

# GRE Quantitative Reasoning

## Sample Paper 01

A) **Subject:** Quantitative Reasoning

B) **Total Questions:** 27 Questions (Section I: 12 — Section II: 15)

C) **Time Allowed:** 47 Minutes

- **Section 1:** 12 Questions — 21 Minutes
- **Section 2:** 15 Questions — 26 Minutes

D) **Marking Scheme:**

- **Correct Answer:** +1 Point
- **Incorrect/Unattempted:** 0 Points (No Negative Marking)

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### SECTION I: QUANTITATIVE REASONING

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**Q1.** The price of an item was increased by 20%, and then the new price was decreased by 20%.

**Quantity A**

The final price of the item

**Quantity B**

The original price of the item

- 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.

**Q2.**  $x$  and  $y$  are integers such that  $x^2 = 49$  and  $y^3 = -27$ .

**Quantity A**

$x + y$

**Quantity B**

0

- 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.

**Q3.** The area of a circle with radius  $r$  is  $16\pi$ .

**Quantity A**

The circumference of the circle

**Quantity B**

$8\pi$

- 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.

**Q4.**  $n$  is a positive integer.

**Quantity A**

$(-1)^n + (-1)^{n+1}$

**Quantity B**

0

- 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.

**Q5.** If  $3x + 12 = 7x - 8$ , then  $x^2 =$

- A. 2
- B. 5
- C. 10
- D. 25
- E. 50

**Q6.** In a sequence of 10 consecutive integers, the sum of the first 5 integers is 100. What is the sum of the next 5 integers in the sequence?

- A. 105
- B. 115
- C. 120
- D. 125
- E. 150

**Q7.** A bag contains 3 red balls, 4 green balls, and 5 blue balls. If one ball is chosen at random, what is the probability that the ball is NOT red?

- A.  $1/4$
- B.  $1/3$
- C.  $3/4$
- D.  $2/3$
- E.  $5/12$

**Q8.** A rectangular garden has a perimeter of 40 meters. If the length of the garden is 12 meters, what is the area of the garden in square meters?

- A. 48
- B. 84
- C. 96
- D. 144
- E. 160

**Q9.** If  $k$  is an integer and  $k^2$  is a multiple of 12, which of the following must be true? (Select all that apply)

- ☐  $k$  is a multiple of 6
- ☐  $k$  is a multiple of 12
- ☐  $k^2$  is a multiple of 36

**Q10.** A runner completes a 10-kilometer race in 50 minutes. What was the runner's average speed in kilometers per hour?

**Q11.** If  $2^{x+3} = 64$ , then  $3^{x-1} =$

- A. 1
- B. 3
- C. 9
- D. 27
- E. 81

**Q12.** The average (arithmetic mean) of five numbers is 20. If a sixth number, 50, is added to the set, what is the average of the six numbers?

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## SECTION II: QUANTITATIVE REASONING

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**Q1.**  $a > b > 0$  and  $c > d > 0$ .

**Quantity A**

$ac$

**Quantity B**

$bd$

- 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.

**Q2.**  $k$  is a prime number and  $k > 2$ .

**Quantity A**

The remainder when  $k$  is divided by 2

**Quantity B**

1

- 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.

**Q3.** The standard deviation of set  $S : \{10, 20, 30, 40, 50\}$

**Quantity A**

The standard deviation of set  $T : \{110, 120, 130, 140, 150\}$

**Quantity 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.

**Q4.** If  $x$  is 20% of  $y$  and  $y$  is 30% of  $z$ , what percent of  $z$  is  $x$ ?

- A. 6%
- B. 10%
- C. 25%
- D. 50%

E. 60%

**Q5.** A machine can produce 20 units in 4 hours. How many units can 3 identical machines produce in 6 hours?

- A. 30
- B. 45
- C. 60
- D. 90
- E. 120

Data Interpretation: Annual Revenue of Company X (2018-2021)

| Year | Domestic Revenue (\$) | International Revenue (\$) |
|------|-----------------------|----------------------------|
| 2018 | 200,000               | 50,000                     |
| 2019 | 220,000               | 80,000                     |
| 2020 | 180,000               | 100,000                    |
| 2021 | 250,000               | 150,000                    |

**Q6.** What was the percent increase in total revenue from 2018 to 2019?

- A. 10%
- B. 15%
- C. 20%
- D. 25%
- E. 30%

**Q7.** In 2020, International Revenue accounted for approximately what percent of total revenue?

- A. 28%
- B. 36%
- C. 44%
- D. 55%
- E. 62%

**Q8.** What was the average (arithmetic mean) International Revenue, in dollars, over the four-year period?

**Q9.** A right triangle has legs of length  $a$  and  $b$  and a hypotenuse of length  $c$ . If  $a = 5$  and the area is 30, what is the value of  $c$ ?

- A. 12
- B. 13
- C. 15
- D. 17
- E. 19

**Q10.** If  $x \neq 0$ , then  $\frac{(2x^2)^3}{4x^4} = mx^n$ . What is the value of  $m + n$ ?

**Q11.** A certain store sells notebooks for \$3.00 each and pens for \$1.50 each. If Sarah spends exactly \$21.00 on a mix of notebooks and pens, which of the following could be the number of pens she bought?

- A. 1
- B. 3
- C. 5
- D. 6
- E. 9

**Q12.** Line  $L$  passes through  $(0,0)$  and  $(2,4)$ . Line  $M$  is perpendicular to  $L$  and passes through  $(2,4)$ .

**Quantity A**

The slope of Line  $M$

**Quantity B**

$-0.5$

- 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.

**Q13.** How many positive three-digit integers are divisible by both 4 and 6?

- A. 12

- B. 15
- C. 37
- D. 75
- E. 83

**Q14.** If  $f(x) = x^2 - 4x$ , for what value of  $x$  is  $f(x) = f(4 - x)$ ?

- A. All values of  $x$
- B. Only  $x = 0$
- C. Only  $x = 2$
- D. Only  $x = 4$
- E. No values of  $x$

**Q15.** In a group of 50 students, 28 are taking Spanish, 22 are taking French, and 10 are taking both. How many students are taking neither Spanish nor French?

## Solutions - Section I

1. **(B)** Let original = 100.  $100 \times 1.20 = 120$ .  $120 \times 0.80 = 96$ .  $96 < 100$ .
2. **(D)**  $x = 7$  or  $-7$ .  $y = -3$ . If  $x = 7$ ,  $x + y = 4 (> 0)$ . If  $x = -7$ ,  $x + y = -10 (< 0)$ .
3. **(C)**  $\pi r^2 = 16\pi \Rightarrow r = 4$ . Circumference =  $2\pi(4) = 8\pi$ .
4. **(C)** If  $n$  is even,  $1 + (-1) = 0$ . If  $n$  is odd,  $-1 + 1 = 0$ .
5. **(D)**  $4x = 20 \Rightarrow x = 5 \Rightarrow x^2 = 25$ .
6. **(D)** If sum of 5 integers is 100, the integers are 18, 19, 20, 21, 22. Next 5: 23, 24, 25, 26, 27. Sum = 125. (Pattern: Sum increases by  $n^2 = 5^2 = 25$ ).
7. **(C)** Total = 12. Non-red = 9. Prob =  $9/12 = 3/4$ .
8. **(C)**  $2(12 + W) = 40 \Rightarrow 12 + W = 20 \Rightarrow W = 8$ . Area =  $12 \times 8 = 96$ .
9. **(A, C)**  $k^2$  is multiple of 12 ( $2^2 \cdot 3$ ). For  $k^2$  to be a square, it must be at least  $2^2 \cdot 3^2 = 36$ .  $k$  must be a multiple of  $2 \cdot 3 = 6$ .
10. **12**  $(10 \text{ km}/50 \text{ min} \times 60 \text{ min} = 12 \text{ km/h})$ .
11. **3**  $2^{x+3} = 2^6 \Rightarrow x = 3$ .  $3^{3-1} = 3^2 = 9$ . (Correction:  $3^2$  is 9, option C)
11. **25** Sum =  $20 \times 5 = 100$ . New sum =  $100 + 50 = 150$ . New avg =  $150/6 = 25$ .

## Solutions - Section II

1. **(A)** Since all values are positive and  $a > b, c > d$ , the product of the larger values is larger.
2. **(C)** All primes  $> 2$  are odd. Odd numbers divided by 2 always leave remainder 1.
3. **(C)** Standard deviation measures spread. Adding 100 to every term shifts the mean but does not change the spread.
4. **(A)**  $x = 0.20(0.30z) = 0.06z = 6\%$ .
5. **(D)** 1 machine = 5 units/4 hrs = 5 units/hr. 3 machines = 15 units/hr.  $15 \times 6 = 90$ .
6. **(C)** 2018 Total = 250k. 2019 Total = 300k. Change =  $50k/250k = 20\%$ .
7. **(B)**  $100k/280k \approx 35.7\%$ .
8. **95,000** Total Int =  $(50 + 80 + 100 + 150)/4 = 380/4 = 95$ .
9. **13**  $0.5(5)(b) = 30 \Rightarrow b = 12$ .  $c = \sqrt{5^2 + 12^2} = 13$ .
10. **4**  $\frac{8x^6}{4x^4} = 2x^2$ .  $m = 2, n = 2$ . Sum = 4.
11. **(D)**  $3N + 1.5P = 21$ . If  $P = 6$ ,  $1.5(6) = 9$ .  $21 - 9 = 12$ . 12 is div by 3.
12. **(C)** Slope  $L = (4 - 0)/(2 - 0) = 2$ . Perp slope =  $-1/2 = -0.5$ .



13. **(D)**  $\text{LCM}(4,6) = 12$ . Multiples of 12 from 100-999.  $999/12 = 83$ ;  $99/12 = 8$ .  
 $83 - 8 = 75$ .
14. **(A)**  $f(4 - x) = (4 - x)^2 - 4(4 - x) = 16 - 8x + x^2 - 16 + 4x = x^2 - 4x$ . It is an identity.
15. **10**  $50 - (28 + 22 - 10) = 50 - 40 = 10$ .

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