

**Quantitative Math Preparation**

This course provides extensive practice in test-taking strategies and verbal skills with individual feedback to raise your score on the General Management Admissions Test.

The focus of the course is on the Quantitative Section, but it also deals with the Data Interpretation Section to the extent that understanding and responding to those questions depends on language skills

Quantitative Section: Maths

Directions :

In this section you will be given two quantities, one in column A and one in column B. You are to determine a relationship between the two quantities and mark.

1. If the quantity in column A is greater than the quantity in column B.
2. If the quantity in column B is greater than the quantity in column A.
3. If the quantities are equal.
4. If the comparison cannot be determined from the information that is given.

1. Quantity A:  $(-6)^4$

Quantity B:  $(-6)^5$

- (a) if the quantity A is greater;
- (b) milk : quart
- (c) society : classes
- (d) letter : alphabet
- (e) time : minutes

Ans : (a)

2. Quantity A: Time to travel 95 miles at 50 miles per hour

Quantity B: Time to travel 125 miles at 60 miles per hour

- (a) Quantity A is greater
- (b) Quantity A equals Quantity B
- (c) Quantity B is greater
- (d) Relationship Indeterminate

Ans : (c)

3. Quantity A:  $(9/13)^2$

Quantity B:  $(9/13)^{1/2}$

- (a) Quantity A equals Quantity B
- (b) Relationship Indeterminate
- (c) Quantity B is greater
- (d) Quantity A is greater

Ans : (c)

4. Quantity A:  $4 / 100$

Quantity B:  $0.012 / 3$

- (a) Quantity B is greater
- (b) Quantity A equals Quantity B
- (c) Quantity A is greater
- (d) Relationship Indeterminate

Ans : (c)

5.  $x=2y+3$

$y=-2$

Quantity A:  $x$

Quantity B:  $-1$

- (a) if the quantity in Column A is greater
- (b) if the quantity in Column B is greater
- (c) if the two quantities are equal
- (d) if the relationship cannot be determined from the information given

Ans : (c)

6.  $x+2y>8$

Quantity A:  $2x + 4y$

Quantity B: 20

- (a) if the quantity in Column A is greater
- (b) if the quantity in Column B is greater
- (c) if the two quantities are equal
- (d) if the relationship cannot be determined from the information given.

Ans : (d)

7. Quantity A: The number of months in 7 years

Quantity B: The number of days in 12 weeks

- (a) if the quantity in Column A is greater
- (b) if the quantity in Column B is greater
- (c) if the two quantities are equal
- (d) if the relationship cannot be determined from the information given

Ans : (c)

8. Quantity A:  $1-1/27$

Quantity B:  $8/9 + 1/81$

- (a) if the quantity in is greater
- (b) if the quantity in is greater
- (c)if the two quantities are equal
- (d) if the relationship cannot be determined from the information given.

Ans : (a)

9.  $r/s > 0$

Quantity A:  $rs/r$

Quantity B:  $rs/s$

- (a) if the quantity A is greater
- (b) if the quantity B is greater
- (c) if the two quantities are equal
- (d) if the relationship cannot be determined from the information given.

Ans : (b)

10. Quantity A: 0.83

Quantity B:  $0.81/3$

- (a) Quantity B is greater
- (b) Relationship Indeterminate
- (c) Quantity A is greater
- (d) Quantity A equals Quantity B

Ans : (a)

11.  $t$  is a positive integer.

$4/7 = t/s$

Quantity A:  $s$

Quantity B: 7

- (a) if the quantity in Column A is greater;
- (b) if the quantity in Column B is greater;
- (c) if the two quantities are equal;
- (d) if the two relationship cannot be determined from the information given

Ans : (d)

12. Quantity A:  $(0.82)^2(0.82)^3$

Quantity B:  $(0.82)^6$

- (a) if the quantity in column A is greater;
- (b) if the quantity in column B is greater;

- (c) If the two quantities are equal;  
 (d) if the relationship cannot be determined from the information given.

Ans : (a)

13. For all real numbers  $a$ , let  $a^* = 1 - a$ .

Quantity A:  $((-1)^*)^*$

Quantity B:  $2^*$

- (a) if the quantity in Column A is greater;  
 (b) if the quantity in Column B is greater;  
 (c) if the two quantities are equal;  
 (d) if the relationship cannot be determined from the information given.

Ans : (c)

14. Quantity A:  $(x - 1)(x)(x + 1)$

Quantity B:  $(x)(x)(x)$

- (a) if the quantity in Column A is greater;  
 (b) if the quantity in Column B is greater;  
 (c) if the two quantities are equal;  
 (d) if the relationship cannot be determined from the information given.

Ans : (d)

15. Quantity A:  $(3 \times 4 \times 17) / (121 \times 100)$

Quantity B:  $(4 \times 5 \times 19) / (1000 \times 121)$

- (a) Quantity A is greater  
 (b) Quantity A equals Quantity B  
 (c) Relationship Indeterminate  
 (d) Quantity B is greater

Ans : (a)

16. Consider a triangle PQR.

Quantity A: length of PQ + length of QR

Quantity B: length of PR

- (a) Quantity A is greater  
 (b) Quantity B is greater  
 (c) Relationship Indeterminate  
 (d) Quantity A equals Quantity B

Ans : (a)

17. Quantity A:  $(27 - 13)(296 + 534)$

Quantity B:  $(27 + 13)(534 + 296)$

- (a) Quantity B is greater  
 (b) Quantity A equals Quantity B  
 (c) Relationship Indeterminate  
 (d) Quantity A is greater

Ans : (d)

18. Quantity A:  $A = 1.1$

Quantity B:  $12.11/2$

- (a) Relationship Indeterminate  
 (b) Quantity B is greater  
 (c) Quantity A equals Quantity B  
 (d) Quantity A is greater

Ans : (b)

19.  $100 < y < 200$  and  $100 < z < 210$

Quantity A:  $y$

Quantity B:  $z$

- (a) Quantity A is greater

- (b) Quantity A equals Quantity B
- (c) Quantity B is greater
- (d) Relationship Indeterminate

Ans : (d)

20.  $y^2 + z^2 = 34$  and  $yz = 15$

Quantity A:  $y^2 + 2yz + z^2$

Quantity B:  $(y + z)^2$

- (a) Quantity B is greater
- (b) Relationship Indeterminate
- (c) Quantity A is greater
- (d) Quantity A equals Quantity B

Ans : (d)

21. Consider a rectangle. The length of its shorter side is 8, and the length of its diagonal is 16.

Quantity A:  $30^\circ$

Quantity B: measure of angle formed by diagonal and shorter side

- (a) Relationship Indeterminate
- (b) Quantity A equals Quantity B
- (c) Quantity A is greater
- (d) Quantity B is greater

Ans : (d)

22. Quantity A:  $(y+5)^2$

Quantity B:  $(y-5)^2$

- (a) Quantity B is greater
- (b) Relationship Indeterminate
- (c) Quantity A equals Quantity B
- (d) Quantity A is greater

Ans : (b)

23. Quantity A:  $(\frac{1}{25})^{1/2} + (\frac{1}{144})^{1/2}$

Quantity B:  $[(\frac{1}{25}) + (\frac{1}{144})]^{1/2}$

- (a) Relationship Indeterminate
- (b) Quantity A is greater
- (c) Quantity B is greater
- (d) Quantity A equals Quantity B

Ans : (a)

24.  $y^2 + z^2 = 34$  and  $yz = 15$

Quantity A:  $y^2 + 2yz + z^2$

Quantity B:  $(y+z)^2$

- (a) Quantity A is greater
- (b) Relationship Indeterminate
- (c) Quantity A equals Quantity B
- (d) Quantity B is greater

Ans : (c)

25.  $100 < 200$  and  $100 < 210$  Quantity A:  $y$

Quantity B:  $z$

- (a) Quantity A is greater
- (b) Quantity A equals Quantity B
- (c) Relationship Indeterminate
- (d) Quantity B is greater

Ans : (c)

26. Quantity A:  $(y+5)^2$

Quantity B:  $(y-5)^2$

- (a) Quantity A equals Quantity B
- (b) Quantity A is greater
- (c) Relationship Indeterminate
- (d) Quantity B is greater

Ans : (c)

27. Consider a rectangle. The length of its shorter side is 8, and the length of its diagonal is 16.

Quantity A:  $30^\circ$

Quantity B: measure of angle formed by diagonal and shorter side

- (a) Quantity A is greater
- (b) Quantity A equals Quantity B
- (c) Quantity B is greater
- (d) Relationship Indeterminate

Ans : (c)

28. The sum of three consecutive even numbers is 18.

Quantity A: Their average

Quantity B: 6

- (a) Relationship Indeterminate
- (b) Quantity A is greater
- (c) Quantity A equals Quantity B
- (d) Quantity A is greater

Ans : (c)

29.  $x - y > 10$

Quantity A:  $y - x$

Quantity B: 12

- (a) Quantity B is greater
- (b) Quantity A is greater
- (c) Quantity A equals Quantity B
- (d) Relationship Indeterminate

Ans : (a)

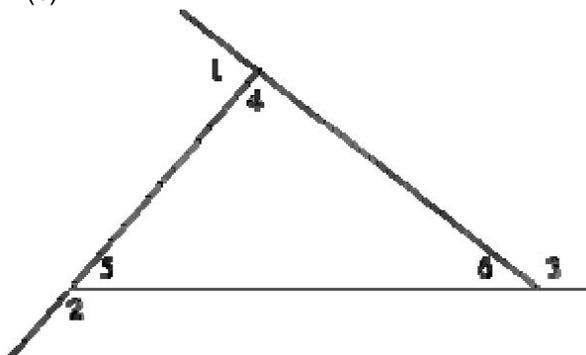
30.  $x = 0, y = 0$

Quantity A:  $xy$

Quantity B:  $yx$

- (a) Quantity A equals Quantity B
- (b) Quantity A is greater
- (c) Quantity B is greater
- (d) Relationship Indeterminate

Ans : (c)

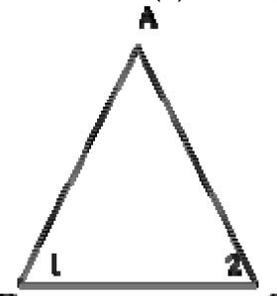


31. [Diagram](#) is illustrative and is not drawn to scale.

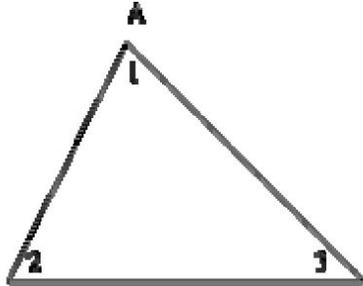
Quantity A: Measure of angle 3 - Measure of angle 2    Quantity B: Measure of angle 5 - Measure of angle 6

- (a) Relationship Indeterminate
  - (b) Quantity A equals Quantity B
  - (c) Quantity B is greater
  - (d) Quantity A is greater
- Ans : (b)
32. Quantity A:  $2^9$     Quantity B:  $9^2$     (a) Quantity B is greater    (b) Quantity A is greater    (c) Relationship Indeterminate    (d) Quantity A equals Quantity B    Ans : (b)

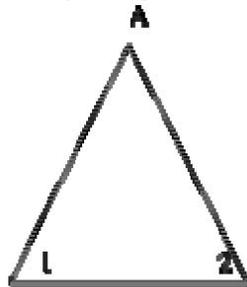
33.  $0 < -x < 10$   $11 < -y < 20$  **Quantity A:**  $x$  **Quantity b:**  $y$  (a) Relationship Indeterminate (b) Quantity A equals



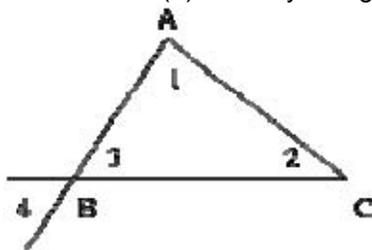
Quantity B (c) Quantity B is greater (d) Quantity A is greater **Ans : (d)** 34. **B** **C** Diagram is illustrative and is not drawn to scale. Given angles 1 and 2 are equal, length of side  $AB = x$ , length of side  $BC = y$ , length of side  $AC = z$  **Quantity A:**  $x+y$  **Quantity B:**  $y+z$  (a) Quantity A is greater; (b) Quantity A equals Quantity B (c) Quantity B is greater (d) Relationship Indeterminate **Ans : (b)** 35.



**B** **C** Diagram is illustrative and is not drawn to scale. In triangle ABC,  $AB = AC$  and measure of angle 1 =  $100^\circ$ . **Quantity A:** Measure of angle 2 + Measure of angle 3 **Quantity B:**  $90^\circ$  (a) Quantity B is greater (b) Relationship Indeterminate (c) Quantity A is greater (d) Quantity A equals Quantity B **36.**  $x$  and  $y$  are both positive and  $x/y > 5$  **Quantity A:**  $0.2x$  **Quantity B:**  $y$  (a) Quantity A is greater (b) Quantity B is greater (c) Relationship Indeterminate (d) Quantity A equals Quantity B **Ans : (a)**



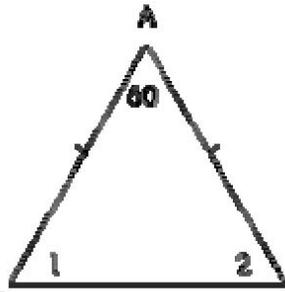
37. **B** **C** Diagram is illustrative and is not drawn to scale. Given  $AB = AC$  and angle  $BAC = 60^\circ$  **Quantity A:** Length of side AB **Quantity B:** Length of side BC (a) Quantity A equals Quantity B (b) Quantity B is greater (c) Relationship Indeterminate (d) Quantity A is greater **Ans : (A)** 38.  $y^2$  **Quantity A:**  $y$  **Quantity B:** 6 (a) Relationship Indeterminate (b) Quantity A is greater (c) Quantity B is greater (d) Quantity A



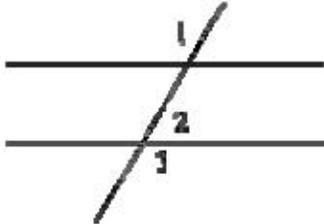
equals Quantity B **Ans : (a)** 39.

Diagram is illustrative and is not drawn to scale.

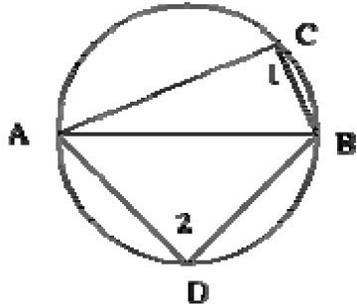
**Quantity A:** Measure of angle 1 + Measure of angle 2 + Measure of angle 4 **Quantity B:**  $180^\circ$  (a) Relationship Indeterminate (b) Quantity A is greater (c) Quantity B is greater (d) Quantity A equals Quantity B



Ans : (d) 40. **B** **C** Diagram is illustrative and is not drawn to scale. In triangle **ABC**, angle A =  $60^\circ$  and  $AB = AC$ . **Quantity A**: Measure of angle 1 + Measure of angle 2 **Quantity B**:  $120^\circ$  (a) Relationship Indeterminate (b) Quantity A is greater (c) Quantity A equals Quantity B (d) Quantity B is greater  
**Ans : (c)**



41. **Diagram** is illustrative and is not drawn to scale. **Quantity A**: Measure of angle 2 - Measure of angle 3 **Quantity B**:  $180^\circ$  (a) Quantity B is greater (b) Quantity A is greater (c) Quantity A equals Quantity B (d) **Relationship** Indeterminate **Ans : (c)**



42. **D** Diagram is illustrative and is not drawn to scale. AB is the diameter of the circle. **Quantity A**: Measure of angle 1 **Quantity B**: Measure of angle 2 (a) Relationship Indeterminate (b) Quantity A is greater (c) Quantity B is greater (d) Quantity A equals Quantity B **Ans : (d) 43.**

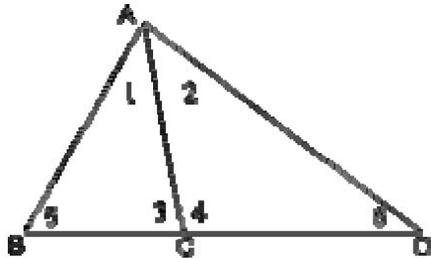
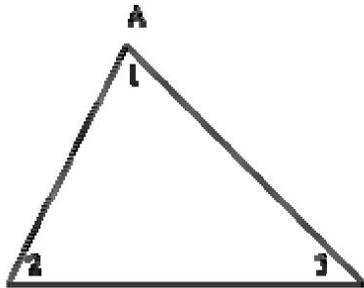
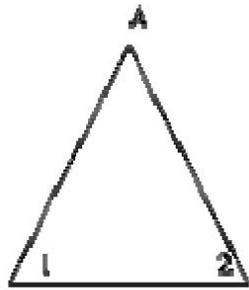


Diagram is illustrative and is not drawn to scale. **Quantity A**: Measure of angle 1 + Measure of angle 3 **Quantity b**: Measure of angle 2 + Measure of angle 4 (a) Relationship Indeterminate (b) Quantity A is greater (c) Quantity A equals Quantity B (d) Quantity B is greater **Ans : (a)**



44. **B** **C** Diagram is illustrative and is not drawn to scale. In **triangle ABC**,  $AB = AC$  and measure of angle 1 =  $100^\circ$ . **Quantity A**: Measure of angle 2 + Measure of angle 3 **Quantity B**:  $90^\circ$  (a) Quantity B is greater; (b) Quantity A equals Quantity B (c) Relationship Indeterminate (d) Quantity B is



- greater **Ans : (a) 45. B C** Diagram is illustrative and is not drawn to scale. Given angles 1 and 2 are equal, length of side  $AB = x$ , length of side  $BC = y$ , length of side  $AC = z$ . **Quantity A:**  $x+y$  **Quantity B:**  $y+z$  (a) Quantity B is greater (b) Quantity A equals Quantity B (c) Quantity A is greater (d) Relationship Indeterminate **Ans : (b)**
- 46.**  $x$  and  $y$  are both positive and  $x/y > 5$  **Quantity A:**  $0.2x$  **Quantity B:**  $y$  (a) Quantity B is greater (c) Relationship Indeterminate (d) Quantity A equals Quantity B (d) Quantity A is greater **Ans : (d) 47.**  $yz < 0$  **Quantity A:**  $(y-z)^2$  **Quantity B:**  $y^2 + z^2$  (a) Quantity A is greater (b) Quantity B is greater (c) Relationship Indeterminate (d) Quantity A equals Quantity B **Ans : (A) 48.** For any positive integer  $n$ ,  $n!$  is the product of all positive integers less than or equal to  $n$ . **Quantity A:**  $20! / 17!$  **Quantity B:**  $80! / 78!$  (a) Quantity A is greater (b) Quantity B is greater (c) Quantity A equals Quantity B (d) Relationship Indeterminate **Ans : (a) 49.**  $2 < z < 4$  **Quantity A:**  $\pi^2 z^3$  **Quantity B:**  $\pi^3 z^2$  (a) Quantity A is greater (b) Quantity B is greater (c) Quantity A equals Quantity B (d) Relationship Indeterminate **Ans : (d) 50.** Amy, Beth and Charlie divided a pizza amongst themselves. Amy took 30% of the pizza and ate  $(3/4)$  of what she took. Beth took 20% of the pizza. Charlie ate  $(2/5)$  of what he took. **Quantity A:** The amount Amy ate **Quantity B:** The amount Charlie ate (a) Quantity A is greater (b) Quantity B is greater (c) Quantity A equals Quantity B (d) Relationship Indeterminate **Ans : (a)**
- 51.**  $p > 0 > q$  **Quantity A:**  $p+q$  **Quantity B:**  $pq$  (a) the quantity in Column A is greater; (b) the quantity in Column B is greater; (c) the quantities are equal; (d) the relationship cannot be determined from the information given **Ans : (d) 52.** **Quantity A:** The average (arithmetic mean) of  $x$  and  $y$  **Quantity B:** The average (arithmetic mean) of  $x - 1$  and  $y + 1$  (a) the quantity in column A is greater; (b) the quantity in column B is greater; (c) the quantities are equal; (d) the relationship cannot be determined from the information given. **Ans : (c) 53.** The integer  $(x - 1)$  is a prime number between 40 and 50. **Quantity A:** The sum of all different prime factors of  $x$  **Quantity B:** 14 (a) the quantity in Column A is greater; (b) if the quantity in Column B is greater; (c) the quantities are equal; (d) the relationship cannot be determined from the information given. **Ans : (b) 54.**  $A > B > D > 0$  **Quantity A:**  $A-B$  **Quantity B:**  $C-D$  (a) the quantity in Column A is greater; (b) the quantity in Column B is greater; (c) the two quantities are equal; (d) the relationship cannot be determined from the information given. **Ans : (b) 55.** In a particular jellybean jar, the number of red jellybeans exceeds the number of white ones by a ratio of 3:2. If two red jellybeans were removed, the ratio of red to white jellybeans would be 1:1. **Quantity A:** The number of white jellybeans in the jar **Quantity B:** 4 (a) The quantity in Column A is greater (b) The quantity in Column B is greater. (c) The quantities are equal. (d) The relationship cannot be determined from the information given. **Ans : (c)**

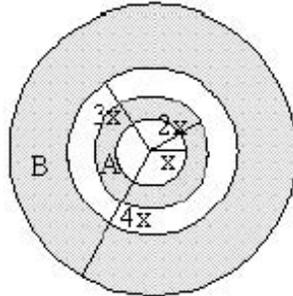
#### Quantitative Section: Multiple Choice

**Directions :** Solve each CAT sample quantitative ability problem and indicate the best of the answer choices given. **Numbers :** All numbers used are real numbers. **Figures:** A figure accompanying a CAT sample quantitative ability problem solving question is intended to provide information useful in solving the problem. Figures are drawn as accurately as possible EXCEPT when it is stated in a specific problem that its figure is not drawn to scale. Straight lines may sometimes appear jagged. All figures lie on a plane unless otherwise indicated. Following are some CAT sample quantitative ability questions.

1. A rectangle is 14 cm long and 10 cm wide. If the length is reduced by  $x$  cms and its width is increased also by  $x$  cms so as to make it a square then its area changes by : (a) 4 (b) 144 (c) 12 (d) 2 (e) None of the above **Ans : (a)**

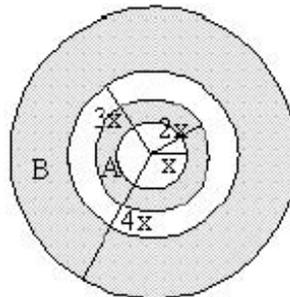
2. A [motorcycle stunts](#) man belonging to a fair, rides over the vertical walls of a circular well at an average

- speed of 54 kph for 5 minutes. If the radius of the well is 5 meters then the distance traveled is: (a) 2.5 (b) 3.5 (c) 4.5 (d) 5.5 (e) None of the above **Ans : (c)**
3. If 1 cm on a map corresponds to an actual distance of 40 kms. And the distance on the map between Bombay and Calcutta is 37.5 cms., the actual distance between them is : (a) 375 kms (b) 3750 kms (c) 1500 kms (d) 1375 kms (e) None of the above **Ans : (c)**
4. A box contains 90 mts each of 100 gms and 100 bolts each of 150 gms. If the entire box weighs 35.5 kg., then the weight of the empty box is : (a) 10 Kg (b) 10.5 Kg (c) 11 Kg (d) 11.5 Kg (e) None of the above **Ans : (d)**
5. If the radius of a circle is increased by 20% then the area is increased by : (a) 44% (b) 120% (c) 144% (d) 40% (e) None of the above **Ans : (a)**
6. Tom, Dick and Harry went for lunch to a restaurant. Tom had \$100 with him, Dick had \$60 and Harry had \$409. They got a bill for \$104 and decided to give a tip of \$16. They further decided to share the total expenses in the ratio of the amounts of money each carried. The amount of money which Tom paid more than what Harry paid is (a) 120 (b) 200 (c) 60 (d) 24 (e) 36 **Ans : (E)**
7. A plot of land is in the shape of a trapezium whose dimensions are given in the figure below : Hence the perimeter of the field is (a) 50m (b) 64m (c) 72m (d) 84m (e) None of the above **Ans : (c)**
8. Four concentric ( having the same center ) circles with radii,  $x$ ,  $2x$ ,  $3x$  and  $4x$  are drawn to form two rings A and B as shown in the figure.



Ratio of the area of inner ring A to the area of outer ring B is (a) 1:2 (b) 1:4 (c) 2:3 (d) 3:7 (e) None of the above **Ans : (d)**

9. If  $3/p = 6$  and  $3/q = 15$  then  $p - q = ?$  (a)  $1/3$  (b)  $2/5$  (c)  $3/10$  (d)  $5/6$  (e) None of the above **Ans : (c)**
10. A father is three times as old as his son. After fifteen years the father will be twice as old as his son's age at that time. Hence the father's present age is (a) 36 (b) 42 (c) 45 (d) 48 (e) None of the above **Ans : (c)**
11.  $(1/4)^3 + (3/4)^3 + 3(1/4)(3/4)(1/4 + 3/4) = ?$  (a)  $1/64$  (b)  $27/64$  (c)  $49/64$  (d) 0 (e) 1 **Ans : (e)**
12. If the area of two circles are in the ratio 169 : 196 then the ratio of their radii is (a) 10 : 11 (b) 11 : 12 (c) 12 : 13 (d) 13 : 14 (e) None of the above **Ans : (d)**
13. A semi-circle is surmounted on the side of a square. The ratio of the



area of the semi-circle to the area of the square is (a) 1:2 (b) 2 : p (c) p : 8 (d) 8 : p (e) None of the above **Ans : (c)**

14. Which of the following is the greatest ? (a) 40% of 30 (b)  $3/5$  of 25 (c) 6.5% of 200 (d) Five more than the square of 3 (e)  $1/2^{-4}$  **Ans : (e)**

15. Two identical taps fill  $2/5$  of a tank in 20 minutes. When one of the taps goes dry in how many minutes will the remaining one tap fill the rest of the tank

? (a) 5 minutes (b) 10 minutes (c) 15 minutes (d) 20 minutes (e) None of the above **Ans : (c) 16.** If the value of XYZ Company **stock** drops from \$25 per share to \$21 per share, what is the percent of the decrease? (a) 4 (b) 8 (c) 12 (d) 16 (e) 20 **Ans : (d) 17.** If a building  $b$  feet high casts a shadow  $f$  feet long, then, at the same time of day, a **tree**  $t$  feet high will cast a shadow how many feet long? (a)  $ft/b$  (b)  $fb/t$  (c)  $b/ft$  (d)  $tb/f$  (e)  $t/f$  **Ans : (a) 18.** If  $x$ ,  $y$ , and  $z$  are consecutive negative integers, and if  $x > y > z$ , which of the following must be a positive odd integer? (a)  $xyz$  (b)  $(x - y)$  (c)  $(y - z)$  (d)  $x - yz$  (e)  $x(y + z)$  (f)  $x+y+z$  **Ans : (b) 19.** At a certain ice cream parlor, customers can choose among five different ice cream flavors and can choose either a sugar cone or a waffle cone. Considering both ice cream flavor and cone type, how many distinct triple-scoop cones with three different ice cream flavors are available? (a) 12 (b) 16 (c) 20 (d) 24 (e) 30 **Ans : (c) 20.** What is the greatest value of a positive integer  $n$  such that  $3n$  is a factor of 1815? (a) 15 (b) 18 (c) 30 (d) 33 (e) 45 **Ans : (c)**

**21.** If  $.2t = 2.2 - .6s$  and  $.5s = .2t + 1.1$ , then  $s =$  (a) 1 (b) 3 (c) 10 (d) 11 (e) 30 **Ans : (b) 22.** Five years ago, Beth's age was three times that of Amy. Ten years ago, Beth's age was one half that of **Chelsea**. If  $C$  represents Chelsea's current age, which of the following represents Amy's current age? (a)  $c/6 + 5$  (b)  $2c$  (c)  $(c-10)/3$  (d)  $3c-5$  (e)  $5c/3 - 10$  **Ans : (a) 23.** A portion of \$7200 is invested at a 4% annual return, while the remainder is invested at a 5% annual return. If the annual income from both portions is the same, what is the total income from the two **investments**? (a) \$160 (b) \$320 (c) \$400 (d) \$720 (e) \$1,600 **Ans : (b) 24.** An empty **swimming pool** can be filled to capacity through an inlet pipe in 3 hours, and it can be completely drained by a drainpipe in 6 hours. If both pipes are fully open at the same time, in how many hours will the empty pool be filled to capacity? (a) 4 (b) 4.5 (c) 5 (d) 5.5 (e) 6 **Ans : (e) 25.** If  $r = (3p + q)/2$  and  $s = p - q$ , for which of the following values of  $p$  would  $r^2 = s^2$ ? (a)  $1q/5$  (b)  $10 - 3q/2$  (c)  $q - 1$  (d)  $3q$  (e)  $9q/2 - 9$  **Ans : (a) 26.** At 10 a.m. two trains started traveling toward each other from stations 287 miles apart. They passed each other at 1:30 p.m. the same day. If the average speed of the faster train exceeded the average speed of the slower train by 6 miles per hour, which of the following represents the speed of the faster train, in miles per hour? (a) 38 (b) 40 (c) 44 (d) 48 (e) 50 **Ans : (c) 27.** On the  $xy$ -coordinate plane, points A and B both lie on the circumference of a circle whose center is O, and the length of AB equals the circle's diameter. If the  $(x,y)$  coordinates of O are (2,1) and the  $(x,y)$  coordinates of B are (4,6), what are the  $(x,y)$  coordinates of A? (a) (3, 3/2) (b) (1, 2/2) (c) (0, -4) (d) (2/2, 1) (e) (-1, -2/2) **Ans : (c)**

**28.** If a rectangle's length and width are both doubled, by what percent is the rectangle's area increased? (a) 50 (b) 100 (c) 200 (d) 300 (e) 400 **Ans : (d) 29.** If a rectangle's length and width are both doubled, by what percent is the rectangle's area increased? (a) 9 (b) 12 (c) 16 (d) 21 (e) 39 **Ans : (b) 30.** Point Q lies at the center of the square base (ABCD) of the pyramid pictured above. The pyramid's height (PQ) measures exactly one half the length of each edge of its base, and point E lies exactly halfway between C and D along one edge of the base. What is the ratio of the surface area of any of the pyramid's four triangular faces to the surface area of the shaded **triangle**? (a)  $3 : \sqrt{2}$  (b)  $\sqrt{5} : 1$  (c)  $4\sqrt{3} : 3$  (d)  $2\sqrt{2} : 1$  (e)  $8 : \sqrt{5}$  **Ans : (d)**

**31.** The average wages of a worker during a fortnight comprising 15 consecutive working days was Rs.90 per day. During the first 7 days, his average wages was Rs.87/day and the average wages during the last 7 days was Rs.92 /day. What was his wage on the 8th day? (a) 83 (b) 92 (c) 90 (d) 97 **Ans : (d) 32.** The average of 5 quantities is 6. The average of 3 of them is 8. What is the average of the remaining two numbers? (a) 6.5 (b) 4 (c) 3 (d) 3.5 **Ans : (c) 33.** The average temperature on Wednesday, Thursday and Friday was 250. The average temperature on Thursday, Friday and Saturday was 240. If the temperature on Saturday was 270, what was the temperature on Wednesday? (a) 240 (b) 210 (c) 270 (d) 300 **Ans : (d) 34.** The average age of a group of 12 **students** is 20years. If 4 more students join the group, the average age increases by 1 year. The average age of the new students is (a) 24 (b) 26 (c) 23 (d) 22 **Ans : (a) 35.** When a student weighing 45 kgs left a class, the average weight of the remaining 59 students increased by 200g. What is the average weight of the remaining 59 students? (a) 57 kgs (b) 56.8 kgs (c) 58.2 kgs (d) 52.2 kgs **Ans : (a) 36.** Three math classes: X, Y, and Z, take an **algebra** test. The average score in class X is 83. The average score in class Y is 76. The average score in class Z is 85. The average score of all students in classes X and Y together is 79. The average score of all students in classes Y and Z together is 81. What is the average for all the three classes? (a) 81 (b) 81.5 (c) 82 (d) 84.5 **Ans : (b) 37.** The average weight of a class of 24 students is 36 years. When the weight of the **teacher** is also included, the average weight increases by 1kg.

What is the weight of the teacher? (a) 60 kgs (b) 61 kgs (c) 37 kgs (d) None of these **Ans : (b) 38.** The average of 5 quantities is 10 and the average of 3 of them is 9. What is the average of the remaining 2? (a) 11 (b) 12 (c) 11.5 (d) 12.5 **Ans : (c) 39.** The average age of a family of 5 members is 20 years. If the age of the youngest member be 10 years then what was the average age of the family at the time of the birth of the youngest member? (a) 13.5 (b) 14 (c) 15 (d) 12.5 **Ans : (d) 40.** A student finds the average of 10 positive integers. Each integer contains two digits. By mistake, the boy interchanges the digits of one number say ba for ab. Due to this, the average becomes 1.8 less than the previous one. What was the difference of the two digits a and b? (a) 8 (b) 6 (c) 2 (d) 4 **Ans : (c) 41.** Average cost of 5 apples and 4 mangoes is Rs. 36. The average cost of 7 apples and 8 mangoes is Rs. 48. Find the total cost of 24 apples and 24 mangoes. (a) 1044 (b) 2088 (c) 720 (d) 324 **Ans : (b)**

**Extra Question).** A father left a will of Rs.35 lakhs between his two daughters aged 8.5 and 16 such that they may get equal amounts when each of them reach the age of 21 years. The original amount of Rs.35 lakhs has been instructed to be invested at 10% p.a. simple interest. How much did the elder daughter get at the time of the will? (a) Rs. 17.5 lakhs (b) Rs. 21 lakhs (c) Rs. 15 lakhs (d) Rs. 20 lakhs **Ans : (b) 42.** What will Rs.1500 amount to in three years if it is invested in 20% p.a. compound interest, interest being compounded annually? (a) 2400 (b) 2592 (c) 2678 (d) 2540 **Ans : (b) 43.** If a sum of money grows to 144/121 times when invested for two years in a scheme where interest is compounded annually, how long will the same sum of money take to treble if invested at the same rate of interest in a scheme where interest is computed using simple interest method? (a) 9 years (b) 22 years (c) 18 years (d) 33 years **Ans : (b) 44.** The population of a town was 3600 three years back. It is 4800 right now. What will be the population three years down the line, if the rate of growth of population has been constant over the years and has been compounding annually? (a) 6000 (b) 6400 (c) 7200 (d) 9600 **Ans : (b) 45.** A man invests Rs.5000 for 3 years at 5% p.a. compound interest reckoned yearly. Income tax at the rate of 20% on the interest earned is deducted at the end of each year. Find the amount at the end of the third year. (a) 5624.32 (b) 5630.50 (c) 5788.125 (d) 5627.20 **Ans : (a) 46.** The difference between the compound interest and the simple interest on a certain sum at 12% p.a. for two years is Rs.90. What will be the value of the amount at the end of 3 years? (a) 9000 (b) 6250 (c) 8530.80 (d) 8780.80 **Ans : (d) 47.** Vijay invested Rs.50,000 partly at 10% and partly at 15%. His total income after a year was Rs.7000. How much did he invest at the rate of 10%? (a) Rs.40,000 (b) Rs.40,000 (c) Rs.12,000 (d) Rs.20,000 **Ans : (b) 48.** A sum of money invested for a certain number of years at 8% p.a. simple interest grows to Rs.180. The same sum of money invested for the same number of years at 4% p.a. simple interest grows to Rs.120 only. For how many years was the sum invested? (a) 25 years (b) 40 years (c) 33 years and 4 months (d) Cannot be determined **Ans : (a) 49.** How long will it take for a sum of money to grow from Rs.1250 to Rs.10,000, if it is invested at 12.5% p.a simple interest? (a) 8 years (b) 64 years (c) 72 years (d) 56 years **Ans : (d) 50.** Rs. 5887 is divided between Shyam and Ram, such that Shyam's share at the end of 9 years is equal to Ram's share at the end of 11 years, compounded annually at the rate of 5%. Find the share of Shyam. (a) 2088 (b) 2000 (c) 3087 (d) None of these **Ans : (c) 51.** Find the coordinates of the point which divides the line joining (5, -2) and (9, 6) internally in the ratio 1 : 3. (a) (6, 0) (b) (6, 3) (c) (0, 6) (d) (3, 6) **Ans : (a) 52.** Find the number of triangles in an octagon. (a) 326 (b) 120 (c) 56 (d) Cannot be determined **Ans : (c) 53.** Find the equation of a line whose intercepts are twice of the line  $3x - 2y - 12 = 0$  (a)  $3x - 2y = 24$  (b)  $2x - 3y = 12$  (c)  $2x - 3y = 24$  (d) None of these **Ans : (a) 54.** Find the area of the sector covered by the hour hand after it has moved through 3 hours and the length of the hour hand is 7cm. (a) 77 sq.cm (b) 38.5 sq.cm (c) 35 sq.cm (d) 70 sq.cm **Ans : (b) 55.** Find the area of the triangle whose vertices are (-6, -2), (-4, -6), (-2, 5). (a) 36 (b) 18 (c) 15 (d) 30 **Ans : (c) 56.** A stairway 10ft high is such that each step accounts for half a foot upward and one-foot forward. What distance will an ant travel if it starts from ground level to reach the top of the stairway? (a) 30 ft (b) 33 ft (c) 10 ft (d) 29 ft **Ans : (d) 57.** Each interior angle of a regular polygon is 120 degrees greater than each exterior angle. How many sides are there in the polygon? (a) 6 (b) 8 (c) 12 (d) 3 **Ans : (c) 58.** What is the area of the largest triangle that can be fitted into a rectangle of length 'l' units and width 'w' units? (a)  $lw/3$  (b)  $(2lw)/3$  (c)  $(3lw)/4$  (d)  $(lw)/2$  **Ans : (d) 59.** Which of the following is incorrect? (a) An incentre is a point where the angle bisectors meet. (b) The median of any side of a triangle bisects the side at right angle (c) The point at which the three altitudes of a triangle meet is the orthocentre (d) The point at which the three perpendicular bisectors meet is

the centre of the circumcircle. **Ans : (b) 60.** A and B are two points with the co-ordinates (-2, 0) and (0, 5). What is the length of the diagonal AC if AB form one of the sides of the square ABCD? (a) units (b) units (c) units (d) units **Ans : (b)**

**61.** What is the measure of the circum radius of a [triangle](#) whose sides are 9, 40 and 41? (a) 6 (b) 4 (c) 24.5 (d) 20.5 **Ans : (d) 62.** If the sum of the interior angles of a regular polygon measures up to 1440 [degrees](#),

how many sides does the polygon have? (a) 10 sides (b) 8 sides (c) 12 sides (d) 9 sides **Ans : (a) 63.** If ABC is a right angle triangle with angle A = 90° and  $2s = a + b + c$ , where  $a > b > c$  where notations have their usual meanings, then which one of the following is Correct? (a)  $(s - b)(s - c) > s(s - a)$  (b)  $(s - a)(s - c) > s(s - b)$  (c)  $(s - a)(s - b) < s(s - c)$  (d)  $4s(s - a)(s - b)(s - c) = bc$  **Ans : (c) 64.** What is the measure of in

radius of the triangle whose sides are 24, 7 and 25? (a) 12.5 (b) 3 (c) 6 (d) None of these **Ans : (b) 65.** What is the circum radius of a triangle whose sides are 7, 24 and 25 respectively? (a) 18 (b) 12.5 (c) 12 (d) 14 **Ans :**

**(b) Quantitative Ability : [Menstruation](#) 66.** A regular hexagon is inscribed in a circle of radius r cms. What is the perimeter of the regular hexagon? (a) 3r (b) 6r (c) r (d) 9r **Ans : (b) 67.** A 4 cm cube is cut into 1 cm

cubes. What is the percentage increase in the surface area after such cutting? (a) 4% (b) 300% (c) 75% (d) 400% **Ans : (b) 68.** If the diagonal and the area of a rectangle are 25 m and 168 m<sup>2</sup>, what is the length of the rectangle? (a) 17 m (b) 31 m (c) 12 m (d) 24 m **Ans : (d) 69.** The surface area of the three coterminal

faces of a cuboid are 6, 15, 10 sq.cm respectively. Find the volume of the cuboid. (a) 30 (b) 20 (c) 40 (d) 35 **Ans : (a) 70.** If each interior angle of a regular polygon is 150 degrees, then it is (a) Octagon (b) Decagon (c) Dodecagon (d) Tetrahedron **Ans : (c)**

**71.** A 5 cm cube is cut into as many 1 cm cubes as possible. What is the ratio of the surface area of the larger cube to that of the sum of the surface areas of the smaller cubes? (a) 1 : 6 (b) 1 : 5 (c) 1 : 25 (d) 1

: 125 **Ans : (b) 72.** If the sides of a [triangle](#) measure 72, 75 and 21, what is the measure of its in radius?

(a) 37.5 (b) 24 (c) 9 (d) 15 **Ans : (c) 73.** The circumference of the front wheel of a cart is 30 ft long and that of the back wheel is 36 ft long. What is the distance travelled by the cart, when the front wheel has done five more revolutions than the rear wheel? (a) 20 ft (b) 25 ft (c) 750 ft (d) 900 ft **Ans : (d) 74.** The area of a

square field is 24200 sq m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr? (a) 3 minutes (b) 2 minutes (c) 2.4 minutes (d) 2 minutes 40 seconds **Ans : (b) Quantitative Ability :**

**Trigonometry 75.** a and b are the lengths of the base and height of a right angled triangle whose hypotenuse is h. If the values of a and b are positive integers, which of the following cannot be a value of the square of the hypotenuse? (a) 13 (b) 23 (c) 37 (d) 41 **Ans : (b) Quantitative Ability : [Menstruation](#) 76.** The angle of

elevation of the top of a tower 30 m high, from two points on the level ground on its opposite sides are 45 [degrees](#) and 60 degrees. What is the distance between the two points? (a) 30 (b) 51.96 (c) 47.32 (d) 81.96

**Ans : (c) 77.** What is the value of  $\cot 15^\circ + \cot 75^\circ + \cot 135^\circ - \operatorname{cosec} 30^\circ$ ? (a) 3 (b) Infinity (c) 1 (d) None of these **Ans : (c) Ratio And Proportion 78.** Rs.432 is divided amongst three workers A, B and C such that

8 times A's share is equal to 12 times B's share which is equal to 6 times C's share. How much did A get? (a) Rs.192 (b) Rs.133 (c) Rs.144 (d) Rs.128 **Ans : (c)**

**79.** If 20 men or 24 women or 40 boys can do a job in 12 days working for 8 hours a day, how many men working with 6 women and 2 boys take to do a job four times as big working for 5 hours a day for 12 days?

(a) 8 men (b) 12 men (c) 2 men (d) 24 men **Ans : (c) 80.** Two cogged wheels of which one has 32 cogs and other 54 cogs, work into each other. If the latter turns 80 times in three quarters of a minute, how often does the other turn in 8 seconds? (a) 48 (b) 135 (c) 24 (d) None of these **Ans : (c)**

**81.** The [monthly incomes](#) of A and B are in the ratio 4 : 5, their expenses are in the ratio 5 : 6. If 'A' saves Rs.25 per month and 'B' saves Rs.50 per month, what are their respective incomes? (a) Rs.400 and Rs.500

(b) Rs.240 and Rs.300 (c) Rs.320 and Rs.400 (d) Rs.440 and Rs.550 **Ans : (a) 82.** The proportion of milk and [water](#) in 3 samples is 2:1, 3:2 and 5:3. A mixture comprising of equal quantities of all 3 samples is made.

The proportion of milk and [water](#) in the mixture is (a) 2:1 (b) 5:1 (c) 99:61 (d) 227:133 **Ans : (d) 83.** A group of workers can do a piece of work in 24 days. However as 7 of them were absent it took 30 days to complete the work.

How many people actually worked on the job to complete it? (a) 35 (b) 30 (c) 28 (d) 42 **Ans : (c) 84.** A, B and C play cricket. A's runs are to B's runs and B's runs are to C's as 3:2. They get altogether 342 runs. How many runs did A make? (a) 162 (b) 108 (c) 72 (d) None of these **Ans : (a) 85.** The monthly [salaries](#)

of two persons are in the ratio of 4:7. If each receives an increase of Rs.25 in the salary, the ratio is altered

- to 3: 5. Find their respective salaries. (a) 120 and 210 (b) 80 and 140 (c) 180 and 300 (d) 200 and 350 **Ans : (d) 86.** A fort has provisions for 60 days. If after 15 days 500 men strengthen them and the **food** lasts 40 days longer, how many men are there in the fort? (a) 3500 (b) 4000 (c) 6000 (d) None of these **Ans : (b) 87.** The ratio of marks obtained by Vinod and Basu is 6:5. If the combined average of their percentage is 68.75 and their sum of the marks is 275, find the total marks for which exam was conducted. (a) 150 (b) 200 (c) 400 (d) None of these **Ans : (b) 88.** The present ages of A and B are as 6 : 4. Five years ago their ages were in the ratio 5 : 3. Find their present ages. (a) 42, 28 (b) 36, 24 (c) 30, 20 (d) 25, 15 **Ans : (c) 89.** A, B and C enter into a partnership by investing Rs.3600, Rs.4400 and Rs.2800. A is a working partner and gets a fourth of the profit for his services and the remaining profit is divided amongst the three in the rate of their investments. What is the amount of profit that B gets if A gets a total of Rs. 8000? (a) 4888.88 (b) 9333.33 (c) 4000 (d) 3666.66 **Ans : (a) 90.** A, B and C, each of them working alone can complete a job in 6, 8 and 12 days respectively. If all three of them work together to complete a job and earn Rs.2340, what will be C's share of the earnings? (a) Rs.520 (b) Rs.1080 (c) Rs.1170 (d) Rs.630 **Ans : (a)**
- 91.** A 20 litre mixture of milk and **water** contains milk and water in the ratio 3 : 2. 10 litres of the mixture is removed and replaced with pure milk and the operation is repeated once more. At the end of the two removal and replacement, what is the ratio of milk and **water** in the resultant mixture? (a) 17 : 3 (b) 9 : 1 (c) 3 : 17 (d) 5 : 3 **Ans : (b) 92.** In what ratio must a person mix three kinds of **tea** costing Rs.60/kg, Rs.75/kg and Rs.100 /kg so that the resultant mixture when sold at Rs.96/kg yields a profit of 20%? (a) 1 : 2 : 4 (b) 3 : 7 : 6 (c) 1 : 4 : 2 (d) None of these **Ans : (c) 93.** A merchant mixes three varieties of rice costing Rs.20/kg, Rs.24/kg and Rs.30/kg and sells the mixture at a profit of 20% at Rs.30 / kg. How many kgs of the second variety will be in the mixture if 2 kgs of the third variety is there in the mixture? (a) 1 kg (b) 5 kgs (c) 3 kgs (d) 6 kgs **Ans : (b)**
- 94.** How many litres of water should be added to a 30 litre mixture of milk and water containing milk and water in the ratio of 7 : 3 such that the resultant mixture has 40% water in it? (a) 7 litres (b) 10 litres (c) 5 litres (d) None of these **Ans : (c) 95.** How many kgs of Basmati rice costing Rs.42/kg should a shopkeeper mix with 25 kgs of ordinary rice costing Rs.24 per kg so that he makes a profit of 25% on selling the mixture at Rs.40/kg? (a) 20 kgs (b) 12.5 kgs (c) 16 kgs (d) 200 kgs **Ans : (a) 96.** How many litres of a 12 litre mixture containing milk and water in the ratio of 2 : 3 be replaced with pure milk so that the resultant mixture contains milk and water in equal proportion? (a) 4 litres (b) 2 litres (c) 1 litres (d) 1.5 litres **Ans : (b) 97.** A sample of x litres from a **container** having a 60 litre mixture of milk and water containing milk and water in the ratio of 2 : 3 is replaced with pure milk so that the container will have milk and water in equal proportions. What is the value of x? (a) 6 litres (b) 10 litres (c) 30 litres (d) None of these **Ans : (b)**
- 98.** A zookeeper counted the heads of the animals in a zoo and found it to be 80. When he counted the legs of the animals he found it to be 260. If the zoo had either **pigeons** or horses, how many horses were there in the zoo? (a) 40 (b) 30 (c) 50 (d) 60 **Ans : (c) 99.** From a cask of milk containing 30 litres, 6 litres are drawn out and the cask is filled up with water. If the same process is repeated a second, then a third time, what will be the number of litres of milk left in the cask? (a) 0.512 liters (b) 12 liters (c) 14.38 liters (d) 15.36 liters **Ans : (d) 100.** In a km race, A gives B a start of 20 seconds and beats him by 40m. However, when he gives B a start of 25 seconds they finish in a dead heat. What is A's speed in m/sec? (a) 12.5 m/sec (b) 20 m/sec (c) 8 m/sec (d) 10 m/sec **Ans : (d)**
- 101.** In a kilometre race, A can give B a start of 100 m or 15 seconds. How long does A take to complete the race? (a) 150 seconds (b) 165 seconds (c) 135 seconds (d) 66.67 seconds **Ans : (c) 102.** A gives B a start of 10 metres in a 100 metre race and still beats him by 1.25 seconds. How long does B take to complete the 100 metre race if A runs at the rate of 10 m/sec? (a) 8 seconds (b) 10 seconds (c) 16.67 seconds (d) 12.5 seconds **Ans : (d) 103.** A predator is chasing its prey. The predator takes 4 leaps for every 6 leaps of the prey and the predator covers as much distance in 2 leaps as 3 leaps of the prey. Will the predator succeed in getting its **food** ? (a) Yes (b) In the 6th leap (c) Never (d) Cannot determine **Ans : (d) 104.** A skating champion moves along the circumference of a circle of radius 21 meters in 44 seconds. How many seconds will it take her to move along the perimeter of a hexagon of side 42 meters? (a) 56 (b) 84 (c) 64 (d) 48 **Ans : (b) 105.** A runs  $13\frac{5}{8}$  times as fast as B. If A gives a start of 240m, how far must the post be so that A and B might reach at the same time. (a) 390 m (b) 330 m (c) 600 m (d) 720 m **Ans : (a) 106.** A gives B a start of 30 seconds in a km race and still beats him by 20 m. However, when he gives B a start of 35 seconds, they finish

- the race in a dead heat. How long does A take to run the km? (a) 250 seconds (b) 285 seconds (c) 220 seconds (d) 220 seconds **Ans : (d) 107.** A can give B 20 points, A can give C 32 points and B can give C 15 points. How many points make the game? (a) 150 (b) 200 (c) 100 (d) 170 **Ans : (d) 108.** A can give B a start of 50 metres or 10 seconds in a kilometer race. How long does A take to complete the race? (a) 200 seconds (b) 140 seconds (c) 220 seconds (d) 190 seconds **Ans : (d) 109.** Three runners A, B and C run a race, with runner A finishing 12 meters ahead of runner B and 18 meters ahead of runner C, while runner B finishes 8 meters ahead of runner C. Each runner travels the entire distance at a constant speed. What was the length of the race? (a) 36 meters (b) 48 meters (c) 60 meters (d) 72 meters **Ans : (b)**
- 110.** P can give Q a start of 20 seconds in a kilometer race. P can give R a start of 200 meters in the same kilometer race. And Q can give R a start of 20 seconds in the same kilometer race. How long does P take to run the kilometer? (a) 200 seconds (b) 240 seconds (c) 160 seconds (d) 140 seconds **Ans : (c)**
- 111.** Two numbers when divided by a certain divisor leave remainders of 431 and 379 respectively. When the sum of these two numbers is divided by the same divisor, the remainder is 211. What is the divisor? (a) 599 (b) 1021 (c) 263 (d) Cannot be determined **Ans : (a) 112.** How many zeros contained in 100!? (a) 100 (b) 24 (c) 97 (d) Cannot be determined **Ans : (b) 113.** Which is greater of the two (a) 2300 (b) 3200 (c) Both are equal (d) Cannot be determine **Ans : (b) 114.** What is the value of M and N respectively? If  $M39048458N$  is divisible by 8 & 11; Where M & N are single digit integers? (a) 7, 8 (b) 8, 6 (c) 6, 4 (d) 5, 4 **Ans : (c) 115.** When 26854 and 27584 are divided by a certain two digit prime number, the remainder obtained is 47. Which of the following choices is a possible value of the divisor? (a) 61 (b) 71 (c) 73 (d) 89 **Ans : (c) 116.** Find the G.C.D of  $12x^2y^3z^2$ ,  $18x^3y^2z^4$ , and  $24xy^4z^3$  (a)  $6xy^2z^2$  (b)  $6x^3y^4z^3$  (c)  $24xy^2z^2$  (d)  $18x^2y^2z^3$  **Ans : (a) 117.** Find the G.C.D of  $12x^2y^3z^2$ ,  $18x^3y^2z^4$ , and  $24xy^4z^3$  (a)  $6xy^2z^2$  (b)  $6x^3y^4z^3$  (c)  $24xy^2z^2$  (d)  $18x^2y^2z^3$  **Ans : (a)**
- 118.** The 7th digit of  $(202)^3$  is (a) 2 (b) 4 (c) 8 (d) 6 **Ans : (c) 119.** A railway half ticket costs half the full fare and the reservation charge is the same on half ticket as on full ticket. One reserved first class ticket from Chennai to Trivandrum costs Rs. 216 and one full and one half reserved first class tickets cost Rs. 327. What is the basic first class full fare and what is the reservation charge? (a) Rs. 105 and Rs. 6 (b) Rs. 216 and Rs. 12 (c) Rs. 210 and Rs. 12 (d) Rs. 210 and Rs. 6 **Ans : (d) 120.** Find the range of real values of x satisfying the inequalities  $3x - 2 > 7$  and  $4x - 13 > 15$ . (a)  $x > 3$  (b)  $x > 7$  (c)  $x < 7$  (d)  $x < 3$  **Ans : (B)**
- 121.** How many different factors are there for the number 48, excluding 1 and 48? (a) 12 (b) 4 (c) 8 (d) None of these **Ans : (c) 122.** What is the remainder when  $9 + 9^2 + 9^3 + \dots + 9^8$  is divided by 6? (a) 3 (b) 2 (c) 0 (d) 5 **Ans : (c) 123.** The sum of the first 100 numbers, 1 to 100 is divisible by (a) 2, 4 and 8 (b) 2 and 4 (c) 2 only (d) None of these **Ans : (c) 124.** The sum of the first 100 numbers, 1 to 100 is divisible by (a) 2, 4 and 8 (b) 2 and 4 (c) 2 only (d) None of these **Ans : (c)**
- 125.** For what value of 'n' will the remainder of  $351n$  and  $352n$  be the same when divided by 7? (a) 2 (b) 3 (c) 6 (d) 4 **Ans : (b) 126.** A person starts multiplying consecutive positive integers from 20. How many numbers should he multiply before the will have result that will end with 3 zeroes? (a) 11 (b) 10 (c) 6 (d) 5 **Ans : (c) 127.** What is the minimum number of square marbles required to tile a floor of length 5 metres 78 cm and width 3 metres 74 cm? (a) 176 (b) 187 (c) 54043 (d) 748 **Ans : (b) 128.** What number should be subtracted from  $x^3 + 4x^2 - 7x + 12$  if it is to be perfectly divisible by  $x + 3$ ? (a) 42 (b) 39 (c) 13 (d) None of these **Ans : (a) 129.** Let x, y and z be distinct integers. x and y are odd and positive, and z is even and positive. Which one of the following statements cannot be true? (a)  $(x-z)^2y$  is even (b)  $(x-z)y^2$  is odd (c)  $(x-z)y$  is odd (d)  $(x-y)^{2z}$  is even **Ans : (a)**
- 130.** Anita had to do a multiplication. Instead of taking 35 as one of the multipliers, she took 53. As a result, the product went up by 540. What is the new product? (a) 1050 (b) 540 (c) 1440 (d) 1590 **Ans : (d) 131.** Let n be the number of different 5 digit numbers, divisible by 4 with the digits 1, 2, 3, 4, 5 and 6, no digit being repeated in the numbers. What is the value of n? (a) 144 (b) 168 (c) 192 (d) None of these **Ans : (c) 132.** Find the greatest number of five digits, which is exactly divisible by 7, 10, 15, 21 and 28. (a) 99840 (b) 99900 (c) 99960 (d) 99990 **Ans : (c) 133.** When 242 is divided by a certain divisor the remainder obtained is 8. When 698 is divided by the same divisor the remainder obtained is 9. However, when the sum of the two numbers 242 and 698 is divided by the divisor, the remainder obtained is 4. What is the value of the divisor? (a) 11 (b) 17 (c) 13 (d) 23 **Ans : (c) 134.** A number when divided by a divisor leaves a remainder of 24. When

twice the original number is divided by the same divisor, the remainder is 11. What is the value of the divisor? (a) 13 (b) 59 (c) 35 (d) 37 **Ans : (d) 135.** Given  $A = 265$  and  $B = (264+263+262+\dots+20)$  (a) B is 264 larger than A (b) A and B are equal (c) B is larger than A by 1 (d) A is larger than B by 1 **Ans : (d) 136.** The sum of third and ninth term of an A.P is 8. Find the sum of the first 11 terms of the progression. (a) 44 (b) 22 (c) 19 (d) None of these **Ans : (a) 137.** If  $(x + 2)^2 = 9$  and  $(y + 3)^2 = 25$ , then the maximum value of  $x / y$  is (a)  $1/2$  (b)  $5/2$  (c)  $5/8$  (d)  $1/8$  **Ans : (c) 138.** If p and q are the roots of the equation  $x^2 - bx + c = 0$ , then what is the equation if the roots are  $(pq + p + q)$  and  $(pq - p - q)$ ? (a)  $x^2 - 2cx + (c^2 - b^2) = 0$  (b)  $x^2 - 2bx + (b^2 + c^2) = 0$  (c)  $Bcx^2 - 2(b+c)x + c^2 = 0$  (d)  $x^2 + 2bx - (c^2 - b^2) = 0$  **Ans : (a) 139.** A piece of equipment cost a certain factory Rs. 600,000. If it depreciates in value, 15% the first year, 13.5% the next year, 12% the third year, and so on, what will be its value at the end of 10 years, all percentages applying to the original cost? (a) 2,00,000 (b) 1,05,000 (c) 4,05,000 (d) 6,50,000 **Ans : (b) 140.** Solve the inequality  $33x-2 > 1$  (a)  $x > 1$  (b)  $x > 3$  (c)  $x > 2/3$  (d)  $x > 1/3$  **Ans : (c)**

**141.** The largest number amongst the following that will perfectly divide  $10^{1100} - 1$  is (a) 100 (b) 10000 (c)  $100^{100}$  (d) 100000 **Ans : (b) 142.** What is the highest power of 7 in  $5000!$ ? ( $5000!$  means factorial 5000) (a) 4998 (b) 714 (c) 832 (d) 816 **Ans : (c) 143.** What is the total number of different divisors including 1 and the number that can divide the number 6400? (a) 24 (b) 27 (c) 54 (d) 68 **Ans : (b) 144.** How many four digit numbers exist which can be formed by using the digits 2, 3, 5 and 7 once only such that they are divisible by 25? (a)  $4! - 3!$  (b) 4 (c) 8 (d) 6 **Ans : (b)**

**145.** A certain number when successfully divided by 8 and 11 leaves remainders of 3 and 7 respectively. What will be remainder when the number is divided by the product of 8 and 11, viz 88? (a) 3 (b) 21 (c) 59 (d) 68 **Ans : (c) 146.** 'a' and 'b' are the lengths of the base and height of a right angled triangle whose hypotenuse is 'h'. If the values of 'a' and 'b' are positive integers, which of the following cannot be a value of the square of the hypotenuse? (a) 13 (b) 23 (c) 37 (d) 41 **Ans : (b) 147.** What is the remainder when  $91 + 92 + 93 + \dots + 99$  is divided by 6? (a) 0 (b) 3 (c) 4 (d) None of these **Ans : (b) 148.** How many times will the digit '0' appear between 1 and 10,000? (a) 4000 (b) 4003 (c) 2893 (d) 3892 **Ans : (c) 149.** What is the total number of different divisors of the number 7200? (a) 20 (b) 4 (c) 54 (d) 32 **Ans : (c) 150.** What is the least number that should be multiplied to  $100!$  to make it perfectly divisible by 350? (a) 144 (b) 72 (c) 108 (d) 216 **Ans : (b)**

#### Quantitative Section: Data Interpretation

**Question 1-5** refers to the following table PROFILE OF CONGRESS IN YEAR X (total membership: 535)

#### House of Representatives

#### Senate

<b>Party</b>
292
Democratic
62
143
Republican
38
435
<b>TOTAL</b>
100
<b>Sex</b>
418
Male
100
17
Female
0
<b>Age</b>
27
Youngest

34  
 77  
 Oldest  
 80  
 48  
 Average (arithmetic mean)  
 54

**Religion**

255  
 Protestant  
 69  
 107  
 Catholic  
 12  
 18  
 Jewish  
 5  
 4  
 Mormon  
 3  
 51  
 Other  
 11

**House of Representatives****Senate****Profession**

215  
 Lawyer  
 63  
 81  
 Business Executive or Banker  
 15  
 45  
 Educator  
 6  
 14  
 Farmer or Rancher  
 6  
 22  
 Career Government  
 0  
 24  
 Official  
 4  
 2  
 Journalist or Communications  
 0  
 1  
 Executive  
 1  
 0

Physician	2
	6
Veterinarian Geologist	0
	25
Worker or Skilled Tradesperson Other	3
<b>Ethnic Group</b>	17
Black American	1
	2
Asian American	3
	4
Hispanic American	0

1. In the Senate, if 25 male members were replaced by 25 female members, the ratio of male members to female members would be (a) 4 to 1 (b) 3 to 1 (c) 3 to 2 (d) 2 to 1 (e) 1 to 1 **Ans : (b)**
2. Approximately what percent of the members of Congress are lawyers? (a) 63% (b) 58% (c) 56% (d) 52% (e) 49% **Ans : (d)**
3. If 5 senators are Catholic Democrats, how many senators are neither Catholic nor Democratic? (a) 79 (b) 74 (c) 69 (d) 31 (e) 21 **Ans : (d)**
4. If all lawyers and all women in the House of Representatives vote for the passage of a bill, how many more votes will be needed for a majority? (a) 435 (b) 220 (c) 3 (d) 0 (e) It cannot be determined from the information given. **Ans : (e)**
5. Which of the following can be inferred from the information given in the chart?
- I. More than 80 percent of the men in Congress are members of the House of Representatives.
  - II. The percent of members who are categorized as farmers or ranchers is greater for the House of Representatives than for the Senate.
  - III. The median age in the Senate is 57.

(a) I only (b) II only (c) III only (d) I and II (e) I and III **Ans : (a)**

PERCENT CHANGE IN DOLLAR AMOUNT OF SALES IN CERTAIN RETAIL STORES FROM 1977 TO 1979  
 Percent change **6.** In 1979, for which of the stores was the dollar amount of sales greater than that of any of the others shown? (a) P (b) Q (c) R (d) S (e) It cannot be determined from the information given. **Ans : (e)** **7.** In store T, the dollar amount of sales for 1978 was approximately what percent of the dollar amount of sales for 1979? (a) 86% (b) 92% (c) 109% (d) 117% (e) 122% **Ans : (c)** **Questions 8 - 9** refers to the following

### REVENUE AND EXPENDITURE OF THE U.S IN 1987 (IN BILLION)

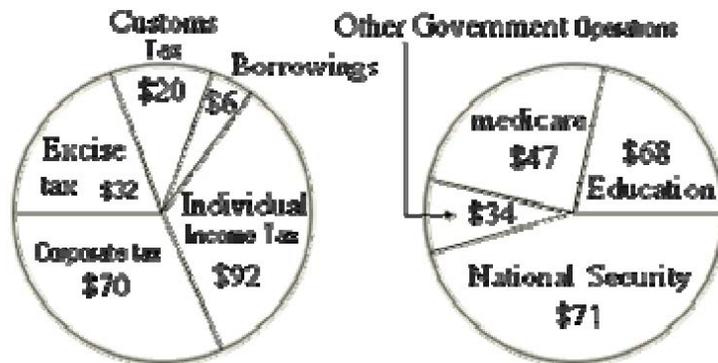


Figure: Sources of Revenue

Distribution of Expenditure

8. Of every dollar received by the federal government, how much (in cents) is from corporate sources? (a) 32 (b) 70 (c) 30 (d) 35 (e) 29 **Ans : (a)**

9. what percentage of the federal revenue is derived from borrowings? (a) 0.2% (b) 0.02% (c) 2.7% (d) 1.2% (e) 2.5% **Ans : (c)** Questions 10 - 11 refers to the following table: **DIRECTIONS:**

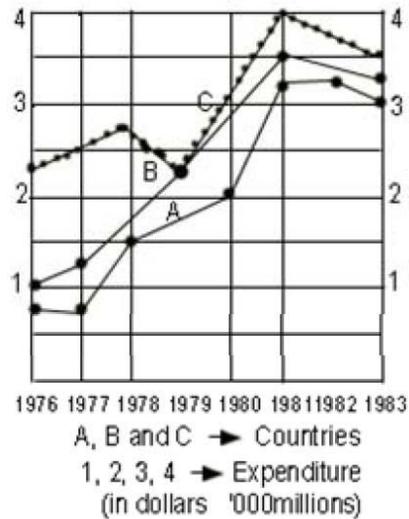
The following question are based on the bellow table, which shows per capita Mean Expenditure, Per capita Food expenditure, Number of Households and Per capita cereal consumption, in both quantity and value, for different expenditure classes of rural India . The sampled 41597 households are divided into 12 expenditure classes, starting from less than Rs.65 per month per capita and ending at more than Rs.385 per capita per month.

PER CAP. EXP. CLASS	PER CAP. MEAN EXP.	PER CAP. FOOD EXP.	NO. HHS.	TOTAL CEREALS PER CAP QUANTY	VALUE
FROM TO	(Rs)	(Rs)		(Kg)	(Rs)
Less than 65	53.71	39.51	1,400	9.75	23.49
65 80	73.25	54.44	2,142	11.82	31.2
80 95	87.74	64.87	3,175	13.85	34.88
95 110	102.56	74.44	4,067	13.64	38.42
110 125	117.45	84.33	4,076	14.19	40.69
125 140	132.98	93.17	3,710	14.64	42.12
140 160	147.3	102.5	4,354	15.1	43.92
160 180	169.67	113.89	3,516	15.4	45.24
180 215	196.36	126.74	4,023	15.9	46.07
215 260	212.77	147.88	4,772	16.3	47.92
260 385	321.32	177.64	3,249	16.91	51.09
More than 385	628.52	262.28	2,483	20.32	62.3
<b>ALL CLASSES</b>	<b>198.1</b>	<b>100.82</b>	<b>41,597</b>	<b>14.47</b>	<b>41.33</b>

10. According to the results of this sample survey , what is the proportion of total expenditure on food to total expenditure for all the sampled households taken together? (a) 58% (b) 36.7% (c) 63.3% (d) 71% (e) Cannot be determined **Ans : (c)** 11. What is the difference, approximately, between the gross expenditure of the sampled households in the Rs.95-110 expenditure class and in the Rs.180-215 expenditure class? (a) 372000 (b) 448000 (c) 496000 (d) 93.8 (e) 52.3 **Ans : (a)**

Questions 12 - 13 refers to the following Graph: GRAPH SHOWS EXPENDITURE ON ARMS BY DIFFERENT COUNTRIES

EXPENDITURE ON ARMS BY  
different countries (\$\$'000 millions)



(VALUE IN DOLLARS '000 MILLIONS)

12. The amount spent by country C in 1983 is what percentage more than the amount spent by Countries A and B together in 1977? (Find approximately) (a) 50% (b) 179% (c) 75% (d) 13% (e) 70% **Ans : (c)**

13. Which of the following statements must be true?
- Country A spends minimum amount of its budget on arms.
  - Throughout, Country C has spent the maximum amount on arms during the years shown.
  - An examination of the information for the last 3 years reveals that generally all 3 countries are reducing their expenditure on arms.
- (a) i only. (b) i and ii only (c) i and iii only (d) ii and iii only (e) None of the statements above. **Ans : (e)**