

CH 2 NUMBER PUZZLE

ANSWERS AND EXPLANATIONS

1. (c) The letter in the second column is three steps behind that in the first column, and the letter in the third column is four steps behind that in the second column. So, the missing letter in the first row will be three steps behind Z, which is W. The missing letter in the second row will be four steps behind O, which is K. The missing letter in the third row will be three steps ahead of G, which is J.
2. (c) The letters in the first row follow the sequence + 5, + 7.
The letters in the second row follow the sequence + 6, + 8.
In the third row, the first letter G moves 7 steps forward to give the second letter N. Clearly, the missing letter will be 9 steps ahead of N i.e. W.
3. (d) Clearly, (1st row)³ + (2nd row)³ + (3rd row)³ = 4th row
So, in the first column,
 $2^3 + 1^3 + 3^3 = 8 + 1 + 27 = 36$
In the third column,
 $0^3 + 4^3 + 3^3 = 0 + 64 + 27 = 91$
 \therefore In the second column, missing number = $4^3 + 2^3 + 1^3 = 64 + 8 + 1 = 73$
4. (a) In each row, out of the letters A, B and C, each of these must appear once. Also, in each column, the product of first and third numbers is equal to the second number. So, the missing number will be (2 × 4)
i.e. 8 and the letter will be C. Thus, the answer is 8C.
Hence, the correct answer is (a).
5. (a) Clearly, (1st row)² + (2nd row)² + (3rd row)² = 4th row.
Thus, in the first column, $4^2 + 2^2 + 1^2 = 21$.
In the second column, $5^2 + 3^2 + 8^2 = 98$.
 \therefore In the third column, missing number
 $= 6^2 + 7^2 + 3^2 = 36 + 49 + 9 = 94$.
6. (b) The letters in the first row form a series C, D, E (a series of consecutive letters). The letters in the second row form a series I, K, M (a series of alternate letters). Similarly, the letters in the third row will form the series D, G, J (a series in which each letter is three steps ahead of the previous one). So, the missing letter is G. Also, the number in the second column is equal to the product of the numbers in the first and third columns.
So, missing number is (4 × 7) i.e. 28.
Thus, the answer is 28G.
7. (a) In each row, out of the letters A, B and C, each of these must appear one. Also, in each column, the product of first and third numbers is equal to the second numbers so, the missing number will be (2 × 4) i.e. 8 and the missing letter will be C. Thus, the answer is 8C.
8. (b) In the first column, $6 \times 5 \times 4 = 120$.
In the second column, $6 \times 7 \times 3 = 126$
Let the missing number be x. Then in the third column, we have :
 $8 \times 5 \times x = 320$
 $\Rightarrow x = \frac{320}{40} = 8$.
9. (a) Clearly, sum of numbers in each row is 17.
So, missing number = $17 - (4 + 7) = 6$.
10. (d) In the first column, $(5 + 8 + 7) \div 4 = 5$.
In the second column, $(9 + 6 + 13) \div 4 = 7$.



In the fourth column, $(7 + 10 + 19) \div 4 = 9$.

Let the missing number be x . Then, in the third column, we have : $(8 + 9 + x) \div 4 = 8$

$$\Rightarrow 71 + x = 32 \Rightarrow x = 15.$$

11. (c) In each row, the second number is the square of the first number, and the third number is the square of the number obtained by interchanging the digits of the first number.

$$\therefore \text{Missing number} = (91)^2 = 8281.$$

12. (c) The sum of the numbers in each column is 200.
 \therefore Missing number = $200 - (87 + 56 + 50) = 7$.

13. (a) In the first row, $72 \div \left(\frac{24}{2}\right) = 16$.

$$\text{In the second row, } 96 \div \left(\frac{16}{2}\right) = 12.$$

Let the missing number in the third row be x .

$$\text{Then, } 108 \div \left(\frac{x}{2}\right) = 18$$

$$\Rightarrow \frac{x}{2} = \frac{108}{18} = 6 \Rightarrow x = 12$$

14. (a) In the first row, $(263 - 188) \times 4 = 300$.

$$\therefore \text{In the second row, missing number} \\ = (915 - 893) \times 4 = 22 \times 4 = 88.$$

15. (c) Putting $A = 1, B = 2, C = 3, \dots, M = 13, \dots, X = 24,$

$Y = 25, Z = 26,$ we have :

$$\text{In the first column, } F - A = 6 - 1 = 5 = E.$$

$$\text{In the second column, } W - J = 23 - 10 = 13 \\ = M.$$

\therefore In the third column, missing letter

$$= O - K = 15 - 11 = 4 = D.$$

16. (d) Consecutive letters occupy alternate positions in each row.

17. (c) This is a multiplication magic square. The product of each set of three numbers in any column or row is the constant 120.

18. (b) In the first row, $6 \times \frac{3}{2} = 9, 6 \times \frac{5}{2} = 15$

$$\text{In the second row, } 8 \times \frac{3}{2} = 12, 8 \times \frac{5}{2} = 20.$$

\therefore In the third row, missing number

$$= 4 \times \frac{5}{2} = 10$$

19. (a) In the first row, $72 \div \left(\frac{24}{2}\right) = 72 \div 12 = 6$

$$\text{In the second row, } 96 \div \left(\frac{16}{2}\right) = 96 \div 8 = 12$$

Let the missing number in the third row be x . Then,

$$108 \div \left(\frac{x}{2}\right) = 18 \Rightarrow \frac{x}{2} = \frac{108}{18} = 6 \Rightarrow x = 12.$$

20. (b) The numbers in the right half form the series :
 2, 3, 4, 5.

The numbers in the left half form the series :
 5, 7, 9, 11.

21. (c) Moving clockwise,

$$\text{we have : } 594 \div 3 = 198 : 198 \div 3 = 66.$$

$$\text{So, missing number} = 66 \div 3 = 22$$

22. (d) Clearly, $(5 - 4)^3 = 1;$

$$(7 - 3)^3 = 64; (11 - 8)^3 = 27.$$

$$\text{So, missing number} = (8 - 2)^3 = 6^3 = 216.$$

23. (b) The given figure contains numbers 1 to 6 in three alternate segments, the smaller number being towards the outside and the numbers 14 to 19 in the remaining three alternate segments with the smaller number towards the inside.

24. (b) Clearly, we have :

$$7 \times 2 + 2 = 16; 16 \times 2 + 2 = 34 \text{ and so on.}$$

$$\text{so missing number} = 34 \times 2 + 2 = 70$$

25. (c) The number inside the triangle is obtained by dividing the product of the numbers outside of



- the triangle
by 10. Thus,
In I triangle, $(5 \times 6 \times 4) \div 10 = 12$
In II triangle, $(6 \times 7 \times 5) \div 10 = 21$
 \therefore In III triangle, missing number
 $= (4 \times 8 \times 10) \div 10 = 32$.
26. (d) In fig. (A), $93 - (27 + 63) = 3$
In fig. (B), $79 - (38 + 37) = 4$
 \therefore In fig. (C), missing number
 $= 67 - (16 + 42) = 9$.
27. (c) The number inside the circle is equal to the difference between the sum of the numbers at the extremities of the horizontal diameter and the sum of numbers at the extremities of the vertical diameter.
In fig. (A), $(5 + 6) - (7 + 4) = 0$
In fig. (B), $(7 + 6) - (8 + 4) = 1$
 \therefore In fig. (C) missing number
 $= (11 + 2) - (0 + 2) = 11$
28. (b) The number inside the circle is the difference of the numbers on its left and right.
29. (b) The number at the centre is to be multiplied by 1, 2, 3, and 4, then subtract '1' from each to get the peripheral number.
30. (d) Multiply all the numbers around the circle and then divide it by 10 to get the number at the centre, viz.,
$$\frac{7 \times 3 \times 8 \times 5}{10} = 84$$
31. (b) In fig. (A),
 $(101 + 15) - (35 + 43) = 116 - 78 = 38$.
In fig. (B), Missing number
 $= (48 + 184) - (56 + 34) = 232 - 90 = 142$.
32. (c) Clearly, we have : $15 \times 2 = 30$, $2 \times 7 = 14$,
 $7 \times 9 = 63$
So, missing number $= 9 \times 15 = 135$.
33. (d) The sum of numbers at the extremities of the three line segments in each figure is same.
- In fig. (A), $39 + 33 = 29 + 43 = 27 + 45 = 72$
In fig. (B), $42 + 31 = 29 + 44 = 30 + 43 = 73$
Let the missing number in fig. (C) be x.
Then, $x + 10 = 59 + 20 = 40 + 39 = 79$ or $x = 69$.
34. (c) The digits of the number inside the circle are the differences between the corresponding numbers above and below the circle. Thus,
In fig. (A), $1 = (2 - 1)$, $3 = (6 - 3)$, $1 = (5 - 4)$.
In fig. (B), $2 = (4 - 2)$, $4 = (6 - 2)$, $8 = (8 - 0)$
So, in fig. (C), the digits of the missing number are :
 $(7 - 5)$, $(9 - 3)$, $(3 - 1)$ i.e. 2, 6, 2.
 \therefore Missing number = 262.
35. (b) In fig. (A), $(915 - 364) = 551$.
In fig. (B), $(789 - 543) = 246$.
 \therefore In fig. (C), missing number
 $= (863 - 241) = 622$.
36. (d) In fig (A), $6^2 = 36$, $8^2 = 64$, $5^2 = 25$, $7^2 = 49$ and
 $6 + 8 + 5 + 7 = 26$
In fig (B), $3^2 = 9$, $5^2 = 25$, $4^2 = 16$, $9^2 = 81$. and
 $3 + 5 + 4 + 9 = 21$
In fig (C), $5^2 = 25$, $12^2 = 144$, $6^2 = 36$, $8^2 = 64$.
So, missing number $= 5 + 12 + 6 + 8 = 31$.
37. (c) In fig (A), $(3 \times 3) + (6 \times 5) = 39$
In fig (B), $(4 \times 4) + (5 \times 7) = 51$
 \therefore In fig (C), missing number
 $= (3 \times 4) + (5 \times 5) = 37$
38. (c) The arrangement is as follows :
In fig. (A), $(3^2 + 6^2) - (2^2 + 4^2) = (9 + 36) - (4 + 16)$
 $= 45 - 20 = 25$
In fig. (B), $(7^2 + 11^2) - (8^2 + 6^2) = (49 + 121) - (64 + 36)$
 $= 170 - 100 = 70$
In fig. (C), let the missing number be x.
Then, $(1^2 + 4^2) - (5^2 + x^2) = -12$



- or $17 + 12 = (5^2 + x^2)$ or $x^2 = 29 - 25 = 4$
 or $x = 2$
39. (d) In fig. (A), $(6 \times 3) + (5 \times 15) = 18 + 75 = 93$.
 In fig. (C), $(4 \times 8) + (18 \times 1) = 32 + 18 = 50$.
 \therefore In fig. (B), missing number
 $= (9 \times 6) + (7 \times 5) = 54 + 35 = 89$.
40. (b) In fig. (A), $(16 - 6)^2 + (5 - 2)^2 = 10^2 + 3^2 = 109$.
 In fig. (B), $(22 - 15)^2 + (21 - 19)^2$
 $= 7^2 + 2^2 = 53$.
 \therefore In fig. (C), missing number
 $= (17 - 13)^2 + (51 - 48)^2 = 4^2 + 3^2 = 25$.
41. (b) The lower number is obtained by adding the square of the upper two numbers. Thus,
 In fig. (A), $2^2 + 4^2 = 20$
 In fig. (B), $3^2 + 9^2 = 90$
 \therefore In fig. (C), missing number $= 1^2 + 5^2 = 26$
42. (c) The above three numbers are multiples of the number at the bottom.
 Clearly, 36, 18 and 27 are all multiples of 9.
 So, the missing number is 9.
43. (b) Putting $A = 1, B = 2, C = 3, D = 4$

 $X = 24, Y = 25, Z = 26,$
 We have $F + P = 6 + 16 = 22 : G + N$
 $= 7 + 14 = 21$
 $: J + E = 10 + 5 = 15$.
 Since $K = 11$, so value corresponding to missing letter
 $= (27 - 11) = 16$
 So, the missing letter is the 16th letter of the English alphabet, which is P.
44. (a) This way, the sum of the numbers in the same shape total 33.
45. (b) We have $(56 + 15) - (22 + 8)$
 $= 41, (46 + 9) - (10 + 6) = 39$
 So, missing number $= (34 + 11) - (14 + 6) = 25$.
46. (d) We have : $4 \times 2 - 1 = 7, 7 \times 2 + 1 = 15,$
 $15 \times 2 - 1 = 29 \times 2 + 1 = 59,$
 $59 \times 2 - 1 = 117, 117 \times 2 + 1 = 235.$
 So missing number $= 235 \times 2 - 1 = 469$.
47. (d) We have : $3 \times 5 + 1 = 16 ,$
 $16 \times 5 + 1 = 81, 81 \times 5 + 1 + 1 = 406.$
 So , missing number $= 406$
 $406 \times 5 + 1 = 2031.$
48. (c) The arrangement is : $5 + 3 = 8, 8 + 4 = 12, 12 + 1 = 13.$
 So, the missing number is 12.
49. (b) The above three numbers are multiples of the number at the bottom. Clearly 36, 18 and 27 are all multiples of 9. So, the missing number is 9.
50. (b) The sum of the two numbers in the upper part is 7 times the number in the lower part.
 So, missing number $= (89 + 16) + 7 = 15$.
51. (d) We have : $(3 \times 4 \times 2 \times 5) \div 10 = 12 ;$
 $(6 \times 2 \times 3 \times 5) \div 10 = 18.$
 So, missing number $= (2 \times 2 \times 9 \times 5) \div 10 = 18$
52. (b) We have : $(5 \times 3) + (6 \times 8) = 63, (2 \times 7) + (3 \times 9) = 41$
 So, missing number $= (6 \times 7) + (8 \times 5) = (42 + 40) = 82.$
53. (d) We have : $\sqrt{36} + \sqrt{64} + \sqrt{25} + \sqrt{49} = 26 ;$
 $\sqrt{9} + \sqrt{25} + \sqrt{16} + \sqrt{81} = 21$
 So, missing number
 $= \sqrt{25} + \sqrt{144} + \sqrt{36} + \sqrt{64}$
 $= (5 + 12 + 6 + 8) = 31$
54. (b) We have $(15 - 5) (2 + 6) = 80, (9 - 4) (7 + 6) = 65$
 So, missing number $= (13 - 11) \times (16 + 8) = 48$.
55. (c) The number inside the circle is obtained by multiplying the sum of the upper number, the lower number and the number corresponding to the position of the letter in the english alphabet, by the number on the right and then subtracting



the number on the left from the product.

$$\begin{aligned} \text{Thus we have } (2 + C + 5) \times 3 - 4 &= (2 + 3 + 5) \\ \times 3 - 4 &= 26; (4 + H + 4) \times 5 - 10 &= (4 + 8 + 4) \\ \times 5 - 10 &= 70. \end{aligned}$$

Let the missing number be x .

$$\text{Then } (8 + J + 6) \times x - 6 = 90$$

$$\Rightarrow (8 + 10 + 6) \times x = 96 \Rightarrow x = 4.$$

$$= 9.$$

56. (b) The top left hand number is obtained by adding the bottom two numbers. The top right hand number is the result of dividing the bottom two numbers.

$$\text{Thus, } 12 + 3 = 15, 12 \div 3 = 4;$$

$$22 + 11 = 33, 22 \div 11 = 2.$$

$$18 + 9 = 27, 18 \div 9 = 2.$$

$$\text{So, } 32 + X = 36 \text{ and } 32 \div X = 8 \text{ or } X = 4.$$

57. (b) Start at 2 and, working clockwise, jump three spaces each time adding 3.

TARA INSTITUTE

