

GRE Quantitative Reasoning

Sample Paper 10

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)

SECTION I: QUANTITATIVE REASONING

- Q1.** x and y are integers such that $xy < 0$. **Quantity A** **Quantity B**
 $|x + y|$ $|x| + |y|$
- 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.** A laptop is priced at \$1,000. Store A offers a single discount of 20%. Store B offers two successive discounts of 10% and 10%. **Quantity A** **Quantity B**
Price at Store A Price at Store 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.
- Q3.** A circle is inscribed inside a square with a side length of 10. **Quantity A**
The area of the circle

- 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 an even integer and m is an odd integer. **Quantity A**
 $(n + 1)m$ **Quantity**
 $nm + 1$

- 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.

Q5. Which of the following is equivalent to the expression: $(2x - 3)^2 - (2x + 3)^2$?

- A. $-24x$
- B. $24x$
- C. $8x^2 + 18$
- D. 0
- E. $-12x$

Q6. If $3^{x+1} = 243$, what is the value of $(x - 1)^2$?

- A. 9
- B. 16
- C. 25
- D. 4
- E. 1

Q7. An airplane flies 1,200 miles at an average speed of 400 mph and returns at an average speed of 600 mph. What is the average speed for the entire round trip?

- A. 480 mph
- B. 500 mph
- C. 520 mph
- D. 450 mph

E. 490 mph

Q8. A set of numbers consists of $\{12, 15, 15, 18, 20, 22\}$. If the number 30 is added to the set, which of the following will increase the most?

A. The mean

B. The median

C. The mode

D. The range

E. They all increase by the same amount

Q9. In triangle ABC , the measure of angle A is 50° and the exterior angle at vertex B is 120° . What is the measure of angle C ?

A. 50°

B. 60°

C. 70°

D. 80°

E. 110°

Q10. A bag contains 5 red marbles, 3 blue marbles, and 2 green marbles. If two marbles are drawn at random without replacement, what is the probability that both are red?

A. $5/18$

B. $2/9$

C. $1/3$

D. $1/4$

E. $2/15$

Q11. Calculate 15% of 25% of 800.

Q12. What is the units digit of 7^{22} ?

SECTION II: QUANTITATIVE REASONING

Q1. $f(x) = x^4 - x^2$ **Quantity A**
 $f(2)$

Quantity B
 $f(-2)$

- 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.

Q2. Line L passes through $(1, 2)$ and $(4, 6)$. Line M is perpendicular to L .

Quantity A
The slope of Line M

- 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. In a group of 100 people, 60 like tea, 50 like coffee, and 20 like neither.

Quantity A
Number of people who like both tea and coffee

- 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. In a sequence a_n , each term is defined by $a_n = a_{n-1} + n$ for $n > 1$. If $a_1 = 5$, what is the value of a_4 ?

- A. 9
- B. 12
- C. 14
- D. 15
- E. 18

Q5. A student must choose 3 electives from a list of 10 available courses. How many different combinations of electives are possible?

- A. 30
- B. 120
- C. 720
- D. 100
- E. 240

Q6. A principal of \$2,000 is invested at an annual interest rate of 5% compounded annually. What is the total balance after 2 years?

- A. \$2,200
- B. \$2,205
- C. \$2,100
- D. \$2,210
- E. \$2,105

Q7. Two fair six-sided dice are rolled. What is the probability that the sum of the numbers shown is exactly 8?

- A. $\frac{5}{36}$
- B. $\frac{1}{6}$
- C. $\frac{1}{9}$
- D. $\frac{7}{36}$
- E. $\frac{1}{12}$

Data Interpretation: Annual Factory Production

Year	Units Produced	Defect Rate (%)	Cost per Unit (\$)
2021	10,000	2.0%	50
2022	12,000	1.5%	45
2023	15,000	1.0%	40

Q8. In which year was the total number of defective units the highest?

- A. 2021
- B. 2022

- C. 2023
- D. 2021 and 2022
- E. It was the same for all years

Q9. What was the total cost of production for the year 2022?

Q10. The production volume in 2023 represents what percentage increase over the production volume in 2021?

- A. 15%
- B. 33.3%
- C. 50%
- D. 60%
- E. 150%

Q11. Solve for x : $3x + 4 = 2(x - 5)$

Q12. A mixture contains alcohol and water in the ratio 4:3. If 5 liters of water are added to the mixture, the ratio becomes 4:5. How many liters of alcohol are in the mixture?

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

Q13. The average of 7 numbers is 12. If one number is removed, the average of the remaining numbers becomes 11. What was the value of the removed number?

- A. 15
- B. 16
- C. 17
- D. 18
- E. 19

Q14. A cylinder has a radius of 3 and a height of 10. What is its volume? (Express in terms of π)

Q15. If $x^2 - 5x + 6 = 0$, what is the sum of the possible values of x ?

- A. 2
- B. 3
- C. 5
- D. 6
- E. -5



Solutions - Section I

1. **(B)** Since $xy < 0$, one is positive and one is negative. $|x+y|$ will involve subtraction, while $|x| + |y|$ is the sum of absolute magnitudes. Thus $|x| + |y| > |x + y|$.
2. **(A)** Store A: $1000 \times 0.8 = 800$. Store B: $1000 \times 0.9 \times 0.9 = 810$. Store A is cheaper.
3. **(C)** The diameter of the circle equals the side of the square (10). Radius = 5. Area = $\pi(5^2) = 25\pi$.
4. **(D)** If $n = 2, m = 1$: $(3)(1) = 3$ and $(2)(1) + 1 = 3$ (Equal). If $n = 2, m = 3$: $(3)(3) = 9$ and $(2)(3) + 1 = 7$ (A greater).
5. **(A)** $(4x^2 - 12x + 9) - (4x^2 + 12x + 9) = -24x$.
6. **(A)** $3^{x+1} = 3^5 \rightarrow x + 1 = 5 \rightarrow x = 4$. $(4 - 1)^2 = 3^2 = 9$.
7. **(A)** Avg Speed = Total Distance / Total Time. $2400/(3 + 2) = 480$ mph.
8. **(D)** Range was $22 - 12 = 10$. New range is $30 - 12 = 18$ (80% increase). Mean increases from 17 to ≈ 18.8 .
9. **(C)** Angle $B = 180 - 120 = 60^\circ$. Angle $C = 180 - (50 + 60) = 70^\circ$.
10. **(B)** $(5/10) \times (4/9) = 20/90 = 2/9$.
11. **30** ($0.15 \times 0.25 \times 800 = 0.15 \times 200 = 30$).
12. **9** (Pattern of 7^n units digit: 7, 9, 3, 1... $22 \div 4$ leaves remainder 2. Second in pattern is 9).

Solutions - Section II

1. **(C)** $f(2) = 16 - 4 = 12$. $f(-2) = 16 - 4 = 12$. Even powers negate the sign.
2. **(C)** Slope $L = (6 - 2)/(4 - 1) = 4/3$. Perpendicular slope $M = -3/4$.
3. **(B)** $100 - 20 = 80$ like at least one. $60 + 50 - \text{Both} = 80 \rightarrow \text{Both} = 30$.
4. **(C)** $a_1 = 5, a_2 = 5 + 2 = 7, a_3 = 7 + 3 = 10, a_4 = 10 + 4 = 14$.
5. **(B)** $\binom{10}{3} = (10 \times 9 \times 8)/(3 \times 2 \times 1) = 120$.
6. **(B)** $2000 \times (1.05)^2 = 2000 \times 1.1025 = 2205$.
7. **(A)** Pairs: (2,6), (3,5), (4,4), (5,3), (6,2). Total 5 pairs out of 36.
8. **(B)** 2021: 200; 2022: 180; 2023: 150. Highest in 2021.
9. **540,000** ($12,000 \times 45$).
10. **(C)** $(15000 - 10000)/10000 = 50\%$.
11. **-14** ($3x + 4 = 2x - 10 \rightarrow x = -14$).

12. **(A)** $4x/(3x + 5) = 4/5 \rightarrow 20x = 12x + 20 \rightarrow 8x = 20 \rightarrow x = 2.5$. Alcohol = $4 \times 2.5 = 10$.
13. **(D)** $\text{Total}(7) = 84$. $\text{Total}(6) = 66$. $84 - 66 = 18$.
14. **90** π ($V = \pi r^2 h = \pi \times 9 \times 10$).
15. **(C)** $(x - 2)(x - 3) = 0$. Roots are 2 and 3. Sum = 5.

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