

CHAPTER – 8

NUMBER AND LETTER ANALOGIES

Analogy means "similarity" or "similar relation ship". In questions on number or letter analogies, a pair, that has a certain relationship between them, is given. This number/letter pair is followed by a third number/letter. The student is expected to identify the relationship between the pair given and find out a FOURTH number such that the relationship between the third and the fourth is similar to the relationship that exists between the first and the second. (In some cases, it may not be the fourth one that has to be found out. The fourth one will be given and the student has to find out one of the other three, whichever is not given).

Number Analogies:

Typical relationships between the numbers in a given pair can be any of the following:

- One number is a multiple of the other.
- One number is the square or square root of the other.
- One number is the cube or cube root of the other.
- The two numbers are squares of two other numbers which themselves are related. For example, the two numbers are squares of two consecutive integers or squares of two consecutive even integers or squares of two consecutive odd integers.
- The two numbers are such that they are obtained by subtracting a certain number from the squares or cubes of the two related numbers.
- The two numbers are such that they are obtained by adding a certain number to the squares or cubes of the two related numbers.
- The two numbers can be consecutive, even, odd or prime numbers.

There can be many more combinations that one can think of but the student has to note an important point in solving questions on Number Analogies. In Number Series related questions, since a series of numbers (more than two numbers) will be given, the relationship or pattern can be identified uniquely. In Number Analogies, since only two numbers are given, it may be possible to think of more than one relationship existing between the two numbers in the given pair. But, it should be kept in mind that generally, simple addition of one number or subtraction of one number is not what is given in Number Analogies. The questions try to test the insight that the student has got into the relationship between the numbers.

Let us take a few examples and understand the questions on Number Analogies.

Worked out Examples:

8.01. Find the missing number.
25 : 36 :: 49 : _____.

Sol. When the numbers in the question are considered the students tend to consider 25 and 36 as squares of two consecutive natural numbers. But the answer choices

does not consist of an answer suitable to the above logic. Hence, it is important that, the student keeps the answer choices in view in arriving at the logic.

$$25 + 11 = 36$$

$$\text{Similarly, } 49 + 11 = 60.$$

Choice (D)

8.02. Find the missing number.
27 : 51 :: 83 : _____.

- (A) 102 (B) 117
(C) 123 (D) 138

Sol. The given analogy can be written as
 $5^2 + 2 : 7^2 + 2 :: 9^2 + 2 : \text{_____}$.
5 and 7 are successive odd numbers.
Similarly, next odd number to 9 is 11 and
 $11^2 + 2 = 121 + 2 = 123$. Choice (C)

8.03. Find the missing number.
11 : 25 :: 17 : _____.

- (A) 33 (B) 28
(C) 41 (D) 37

Sol. $11 \times 2 + 3 = 22 + 3 = 25$
Similarly, $17 \times 2 + 3 = 34 + 3 = 37$.

Choice (D)

Letter Analogies:

The questions in this area are similar to Verbal Analogies. Here, the questions are based on the relationship between **two groups of letters** (instead of **two words** as in Verbal Analogies). Typically, three sets of letters are given followed by a question mark (where a fourth set of letters is supposed to be inserted). The student has to find the relation or order in which the letters have been grouped together in the first two sets of letters on the left hand side of the symbol : and then find a set of letters to fit in place of the question mark so that the third and the fourth set of letters will also have the same relationship as the first and the second. The sequence or order in which the letters are grouped can be illustrated by the following examples.

8.04. BDEG : DFGI :: HKMO : _____.
(A) ILNP (B) JMOP
(C) JMOQ (D) JNOQ

Sol. Two letters are added to each letter to get the next letters in the analogy.
B D E G; Similarly, H K M O
 $+2 +2 +2 +2$ $+2 +2 +2 +2$
D F G I J M O Q
Choice (C)

8.05. ACDF : CGJN :: BEHI : _____.
(A) DJNQ (B) DINQ
(C) DINR (D) DHNQ

Sol. A C D F; Similarly, B E H I
 $+2 +4 +6 +8$ $+2 +4 +6 +8$
C G J N D I N Q
Choice (B)

- 8.06. SUWY : LPTX :: PRTV : _____.
 (A) INRU (B) INQU
 (C) IMRU (D) IMQU

Sol. S U W Y; Similarly, P R T V
 -7 -5 -3 -1 -7 -5 -3 -1
 L P T X I M Q U
 Choice (D)

- 8.07. BCDE : DFHH :: FGHI : _____.
 (A) LJPL (B) LKPL
 (C) JKPL (D) IKPL

Sol. B C D E; Similarly, F G H I
 x2 +3 x2 +3 x2 +3 x2 +3
 D G H H L J P L
 Choice (A)

Verbal Analogies:

Here, the questions are based on relationship between two words. In these kind of questions three words are followed by a blank space, which the student has to fill up in such a way that the third and the fourth words have

the same relationship between them as the first and the second words have. The following examples help in understanding the concepts.

- 8.08. Gum : Stick :: Needle : _____.
 (A) Cloth (B) Prick
 (C) Taylor (D) Stitch

Sol. Gum is used to stick and needle is used to stitch.
 Choice (D)

- 8.09. Socks : Feet :: ____ : Hands
 (A) Arms (B) Shirt
 (C) Gloves (D) Fingers

Sol. Socks are worn on feet, similarly gloves are worn on hands.
 Choice (C)

- 8.10. Soft : Hard :: Cold : _____.
 (A) Hot (B) Shirt
 (C) Gloves (D) Fingers

Sol. Soft and hard are antonyms similarly the antonym of cold is hot.
 Choice (A)

Exercise – 8

Directions for questions 1 to 50: Select the correct alternative from the given choices.

1. 9 : 16 :: 49 : _____.
 (A) 81 (B) 100 (C) 64 (D) 55
2. 48 : 120 :: 35 : _____.
 (A) 97 (B) 99 (C) 101 (D) 109
3. 324 : 18 :: 576 : _____.
 (A) 38 (B) 27 (C) 31 (D) 24
4. 64 : 512 :: 100 : _____.
 (A) 729 (B) 1331 (C) 1024 (D) 1000
5. 15 : 90 :: 17 : _____.
 (A) 102 (B) 112 (C) 94 (D) 85
6. 7 : 91 :: 13 : _____.
 (A) 169 (B) 143 (C) 156 (D) 182
7. 625 : 526 :: 225 : _____.
 (A) 252 (B) 256 (C) 522 (D) 289
8. 9 : 72 :: 16 : _____.
 (A) 272 (B) 248 (C) 240 (D) 254
9. 31 : 37 :: 41 : _____.
 (A) 45 (B) 49 (C) 53 (D) 43
10. 3 : 81 :: 7 : _____.
 (A) 1890 (B) 343 (C) 2307 (D) 2401
11. 110 : 132 :: 210 : _____.
 (A) 230 (B) 240 (C) 250 (D) 260
12. 23 : 529 :: 29 : _____.
 (A) 729 (B) 831 (C) 961 (D) 841
13. 64 : 16 :: 70 : _____.
 (A) 20.5 (B) 17.5 (C) 18.5 (D) 21
14. 216 : 36 :: 1331 : _____.
 (A) 121 (B) 100 (C) 169 (D) 144
15. 28 : 15 :: ____ : 63
 (A) 83 (B) 87 (C) 76 (D) 71
16. 89 : 83 :: ____ : 67
 (A) 61 (B) 71 (C) 78 (D) 79
17. 23 : 161 :: 19 : _____.
 (A) 127 (B) 143 (C) 137 (D) 133
18. 2 : 32 :: 4 : _____.
 (A) 256 (B) 512 (C) 1536 (D) 1024
19. 7 : 53 :: 8 : _____.
 (A) 56 (B) 60 (C) 64 (D) 73
20. 21 : 440 :: 18 : _____.
 (A) 317 (B) 331 (C) 323 (D) 343
21. 400 : 420 :: 961 : _____.
 (A) 1012 (B) 992 (C) 982 (D) 973
22. 1225 : 1190 :: 1089 : _____.
 (A) 1056 (B) 1122 (C) 1043 (D) 1097
23. 2197 : 13 :: 729 : _____.
 (A) 11 (B) 12 (C) 9 (D) 7
24. 625 : 5 :: 1296 : _____.
 (A) 9 (B) 7 (C) 4 (D) 6
25. 41 : 43 :: 47 : _____.
 (A) 55 (B) 51 (C) 53 (D) 57
26. 182 : 210 :: 342 : _____.
 (A) 420 (B) 380 (C) 400 (D) 364

27. 468 : 163664 :: 579 : _____
 (A) 1254981 (B) 254964
 (C) 25781 (D) 254981
28. 13 : 127 :: 46 : _____
 (A) 1636 (B) 64864
 (C) 6436 (D) 64216
29. 18 : 342 :: 17 : _____
 (A) 304 (B) 308 (C) 306 (D) 310
30. 4 : 256 :: 5 : _____
 (A) 25 (B) 3125 (C) 125 (D) 15625
31. 14 : 182 :: 16 : _____
 (A) 230 (B) 250 (C) 260 (D) 240
32. 57 : 711 :: 1113 : _____
 (A) 1317 (B) 1315 (C) 1719 (D) 1517
33. 29 : 66 :: 127 : _____
 (A) 218 (B) 216 (C) 224 (D) 232
34. 24 : 47 :: 76 : _____
 (A) 149 (B) 153 (C) 167 (D) 151
35. 12 : 1728 :: 8 : _____
 (A) 64 (B) 256 (C) 512 (D) 1024
36. PCD : SGI :: BKS : _____
 (A) EJT (B) CLU
 (C) EPX (D) EOX
37. LEMON : PIQSR :: ORANGE : _____
 (A) TWFS LJ (B) SVESKI
 (C) SVREKI (D) SVERKI
38. MAN : LNZBMO :: SUN : _____
 (A) RTTVMO (B) RUTVLM
 (C) PQTUOP (D) TUVWOP
39. LAMP : ETFI :: BAND : _____
 (A) VURX (B) UTGW
 (C) NBST (D) UTHX
40. PLAN : MIXK :: MAPLE : _____
 (A) HNOJX (B) HYNIC
 (C) JYNPC (D) JXMIB
41. To which of the following is bus related as train is related to track?
 (A) Driver (B) Road
 (C) Petrol (D) Passengers
42. To which of the following is carrot related in the same way as Earth is related to planet?
 (A) Vegetable (B) Plant
 (C) Cooking (D) Leaf
43. To which of the following is iron related in the same way as wood is related to carpenter?
 (A) Goldsmith (B) Instrument
 (C) Melting (D) Blacksmith
44. To which of the following is knife related in the same way as pen is related to write?
 (A) Vegetable (B) Cut
 (C) Sharp (D) Shoot
45. To which of the following is dog related, in the same way as pig is related to piglet?
 (A) Tail (B) Feline
 (C) Canine (D) Puppy
46. Cow : Calf :: Dog : Puppy :: Horse : ?
 (A) Calf (B) Hound
 (C) Pony (D) Foal
47. Bike : Rider :: Car : Chauffer :: Horse : ?
 (A) Rider (B) Jockey
 (C) Player (D) Skipper
48. Analgesia : Pain :: Apathy : Feeling :: Avolition : ?
 (A) Motivation (B) Friendship
 (C) Loyalty (D) Love
49. Genius : Ingenious : Stupid
 (A) Perfect : Imperfect : Impeccable
 (B) Intensive : Rigorous : Superficial
 (C) Punctilious : Careless : Lazy
 (D) Innocuous : Innocent : Benign
50. Scientist : Invention : Discovery
 (A) Doctor : Treatment : Surgery
 (B) Friend : Love : Hatred
 (C) Teacher : Teaching : Research
 (D) Editor : Research : Record

Key

Exercise – 8

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|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. C | 6. A | 11. B | 16. B | 21. B | 26. B | 31. D | 36. D | 41. B | 46. D |
| 2. B | 7. C | 12. D | 17. D | 22. A | 27. D | 32. A | 37. D | 42. A | 47. B |
| 3. D | 8. C | 13. B | 18. D | 23. C | 28. D | 33. A | 38. A | 43. D | 48. A |
| 4. D | 9. D | 14. A | 19. B | 24. D | 29. C | 34. D | 39. B | 44. B | 49. B |
| 5. A | 10. D | 15. C | 20. C | 25. C | 30. B | 35. C | 40. D | 45. D | 50. A |