

# Cross-Number Puzzle

Swati Sircar

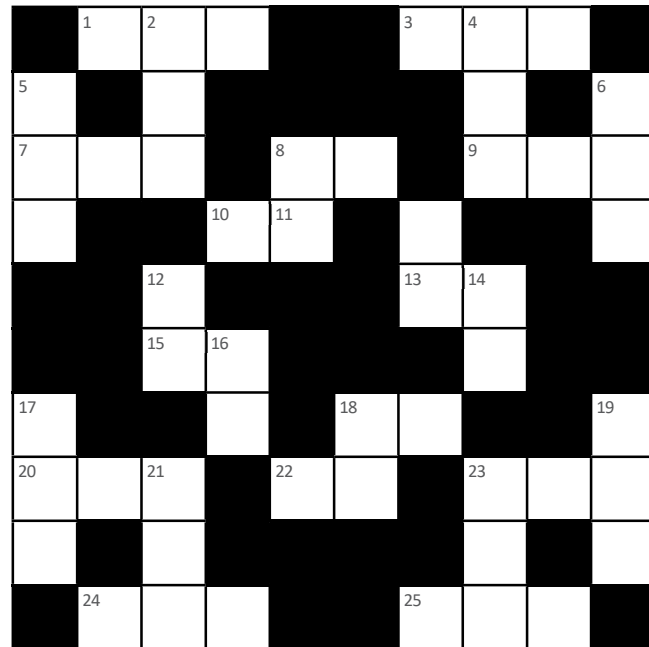
This cross-number puzzle is a follow up to the article on Fact Families in the same issue. An addition fact family is essentially a set of three natural numbers, such that the sum of two of these numbers is the third. For example,  $\{2, 3, 5\}$  forms a fact family since  $2 + 3 = 5$ . But the set  $\{6, 4, 1\}$  does not form an addition fact family.

**Note:** Since a fact family is a set, the order of the elements does not matter.

## Solve the cross-number puzzle

### Across

- 1: The biggest possible number in the addition fact family with 307 and 50
- 3: This number forms an addition fact family with 200 and 14
- 7: The smallest number in the addition fact family with 250 and 126
- 8: The biggest possible number in the fact-family with 14 and 42
- 9: This number forms a fact-family with 170 and 600
- 10: The smallest member of the fact-family with 36 and 68
- 13: This number forms a fact family with 25 and 100
- 15: This number forms fact families with  $\{7, 11\}$  as well as  $\{3, 15\}$
- 18: This number forms fact families with  $(37, 3)$  as well as  $\{40, 6\}$
- 20: The biggest possible number in the fact-family with 300 and 202
- 22: This number forms a fact-family with 39 and 100
- 23: The smallest number in the fact-family with 700 and 396
- 24: This number forms fact-families with 500 and 40 as well as with 300 and 160
- 25: This number forms fact-families with 300 and 200 as well as with 900 and 400

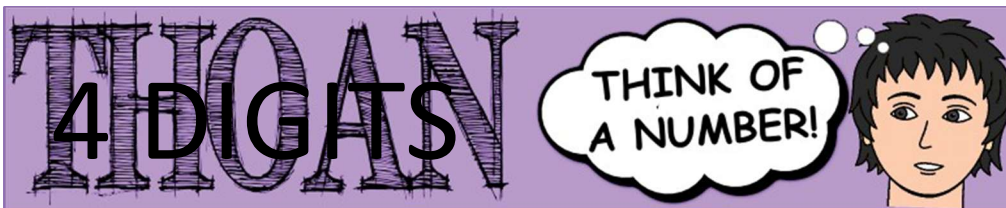


Keywords: fact families, addition, subtraction, puzzle, crossword

**Down**

- 2: This number has digits which form a fact-family in which each of the members is less than 6.
- 4: The biggest possible number in the fact family with 520 and 304
- 5: This number forms a fact-family with 209 and 210
- 6: This number forms a fact family with 331 and 471
- 8: This number forms a fact-family with 60 and 8
- 11: This number forms a fact-family with 70 and 23
- 12: This number forms a fact family with 100 and 29
- 14: This number forms a fact-family with 27 and 26
- 16: This number forms a fact-family with 101 and 17
- 17: The biggest possible number in the fact-family with 425 and 525
- 18: This number forms a fact-family with 15 and 16
- 19: The biggest number in the fact-family with 687 and 153
- 21: This number has digits which form a fact-family in which each of the members is less than 7
- 23: This number forms a fact family with 444 and the number in 7 Across.

Send in your solutions to [AtRightAngles.editor@apu.edu.in](mailto:AtRightAngles.editor@apu.edu.in)



*Think of a four-digit number 'abcd' and move the first digit 'a' to the end so that it becomes the last digit of the number which would be 'bcda'. Subtract the new number from the old.*

*For example, if the first number 'abcd' is 3568, then the next number 'bcda' is 5683.*

*In the March 2025 issue, we noticed a relationship that helped us guess the original number if we were given some data related to these two numbers. In this issue, we make the same claim. If I know the difference between the two numbers and the first digit of the original number, then I can guess that number. [ In the given example, if I know that the difference is -2115 and the first digit was 3, I can guess that the first number was 3568]*

*Can you guess how I do this? Try with some other 4-digit numbers. Now try to generalise this trick for an n-digit number! Send in your solutions to [AtRightAngles.editor@apu.edu.in](mailto:AtRightAngles.editor@apu.edu.in)*

**Contributed by Yathiraj Sharma**