Topic: Adding and subtracting fractions

Question: Simplify the expression.

$$\frac{1}{5} + \frac{3}{7}$$

Answer choices:

A $\quad \dfrac{11}{35}$

B $\quad \dfrac{4}{12}$

C $\quad \dfrac{3}{35}$

D $\quad \dfrac{22}{35}$

Solution: D

To add two fractions together, they must have the same denominator. To find the common denominator, we look for the least common multiple of the two denominators 5 and 7. The smallest number that divides evenly by 5 and 7 is 35. Therefore, we get

$$\frac{1}{5} + \frac{3}{7}$$

$$\frac{1}{5}\left(\frac{7}{7}\right) + \frac{3}{7}\left(\frac{5}{5}\right)$$

$$\frac{7}{35} + \frac{15}{35}$$

$$\frac{7+15}{35}$$

$$\frac{22}{35}$$

Topic: Adding and subtracting fractions

Question: What is the lowest common denominator for the expression?

$$\frac{1}{2} + \frac{1}{8} + \frac{1}{20}$$

Answer choices:

A   20

B   8

C   40

D   320

Solution: C

To find the least common denominator of a set of fractions, we need to find the least common multiple of their denominators. In other words, what's the smallest number that divides evenly by 2, 8 and 20?

To figure this out, we'll use the largest number (20), and list its first few multiples.

$$20 \cdot 1 = 20$$

$$20 \cdot 2 = 40$$

$$20 \cdot 3 = 60$$

$$20 \cdot 4 = 80$$

$$20 \cdot 5 = 100$$

2 and 20 will both divide evenly into 20, but 8 won't. However, 2 and 8 and 20 all divide evenly into 40, so 40 is the least common multiple of these three numbers, and therefore it's the least common denominator for these three fractions.