

Puzzle of the Week

Fractions – 3

THE CHALLENGE: Use the numbers 1 to 9 at most once each to fill in the boxes. Find two mixed numbers, whose fractional parts are proper fractions, that have as small a difference as possible.

$$\boxed{} \frac{\boxed{}}{\boxed{}} - \boxed{} \frac{\boxed{}}{\boxed{}}$$

1 2 3 4 5 6 7 8 9

EXPLORATION: How does your answer change if you allow the fractional parts to be improper?



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Fractions – 3 – Notes

THE CHALLENGE & EXPLORATION:

If you allow the fractional parts to be improper, then the difference can be 0. For example, $8 \frac{1}{2} - 7 \frac{6}{4}$.

If they must be proper fractions, then make the first fractional part as small as possible and the second as large as possible.

There are only a few possibilities that have any reasonable chance.

$3 \frac{1}{9} - 2 \frac{7}{8}$. For this, the difference is $\frac{1}{9} + \frac{1}{8}$.

$3 \frac{1}{8} - 2 \frac{7}{9}$. For this, the difference is $\frac{1}{8} + \frac{2}{9}$

$3 \frac{1}{7} - 2 \frac{8}{9}$. For this, the difference is $\frac{1}{7} + \frac{1}{9}$

The first one is the best. Clearly, the 3 and 2 could be replaced by other consecutive numbers without changing the result.