Arithmetic

GRE REFRESHER

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Arithmetic

Concepts Revision

Arithmetic

1. In a room, there are 450 students of which 20% are girls. A certain group of students have mobile phones with them, of which 40% are girls. Of those students without a mobile phone, only 10% are girls. How many boys have mobile phones in that room?
   A. 30
   B. 60
   C. 90
   D. 150
   E. 270

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2. If 25% of the acreage of a national forest was destroyed in a wildfire, and the remainder regenerates at a rate of 10% a year, after how many years, assuming no further losses, will the forest exceed its original acreage?
   A. 10
   B. 8
   C. 5
   D. 4
   E. 3

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3. Amy and Ricardo volunteer with an environmental group that collects garbage in a national park. Over the course of a month, Amy collected of the total number of bags collected and Ricardo collected of the total number of bags collected. A total of 630 bags were collected by volunteers other than Ricardo and Amy. What is the ratio of bags collected by Ricardo to bags not collected by Ricardo and Amy?

   A. 1 : 5
   B. 1 : 4
   C. 7 : 18
   D. 17 : 18
   E. 18 : 17

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4. Rick takes 5 minutes to inspect a car, and Sam takes 6 minutes to inspect a car. If Rick start inspecting different cars from 09:18 AM to 11:48 AM and Sam start inspecting different cars from 10:42 AM to 01:12 PM, what would be the ratio of the number of cars inspected by Rick and Sam?
   A. 1 : 5
   B. 1 : 6
   C. 2 : 3
   D. 3 : 5
   E. 6 : 5

Arithmetic

5. Which of the following choices when multiplied yields the least product?

A. $\left(-\dfrac{15}{14}, \ -\dfrac{19}{21}, \ -\dfrac{23}{25}\right)$

B. $\left(-\dfrac{15}{17}, \ -\dfrac{19}{21}, \ -\dfrac{23}{22}\right)$

C. $\left(-\dfrac{15}{17}, \ -\dfrac{23}{25}, \ -\dfrac{23}{22}\right)$

D. $\left(-\dfrac{15}{14}, \ -\dfrac{19}{21}, \ -\dfrac{23}{22}\right)$

E. $\left(-\dfrac{15}{14}, \ -\dfrac{15}{17}, \ -\dfrac{23}{25}\right)$

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6. The product of a and b is even, $\sqrt{ab}$ is a prime number and b > 0, a > 2b.

Quantity A	Quantity B
b	2

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

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7. If the integers a and b have the same distinct prime factors, and a is an even number less than 10 with exactly two distinct prime factors, which of the following numbers could be b?
   Indicate ALL possible correct answers.
   A. 9
   B. 10
   C. 12
   D. 15
   E. 16
   F. 18
   G. 24
   H. 30

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8. If p and q are positive integers such that when they are divided by 5, the remainder is 3 for each; and when they are divided by 9, the remainder is 4 for each. If q > p then which of the following must be a factor of q - p?
   A. 2
   B. 20
   C. 27
   D. 36
   E. 45

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9. If $p = 10^x - 6$ and the sum of the digits of integer p is 274 then what is the value of remainder when x is divided by 5?

   A. 0
   B. 1
   C. 2
   D. 3
   E. 4

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10. 20! is divisible by 3^a5^b, where a and b are positive integers.

Quantity A	Quantity B
Twice the value for a	Thrice the value for b

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

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11. What is the remainder when $13^{25} + 15^{12} + 17^{29}$ is divided by 10?

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12. x is an integer greater than 1.

Quantity A	Quantity B
3^{x+1}	4^x

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

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13.

$$m^3 = 27$$
$$n^4 = 81$$

Quantity A   **Quantity B**

m   n

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

14. Steve is running a marathon from point A to point B. 30 minutes after he starts running, his friend Bob who runs 1 mile per hour slower than twice Steve's rate, starts from the same point and follows the same path Bob overtakes Steve in 3 hours.

Quantity A

Distance covered by Bob before overtaking Steve

Quantity B

4 miles

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

Arithmetic

15. Car X started driving north from point P, traveling at a constant rate of 50 miles per hour. One hour later, car Y started driving north from point P at a constant rate of 25 miles per hour. Neither car changed direction of travel. If each car started with 10 gallons of fuel, which is consumed at a rate of 40 miles per gallon, how many miles apart were the two cars when car X ran out of fuel?
    A. 125
    B. 175
    C. 200
    D. 225
    E. 325

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16. One worker strings 4 violins in 5 minutes. All workers string violins at the same constant rate.

Quantity A	Quantity B
The number of minutes required for 15 workers to string 1080 violins	The number of violins that 10 workers can string in 12 minutes

A. Quantity A is greater
B. Quantity B is greater
C. The two quantities are equal
D. The relationship cannot be determined from the information given.

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17. Working continuously 24 hours a day, a factory bottles Soda L at a rate of 750 liters per second and Soda M at a rate of 600 liters per second. If twice as many bottles of Soda M as of Soda L are filled at the factory each day, what is the ratio of the volume of a bottle of Soda L to a bottle of Soda M?

    A. $\dfrac{2}{5}$

    B. $\dfrac{4}{5}$

    C. $\dfrac{5}{4}$

    D. $\dfrac{2}{1}$

    E. $\dfrac{5}{2}$

Arithmetic

18. Which term is 2048 for the given sequence?

2^2, $2^2 + 2^2$, $2^2 + 2^2 + 2^2$, $2^2 + 2^2 + 2^2 + 2^2$, ...

A. 64

B. 28

C. 256

D. 512

E. 024

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19. In the sequence, the nth term is defined as: $a_n = (a_{n-1} - 1)^2$. If $a_4 = 225$, then what is the value of a_2?

    A. -4

    B. -3

    C. 4

    D. 5

    E. 16

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20. A sequence of positive integers a_1, a_2, a_3, … , an is given by the rule $a_{n+1} = 2a_n + 3$. The only even number in the sequence is 26. What is the value of a_2?

    A. 10

    B. 23

    C. 26

    D. 52

    E. 55

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Thank you