

Puzzle of the Week

Fill in the Blanks – 3

Using the numbers from 1 to 5 at most once, this equation has three solutions.

$$\square - \square = \square - \square$$

1 2 3 4 5

The three solutions are:

$$\boxed{3} - \boxed{1} = \boxed{4} - \boxed{2}$$

$$\boxed{4} - \boxed{2} = \boxed{5} - \boxed{3}$$

$$\boxed{4} - \boxed{1} = \boxed{5} - \boxed{2}$$

THE CHALLENGE: Use each of the numbers from 1 to 9 at most once to fill in these blanks.

$$\square = \square + \square = \square + \square + \square$$

1 2 3 4 5 6 7 8 9

EXPLORATION: Explore other number ranges. What happens if you use 1 to 8 or 1 to 10?

Puzzle of the Week

Fill in the Blanks – 3 – Notes

THE CHALLENGE: As with the other Fill in the Blanks puzzles, a child can just play with this and eventually arrive at the answers. That exploration involves a lot of good experiences, and there is no reason to avoid it.

To be more systematic, you want to look for a driver or focus that helps reduce the search. For this puzzle, that driver is the overall sum - we need to keep it small. The smallest sum for the three numbers is $1 + 2 + 3 = 6$, but that leaves the other two numbers to add up to at least $4 + 5 = 9$. To balance those two things, we can add them both up and divide by two - the smallest the single number on the left can be is $(1 + 2 + 3 + 4 + 5) / 2 = 7\frac{1}{2}$. So the sum will either be 8 or 9, which we can try out individually.

If it's 8, we have 1 solution:

- $8 = 1 + 7$ does not work
- $8 = 2 + 6 = 1 + 3 + 4$ works!
- $8 = 3 + 5 =$ does not work

For 9, we have 3 solutions:

- $9 = 1 + 8 = 2 + 3 + 4$ works!
- $9 = 2 + 7 = 1 + 3 + 5$ works!
- $9 = 3 + 6$ does not work
- $9 = 4 + 5 = 1 + 2 + 6$ works!

EXPLORATION: We saw above that 1 to 8 gives one solution. The range from 1 to 10 will give us many more new solutions.

- $10 = 1 + 9 = 2 + 3 + 5$ works!
- $10 = 2 + 8 = 1 + 2 + 7 = 1 + 3 + 6 = 1 + 4 + 5$ - 3 ways!
- $10 = 3 + 7 = 1 + 4 + 5 = 2 + 3 + 5$ - 2 ways!
- $10 = 4 + 6 = 1 + 2 + 7 = 2 + 3 + 5$ - 2 ways!