

MATH GWD 24

1.

In the xy -plane, line n passes through the origin and has slope 4. If points $(1, c)$ and $(d, 2)$ are on line n , what is the value of $\frac{c}{d}$?

(A)0.25 (B)0.5 (C)2 (D)4 (E)8

2.

For each positive integer n , the integer n^* is defined by $n^* = n^2 + 1$. What is the value of the positive integer k ?

- (1) When k is divided by 4, the remainder is 1.
- (2) $18 \leq k^* \leq 36$

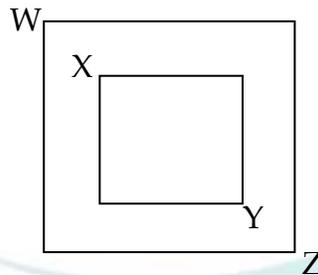
- A. Statement (1) **ALONE** is sufficient, but statement (2) alone is not sufficient.
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3.

When the positive integer n is divided by 13, the remainder is 4. What is the remainder when $2n - 3$ is divided by 13?

(A)1 (B)3 (C)5 (D)7 (E)9

4.



Note: Figure not drawn to scale.

The figure shows two squares, and the points W , X , Y , and Z lie on a line. If the distance between W and X is equal to the distance between X and Y and to the distance between Y and Z , then the area of the smaller square is what fraction of the area of the larger square?

(A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{8}$ (E) $\frac{1}{9}$

5.

A certain database charges users a registration fee of x dollars, and it charges registered users y dollars per file downloaded. If there are no other charges for users of this database, what is the amount of the registration fee?

- (1) The total charge to download 50 files is \$150, including the registration fee.
- (2) The total charge to download 100 files is \$225, including the registration fee.

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6.

Is $h^2 = h$?

- (1) $h + h = h$
- (2) $h - h = h$

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7.

Is m between 35 and 75?

- (1) m is between 40 and 80.
- (2) m is between 50 and 90.

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8.

The average (arithmetic mean) cost per book for the 12 books on a certain table is k dollars. If a book that costs 18 dollars is removed from the table and replaced by a book that costs 42 dollars, then in terms of k , what will be the average cost per book, in dollars, for the books on the table?

- (A) $k + 2$ (B) $k - 2$ (C) $12 + \frac{24}{k}$ (D) $12 - \frac{24}{k}$ (E) $12k - 6$
-

9.

If k is a positive integer, what is the remainder when 2^k is divided by 10 ?

- (1) k is divisible by 10.
- (2) k is divisible by 4.

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10.

To be eligible for retirement benefits at the Omega Corporation, the sum of an employee's age, in years, and the number of years of employment must be at least 70. If x , where $x < 70$, is a certain employee's age when hired and y is the minimum number of years of employment required for the employee to be eligible for retirement benefits, which of the following equations represents the relationship between x and y ?

- (A) $xy = 70$ (B) $x + y = 70$ (C) $2x + y = 70$ (D) $x + 2y = 70$ (E) $2x + 2y = 70$
-

11.

$10,000^{100}$ is equivalent to which of the following?

- I. $(100)^2(100)^{100}$
- II. 100^{200}
- III. 10^{400}

- (A) None (B) I only (C) III only (D) II and III only (E) I, II, and III
-

12.

Chris mixed 3 pounds of raisins with 4 pounds of nuts. If a pound of nuts costs 3 times as much as a pound of raisins, then the total cost of the raisins was what fraction of the total cost of the mixture?

- (A) $\frac{3}{7}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$ (E) $\frac{1}{7}$
-

13.

At a certain bookstore, the regular price of each book is 20 percent less than its list price. If during a sale the price of each book at the store was 15 percent less than its regular price, then the price of a book during the sale was what percent less than its list price?

(A)30% (B)32% (C)35% (D)38% (E)40%

14.

A string of 10 lightbulbs is wired in such a way that if any individual lightbulb fails, the entire string fails. If for each individual lightbulb the probability of failing during time period T is 0.06, what is the probability that the string of lightbulbs will fail during time period T?

(A) 0.06 (B) $(0.06)^{10}$ (C) $1 - (0.06)^{10}$ (D) $(0.94)^{10}$ (E) $1 - (0.94)^{10}$

15.

If n is a positive integer, what is the remainder when $(7^{4n+3})(6^n)$ is divided by 10?

(A) 1 (B) 2 (C) 4 (D) 6 (E) 8

16.

In the xy -plane, if line k passes through the points $(3, -4)$ and (a, b) , where $b = 4a - 16$ and $a \neq 3$, what is the slope of k ?

(A) -4 (B) $-\frac{1}{2}$ (C) 0 (D) 2 (E) 4

17.

Of the three-digit positive integers that have no digits equal to zero, how many have two digits that are equal to each other and the remaining digit different from the other two?

(A) 24 (B) 36 (C) 72 (D) 144 (E) 216

18.

Is $y^2 = 0$?

(1) $3y = 0$

(2) $y^3 = 0$

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19.

A three-digit code for certain logs uses the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 according to the following constraints. The first digit cannot be 0 or 1, the second digit must be 0 or 1, and the second and third digits cannot both be 0 in the same code. How many different codes are possible?

- (A)144 (B)152 (C)160 (D)168 (E)176
-

20.

If n is an integer greater than 6, which of the following must be divisible by 3?

- (A) $n(n+1)(n-4)$ (B) $n(n+2)(n-1)$ (C) $n(n+3)(n-5)$ (D) $n(n+4)(n-2)$ (E) $n(n+5)(n-6)$
-

21.

A doctor prescribed 18 cubic centimeters of a certain drug to a patient whose body weight was 120 pounds. If the typical dosage is 2 cubic centimeters per 15 pounds of body weight, by what percent was the prescribed dosage greater than the typical dosage?

- (A)8 (B)9 (C)11 (D)12.5 (E)14.8
-

22.

What is the value of xy ?

(1) $2^{(x+y)} = 4$

(2) $2^{x+3y} = 16$

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23.

Was Lisa's annual salary at least twice as much as Julie's annual salary?

- (1) Lisa's annual salary was \$20,000 more than Julie's annual salary.
- (2) Lisa's annual salary was less than \$40,000.

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24.

An object thrown directly upward is at a height of h feet after t seconds, where $h = -16(t - 3)^2 + 150$. At what height, in feet, is the object 2 seconds after it reaches its maximum height?

- (A)6 (B)86 (C)134 (D)150 (E)214
-

25.

An office supply store received a shipment of boxes of pencils. How many pencils were in the shipment altogether? (1 gross = 12 dozen)

- (1) The number of boxes of pencils in the shipment was 6 gross.
- (2) There were 3 dozen pencils in each box of pencils in the shipment.

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26.

Of the following values of n , the value of $(-\frac{1}{5})^{-n}$ will be greatest for $n =$

- (A)3 (B) 2 (C) 0 (D) -2 (E) -3
-

27.

For all numbers x , the function f is defined by $f(x) = 3x + 1$ and the function g is defined by $g(x) = \frac{x-1}{3}$. If c is a positive number, what is the value of $g(c)$?

- (1) $f(c) = 13$
- (2) $f(1) = c$

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28.

A certain company expects quarterly earnings of \$0.80 per share of stock, half of which will be distributed as dividends to shareholders while the rest will be used for research and development. If earnings are greater than expected, shareholders will receive an additional \$0.04 per share for each additional \$0.10 of per share earnings. If quarterly earnings are \$1.10 per share, what will be the dividend paid to a person who owns 200 shares of the company's stock?

- (A)\$92 (B)\$96 (C)\$104 (D)\$120 (E)\$240
-

29.

For which real numbers x is the expression $\frac{2}{(x-2)(x+1)}$ not defined?

- (A) $x = 0$ only (B) $x = 2$ only (C) $x = -1$ only
(D) $x = -1$ or 2 (E) $x = -1, 0,$ or 2
-

30.

What is the value of $(2x - 5)^3$?

- (1) $(2x)^3 = 216$
- (2) $(2x + 3)^2 = 81$

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31.

There are 5 cars to be displayed in 5 parking spaces with all the cars facing the same direction. Of the 5 cars, 3 are red, 1 is blue, and 1 is yellow. If the cars are identical except for color, how many different display arrangements of the 5 cars are possible?

(A)20 (B)25 (C)40 (D)60 (E)125



答案

EBCEC/ DEABD/ DDBEE/ EEDBA/ DCCBC/ BDCDA/ A