

Math Section

Q1:

A student's average (arithmetic mean) test score on 4 tests is 78. What must be the student's score on a 5th test for the student's average score on the 5 tests to be 80?

- A. 80
- B. 82
- C. 84
- D. 86
- E. 88

Answer:

Q2:

If 2 different representatives are to be selected at random from a group of 10 employees and if p is the probability that both representatives selected will be women, is $p > \frac{1}{2}$?

(1) More than $\frac{1}{2}$ of the 10 employees are women.

(2) The probability that both representatives selected will be men is less than $\frac{1}{10}$.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q3:

Material A costs \$3 per kilogram, and material B costs \$5 per kilogram. If 10 kilograms of material K consists of x kilograms of material A and y kilograms of material B, is $x > y$?

(1) $y > 4$

(2) The cost of the 10 kilograms of material K is less than \$40.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q4:

For a recent play performance, the ticket prices were \$25 per adult and \$15 per child. A total of 500 tickets were sold for the performance. How many of the tickets sold were for adults?

- (1) Revenue from ticket sales for this performance totaled \$10,500.
- (2) The average (arithmetic mean) price per ticket sold was \$21.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q5:

From a group of 3 boys and 3 girls, 4 children are to be randomly selected. What is the probability that equal numbers of boys and girls will be selected?

- A. $\frac{1}{10}$
- B. $\frac{4}{9}$
- C. $\frac{1}{2}$
- D. $\frac{3}{5}$
- E. $\frac{2}{3}$

Answer:

Q6:

A certain company assigns employees to offices in such a way that some of the offices can be empty and more than one employee can be assigned to an office. In how many ways can the company assign 3 employees to 2 different offices?

- A. 5
- B. 6
- C. 7
- D. 8
- E. 9

Answer:

Q7:

$$\sqrt{[2\sqrt{63} + 2/(8+3\sqrt{7})]} =$$

- A. $8 + 3\sqrt{7}$
- B. $4 + 3\sqrt{7}$
- C. 8
- D. 4
- E. $\sqrt{7}$

Answer:

Q8:

The infinite sequence $a_1, a_2, \dots, a_n, \dots$ is such that $a_1 = 2$, $a_2 = -3$, $a_3 = 5$, $a_4 = -1$, and $a_n = a_{n-4}$ for $n > 4$. What is the sum of the first 97 terms of the sequence?

- A. 72
- B. 74
- C. 75
- D. 78
- E. 80

Answer:

Q9:

If x and y are positive integers and $1 + x + y + xy = 15$, what is the value of $x + y$?

- A. 3
- B. 5
- C. 6
- D. 8
- E. 9

Answer:

Q10:

If Ann saves x dollars each week and Beth saves y dollars each week, what is the total amount that they save per week?

- (1) Beth saves \$5 more per week than Ann saves per week.
- (2) It takes Ann 6 weeks to save the same amount that Beth saves in 5 weeks.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q11:

If x is a positive integer, is the remainder 0 when $3^x + 1$ is divided by 10?

- (1) $x = 4n + 2$, where n is a positive integer.
- (2) $x > 4$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q12:

If r , s , and w are positive numbers such that $w = 60r + 80s$ and $r + s = 1$, is $w < 70$?

- (1) $r > 0.5$
- (2) $r > s$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q13:

What is the value of the integer n ?

- (1) $n(n + 2) = 15$
- (2) $(n + 2)^n = 125$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q14:

If a code word is defined to be a sequence of different letters chosen from the 10 letters $A, B, C, D, E, F, G, H, I$, and J , what is the ratio of the number of 5-letter code words to the number of 4-letter code words?

- A. 5 to 4
- B. 3 to 2
- C. 2 to 1

- D. 5 to 1
- E. 6 to 1

Answer:

Q15:

Which of the following fractions has a decimal equivalent that is a terminating decimal?

- A. $\frac{10}{189}$
- B. $\frac{15}{196}$
- C. $\frac{16}{225}$
- D. $\frac{25}{144}$
- E. $\frac{39}{128}$

Answer:

Q16:

For any integer k greater than 1, the symbol k^* denotes the product of all the fractions of the form $\frac{1}{t}$, where t is an integer between 1 and k , inclusive. What is the value of $\frac{5^*}{4^*}$?

- A. 5
- B. $\frac{5}{4}$
- C. $\frac{4}{5}$
- D. $\frac{1}{4}$
- E. $\frac{1}{5}$

Answer:

Q17:

Company S produces two kinds of stereos: basic and deluxe. Of the stereos produced by Company S last month, $\frac{2}{3}$ were basic and the rest were deluxe. If it takes $\frac{7}{5}$ as many hours to produce a deluxe stereo as it does to produce a basic stereo, then the number of hours it took to produce the deluxe stereos last month was what fraction of the total number of hours it took to produce all the stereos?

- A. $\frac{7}{17}$
- B. $\frac{14}{31}$
- C. $\frac{7}{15}$
- D. $\frac{17}{35}$
- E. $\frac{1}{2}$

Answer:

Q18:

A certain machine produces 1,000 units of product P per hour. Working continuously at this constant rate, this machine will produce how many units of product P in 7 days?

- A. 7,000
- B. 24,000
- C. 40,000
- D. 100,000
- E. 168,000

Answer:

Q19:

If $5^x - 5^{x-3} = (124)(5^y)$, what is y in terms of x ?

- A. x
- B. $x - 6$
- C. $x - 3$
- D. $2x + 3$
- E. $2x + 6$

Answer:

Q20:

Lines k and m are parallel to each other. Is the slope of line k positive?

- (1) Line k passes through the point $(3, 2)$.
- (2) Line m passes through the point $(-3, 2)$.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q21:

Theater *M* has 25 rows with 27 seats in each row. How many of the seats were occupied during a certain show?

- (1) During the show, there was an average (arithmetic mean) of 10 unoccupied seats per row for the front 20 rows.
- (2) During the show, there was an average (arithmetic mean) of 20 unoccupied seats per row for the back 15 rows.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
- C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
- D. **EACH** statement **ALONE** is sufficient.
- E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q22:

The number of defects in the first five cars to come through a new production line are 9, 7, 10, 4, and 6, respectively. If the sixth car through the production line has either 3, 7, or 12 defects, for which of these values does the mean number of defects per car for the first six cars equal the median?

- I. 3
- II. 7
- III. 12

- A. I only
- B. II only
- C. III only
- D. I and III only
- E. I, II, and III

Answer:

Q23:

+	x	y	z	
d			m	
e		n		
f				

The figure above shows two entries, indicated by m and n , in an addition table. What is the value of $n + m$?

(1) $d + y = -3$

(2) $e + z = 12$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
D. **EACH** statement **ALONE** is sufficient.
E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q24:

On a map Town G is 10 centimeters due east of Town H and 8 centimeters due south of Town J . Which of the following is closest to the straight-line distance, in centimeters, between Town H and Town J on the map?

- A. 6
B. 13
C. 18
D. 20
E. 24

Answer:

Q25:

If x is the product of the positive integers from 1 to 8, inclusive, and if i , k , m , and p are positive integers such that $x = 2^i 3^k 5^m 7^p$, then $i + k + m + p =$

- A. 4
B. 7
C. 8
D. 11
E. 12

Answer:

Q26:

In the xy -plane, the line with equation $ax + by + c = 0$, where $abc \neq 0$, has slope $\frac{2}{3}$. What is the value of b ?

- (1) $a = 4$
(2) $c = -6$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.

C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.

D. **EACH** statement **ALONE** is sufficient.

E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q27:

The total cost of an office dinner was shared equally by k of the n employees who attended the dinner. What was the total cost of the dinner?

- (1) Each of the k employees who shared the cost of the dinner paid \$19.
- (2) If the total cost of the dinner had been shared equally by $k + 1$ of the n employees who attended the dinner, each of the $k + 1$ employees would have paid \$18.

A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.

B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.

C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.

D. **EACH** statement **ALONE** is sufficient.

E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q28:

This year Henry will save a certain amount of his income, and he will spend the rest. Next year Henry will have no income, but for each dollar that he saves this year, he will have $1 + r$ dollars available to spend. In terms of r , what fraction of his income should Henry save this year so that next year the amount he was available to spend will be equal to half the amount that he spends this year?

- A. $\frac{1}{r + 2}$
- B. $\frac{1}{2r + 2}$
- C. $\frac{1}{3r + 2}$
- D. $\frac{1}{r + 3}$
- E. $\frac{1}{2r + 3}$

Answer:

Q29:

Leo can buy a certain computer for p_1 dollars in State A, where the sales tax is t_1 percent, or he can buy the same computer for p_2 dollars in State B, where the sales tax is t_2 percent. Is the total cost of the computer greater in State A than in State B?

- (1) $t_1 > t_2$
 (2) $p_1 t_1 > p_2 t_2$

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
 B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
 C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
 D. **EACH** statement **ALONE** is sufficient.
 E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q30:

If $x < 0$ and $0 < y < 1$, which of the following has the greatest value?

- A. x^2
 B. $(xy)^2$
 C. $(\frac{x}{y})^2$
 D. $\frac{x^2}{y}$
 E. $x^2 y$

Answer:

Q31:

Three printing presses, R , S , and T , working together at their respective constant rates, can do a certain printing job in 4 hours. S and T , working together at their respective constant rates, can do the same job in 5 hours. How many hours would it take R , working alone at its constant rate, to do the same job?

- A. 8
 B. 10
 C. 12
 D. 15
 E. 20

Answer:

Q32:

Is x an odd integer?

- (1) $x + 3$ is an even integer.
 (2) $\frac{x}{3}$ is an odd integer.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
 B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.

C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.

D. **EACH** statement **ALONE** is sufficient.

E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q33:

The surface of a certain planet reflects 80 percent of the light that strikes it. The clouds around the planet then absorb 40 percent of the reflected light. What percent of the light that strikes the planet is reflected from the surface and passes through the clouds without being absorbed?

A. 32%

B. 40%

C. 48%

D. 60%

E. 88%

Answer:

Q34:

The selling price of an article is equal to the cost of the article plus the markup. The markup on a certain television set is what percent of the selling price?

(1) The markup on the television set is 25 percent of the cost.

(2) The selling price of the television set is \$250.

A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.

B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.

C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.

D. **EACH** statement **ALONE** is sufficient.

E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q35:

If $\frac{7x}{3} + a = 8$ and $a > 8$, then, in terms of a , $\frac{3x}{7} =$

- A. $\frac{1}{a} + \frac{1}{8}$
 B. $\frac{1}{8} - \frac{1}{a}$
 C. $\frac{1}{8-a}$
 D. $\frac{3}{7}(8-a)$
 E. $\frac{9}{49}(8-a)$

Answer:

Q36:

What is the sum of a certain pair of consecutive odd integers?

- (1) At least one of the integers is negative.
 (2) At least one of the integers is positive.

- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
 B. Statement (2) **ALONE** is sufficient, but statement (1) alone is not sufficient.
 C. **BOTH** statements **TOGETHER** are sufficient, but **NEITHER** statement **ALONE** is sufficient.
 D. **EACH** statement **ALONE** is sufficient.
 E. Statements (1) and (2) **TOGETHER** are **NOT** sufficient.

Answer:

Q37:

If an automobile averaged 22.5 miles per gallon of gasoline, approximately how many kilometers per liter of gasoline did the automobile average? (1 mile = 1.6 kilometers and 1 gallon = 3.8 liters, both rounded to the nearest tenth.)

- A. 3.7
 B. 9.5
 C. 31.4
 D. 53.4
 E. 136.8

Answer:

Answers:

EEBDD, DDBCC, ADBEE, EAECE, EDCBD, ACEEC, EDCAE, CB