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FRACTIONS

2011B

1. **Answer (C):** The given expression is equal to

$$\frac{12}{9} - \frac{9}{12} = \frac{4}{3} - \frac{3}{4} = \frac{16-9}{12} = \frac{7}{12}.$$

2013B

1. **Answer (C):** Simplifying gives

$$\frac{2+4+6}{1+3+5} - \frac{1+3+5}{2+4+6} = \frac{12}{9} - \frac{9}{12} = \frac{4}{3} - \frac{3}{4} = \frac{16-9}{12} = \frac{7}{12}.$$

2014A

1. **Answer (C):** Note that

$$10 \cdot \left(\frac{1}{2} + \frac{1}{5} + \frac{1}{10}\right)^{-1} = 10 \cdot \left(\frac{8}{10}\right)^{-1} = \frac{25}{2}.$$

2016B

1. **Answer (D):**

$$\frac{2\left(\frac{1}{2}\right)^{-1} + \frac{\left(\frac{1}{2}\right)^{-1}}{2}}{\frac{1}{2}} = \left(2 \cdot 2 + \frac{2}{2}\right) \cdot 2 = 10$$

2002A

2. **(C)** We have

$$(2, 12, 9) = \frac{2}{12} + \frac{12}{9} + \frac{9}{2} = \frac{1}{6} + \frac{4}{3} + \frac{9}{2} = \frac{1 + 8 + 27}{6} = \frac{36}{6} = 6.$$

2009B

2. **Answer (C):** The least common multiple of 2, 3, and 4 is 12, and

$$\frac{\frac{1}{3} - \frac{1}{4}}{\frac{1}{2} - \frac{1}{3}} \cdot \frac{12}{12} = \frac{4 - 3}{6 - 4} = \frac{1}{2}.$$

2013A

2. **Answer (B):** Filling the cup 4 times will give Alice 1 cup of sugar. To get $2\frac{1}{2}$ cups of sugar, she must fill it $4 + 4 + \frac{1}{2} \cdot 4 = 10$ times.

2014A

2. **Answer (C):** Because Roy's cat eats $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$ of a can of cat food each day, the cat eats 7 cans of cat food in 12 days. Therefore the cat eats $7 - \frac{7}{12} = 6\frac{5}{12}$ cans in 11 days and $6\frac{5}{12} - \frac{7}{12} = 5\frac{5}{6}$ cans in 10 days. The cat finishes the cat food in the box on the 11th day, which is Thursday.

2014B

2. **Answer (E):** Note that

$$\frac{2^3 + 2^3}{2^{-3} + 2^{-3}} = \frac{2 \cdot 2^3}{2 \cdot 2^{-3}} = 2^6 = 64.$$

2005B

3. **(D)** After the first day,

$$1 - \frac{1}{3} = \frac{2}{3}$$

of the paint remains. On the second day,

$$\frac{1}{3} \cdot \frac{2}{3} = \frac{2}{9}$$

of the paint is used. So for the third day

$$1 - \frac{1}{3} - \frac{2}{9} = \frac{4}{9}$$

of the original gallon of paint is available.

2009A

3. **Answer (C):** Simplifying the expression,

$$1 + \frac{1}{1 + \frac{1}{1+1}} = 1 + \frac{1}{1 + \frac{1}{2}} = 1 + \frac{1}{\frac{3}{2}} = 1 + \frac{2}{3} = \frac{5}{3}.$$

2008A

4. **Answer (C):** Note that $\frac{2}{3}$ of 10 bananas is $\frac{20}{3}$ bananas, which are worth as much as 8 oranges. So one banana is worth as much as $8 \cdot \frac{3}{20} = \frac{6}{5}$ oranges. Therefore $\frac{1}{2}$ of 5 bananas are worth as much as $\frac{5}{2} \cdot \frac{6}{5} = 3$ oranges.

2015A

4. **Answer (B):** Let m be the number of eggs that Mia has. Then Sofia has $2m$ eggs and Pablo has $6m$ eggs. If the total of $9m$ eggs is to be divided equally, each person will have $3m$ eggs. Therefore Pablo should give $2m$ eggs to Mia and m eggs to Sofia. The fraction of his eggs he should give to Sofia is $\frac{m}{6m} = \frac{1}{6}$.

2015B

4. **Answer (C):** After the first three siblings ate, there was $1 - \frac{1}{5} - \frac{1}{3} - \frac{1}{4} = \frac{13}{60}$ of the pizza left for Dan to eat, so Dan ate more than $\frac{1}{5} = \frac{12}{60}$ but less than $\frac{1}{4} = \frac{15}{60}$ of the pizza. Because $\frac{1}{3} > \frac{1}{4} > \frac{13}{60} > \frac{1}{5}$, the order is Beth, Cyril, Dan, Alex.

2006A

5. **(D)** Each slice of plain pizza cost $1. Dave paid $2 for the anchovies in addition to $5 for the five slices of pizza that he ate, for a total of $7. Doug paid only $3 for the three slices of pizza that he ate. Hence Dave paid $7 - 3 = 4$ dollars more than Doug.

2005B

5. **(C)** The number of CDs that Brianna will finally buy is three times the number she has already bought. The fraction of her money that will be required for all the purchases is $(3)(1/5) = 3/5$. The fraction she will have left is $1 - 3/5 = 2/5$.

2008A

5. **Answer (B):** Because each denominator except the first can be canceled with the previous numerator, the product is $\frac{2008}{4} = 502$.

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