Topic: Adding and subtracting mixed numbers

Question: Simplify the expression.

$$2\frac{1}{2} + 5\frac{7}{8}$$

Answer choices:

A $7\frac{8}{9}$

B $7\frac{3}{8}$

C $8\frac{1}{8}$

D $8\frac{3}{8}$

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Solution: D

We'll add the whole numbers and the fractions separately.

$$2\frac{1}{2}+5\frac{7}{8}$$

$$(2+5)+\left(\frac{1}{2}+\frac{7}{8}\right)$$

$$7+\left(\frac{1}{2}+\frac{7}{8}\right)$$

To add the fractions, we have to find a common denominator. We'll find the least common denominator (LCD), which is the least common multiple of the denominators. The least common multiple of 2 and 8 is 8.

$$7+\left[\frac{1}{2}\left(\frac{4}{4}\right)+\frac{7}{8}\right]$$

$$7+\left(\frac{4}{8}+\frac{7}{8}\right)$$

$$7+\frac{11}{8}$$

Since the remaining fraction ($11/8$) is improper, we can express it as a sum of a whole number and a proper fraction, and then simplify.

$$7+\left(\frac{8}{8}+\frac{3}{8}\right)$$

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$$7 + \left(1 + \frac{3}{8}\right)$$

$$8 + \frac{3}{8}$$

$$8\frac{3}{8}$$

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Topic: Adding and subtracting mixed numbers

Question: Add the mixed numbers.

$$1\frac{3}{8} + 1\frac{1}{8}$$

Answer choices:

A $1\frac{1}{2}$

B $2\frac{1}{2}$

C $2\frac{7}{16}$

D $\frac{7}{8}$

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Solution: B

We'll add the whole numbers and the fractions separately.

$$1\frac{3}{8}+1\frac{1}{8}$$

$$(1+1)+\left(\frac{3}{8}+\frac{1}{8}\right)$$

$$2+\left(\frac{3}{8}+\frac{1}{8}\right)$$

To add the fractions, we have to have a common denominator, and luckily we already do, so we can go ahead and add the numerators.

$$2+\frac{3+1}{8}$$

$$2+\frac{4}{8}$$

$$2\frac{4}{8}$$

Now we need to reduce the fraction to lowest terms.

$$2\frac{4\div 4}{8\div 4}$$

$$2\frac{1}{2}$$

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Topic: Adding and subtracting mixed numbers

Question: Simplify the expression.

$$4\frac{1}{5} - 1\frac{1}{2}$$

Answer choices:

A $2\frac{7}{10}$

B $3\frac{1}{3}$

C $5\frac{1}{7}$

D $2\frac{1}{2}$

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Solution: A

We'll subtract the whole numbers separately from the fractions.

$$4\frac{1}{5} - 1\frac{1}{2}$$

$$4 - 1 + \frac{1}{5} - \frac{1}{2}$$

$$3 + \frac{1}{5} - \frac{1}{2}$$

To subtract the fractions, we have to find the lowest common denominator (LCD), which is the least common multiple of the denominators.

$$3 + \frac{1}{5}\left(\frac{2}{2}\right) - \frac{1}{2}\left(\frac{5}{5}\right)$$

$$3 + \frac{2}{10} - \frac{5}{10}$$

$$3 - \frac{3}{10}$$

To change this to a mixed number, we need to change the expression so that it's addition instead of subtraction. We can change the 3 into the equivalent $2 + 1$.

$$2 + 1 - \frac{3}{10}$$

Make a common denominator with the 1 and the fraction.

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$$2+1\left(\frac{10}{10}\right)-\frac{3}{10}$$

$$2+\frac{10}{10}-\frac{3}{10}$$

$$2+\frac{7}{10}$$

$$2\frac{7}{10}$$

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