50 percent of positive integer x, and y percent of x equals 100. What is the value of x?

(A) 50

(B) 100

(C) 200

(D) 1,000

(E) 2,000

Correct Answer:

(C) 200

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Question 13:

If s and t are positive integers such that $\frac{s}{t} = 64.12$, which of the following could be the remainder when s is divided by t?

(A) 2

(B) 4

(C) 8

(D) 20

(E) 45

Correct Answer:

(E) 45

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Question 14:

Of the 84 parents who attended a meeting at a school, 35 volunteered to supervise children during the school picnic and 11 volunteered both to supervise children during the picnic and to bring refreshments to the picnic. If the number of parents who volunteered to bring refreshments was 1.5 times the number of parents who neither volunteered to supervise children during the picnic nor volunteered to bring refreshments, how many of the parents volunteered to bring refreshments?

(A) 25

(B) 36

(C) 38

(D) 42

(E) 45

Correct Answer:

(B) 36

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Question 15:

The product of all the prime numbers less than 20 is closest to which of the following powers of 10?

(A) 10^9

(B) 10^8

(C) 10^7

(D) 10^6

(E) 10^5

Correct Answer:

(C) 10^7

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Question 16:

If $\sqrt{3-2x} = \sqrt{2x+1}$, then $4x^2 =$

(A) 1

(B) 4

(C) 2 -- 2x

(D) 4x -- 2

(E) 6x -- 1

Correct Answer:

(A) 1

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Question 17:

If $n = \frac{16}{81}$, what is the value of $\sqrt{n}$?

(Note: The OCR included a typo, which has been corrected to the most logical question based on the options.)

(A) $\frac{1}{9}$

(B) $\frac{1}{4}$

(C) $\frac{4}{9}$

(D) $\frac{2}{3}$

(E) $\frac{9}{2}$

Correct Answer:

(C) $\frac{4}{9}$

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Question 18:

If n is the product of the integers from 1 to 8, inclusive, how many different prime factors greater than 1 does n have?

(A) Four

(B) Five

(C) Six

(D) Seven

(E) Eight

Correct Answer:

(A) Four

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Question 19:

If k is an integer and $2 < k < 7$, for how many different values of k is there a triangle with sides of lengths 2, 7, and k?

(A) One

(B) Two

(C) Three

(D) Four

(E) Five

Correct Answer:

(A) One

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Question 20:

A right circular cone is inscribed in a hemisphere so that the base of the cone coincides with the base of the hemisphere. What is the ratio of the height of the cone to the radius of the hemisphere?

(A) $\sqrt{3} : 1$

(B) 1:1

(C) $\frac{1}{2} : 1$

(D) $\sqrt{2} : 1$

(E) 2:1

Correct Answer:

(B) 1:1

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Question 21:

John deposited
(10,000 to open a new savings account that earned 4 percent annual interest, compounded quarterly. If there were no other transactions in the account, what was the amount of money in John's account 6 months after the account was opened?

(A)
)10,100

(B)
(10,101

(C)
)10,200

(D)
(10,201

(E)
)10,400

Correct Answer:

(D)
(10,201

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Question 22:

A container in the shape of a right circular cylinder is $\frac{1}{2}$ full of water. If the volume of water in the container is 36 cubic inches and the height of the container is 9 inches, what is the diameter of the base of the cylinder, in inches?

(Note: The fraction in the image is blurry but is assumed to be 1/2 to match one of the answer choices.)

(A) $\frac{16}{9\pi}$

(B) $\frac{4}{\sqrt{\pi}}$

(C) $\sqrt{\frac{12}{\pi}}$

(D) $\sqrt{\frac{2}{\pi}}$

(E) $4\sqrt{\frac{2}{\pi}}$

Correct Answer:

(E) $4\sqrt{\frac{2}{\pi}}$

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Question 23:

If the positive integer x is a multiple of 4 and the positive integer y is a multiple of 6, then xy must be a multiple of which of the following?

I. 8

II. 12

III. 18

(A) II only

(B) I and II only

(C) I and III only

(D) II and III only

(E) I, II, and III

Correct Answer:

(B) I and II only

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Question 24:

Aaron will jog from home at x miles per hour and then walk back home by the same route at y miles per hour. How many miles from home can Aaron jog so that he spends a total of t hours jogging and walking?

(A) $\frac{xt}{y}$

(B) $\frac{x+t}{xy}$

(C) $\frac{xyt}{x+y}$

(D) $\frac{x+y+t}{xy}$

(E) $\frac{y+t}{x} - \frac{t}{y}$

Correct Answer:

(C) $\frac{xyt}{x+y}$

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