Lesson 12-5: Adding and Subtracting Rational Expressions

Part 2: Adding and Subtracting Rational Expressions with Unlike Denominators

1. What is the least common denominator of $\frac{1}{2}$, $\frac{2}{7x}$, and $\frac{5}{x}$?

   [A] $9x$ [B] $14x^2$ [C] $14x$ [D] $2x$

2. The sum of $\frac{3}{x}+\frac{2}{5}$, $x \neq 0$, is

   [A] $\frac{2x+15}{5x}$ [B] $\frac{5}{x+5}$

   [C] $\frac{1}{x}$ [D] $\frac{2x+15}{x+5}$

3. What is the sum of $\frac{2}{x}$ and $\frac{x}{2}$?

   [A] $\frac{4+x^2}{2x}$ [B] 1

   [C] $\frac{4+x}{2x}$ [D] $\frac{2+x}{2x}$

4. Which expression is equivalent to $\frac{a}{x}+\frac{b}{2x}$?

   [A] $\frac{2a+b}{2x}$ [B] $\frac{2a+b}{x}$

   [C] $\frac{a+b}{2x}$ [D] $\frac{a+b}{3x}$

5. What is the sum of $\frac{3}{7n}$ and $\frac{7}{3n}$?

   [A] $\frac{42}{21n}$ [B] $\frac{10}{21n}$ [C] $\frac{1}{n}$ [D] $\frac{58}{21n}$

6. The expression $\frac{y}{x}-\frac{1}{2}$ is equivalent to

   [A] $\frac{2y-x}{2x}$ [B] $\frac{x-2y}{2x}$

   [C] $\frac{1-y}{2x}$ [D] $\frac{y-1}{x-2}$

7. Expressed as a single fraction, what is $\frac{1}{x+1}+\frac{1}{x}$, $x \neq 0,-1$?

   [A] $\frac{2x+1}{x^2+x}$ [B] $\frac{2x+3}{x^2+x}$

   [C] $\frac{3}{x^2}$ [D] $\frac{2}{2x+1}$

8. 060524b, P.I. A2.A.16

   Express in simplest form: $\frac{1}{x}+\frac{1}{x+3}$

9. 010315b, P.I. A2.A.16

   What is the sum of $\frac{3}{x-3}$ and $\frac{x}{3-x}$?

   [A] 0 [B] -1 [C] $\frac{x+3}{x-3}$ [D] 1

10. 080505b, P.I. A2.A.16

    What is the sum of $(y-5)+\frac{3}{y+2}$?

    [A] $\frac{y-2}{y+2}$ [B] $y-5$

    [C] $\frac{y^2-7}{y+2}$ [D] $\frac{y^2-3y-7}{y+2}$

11. 080733b, P.I. A2.A.16

    Express in simplest form:

    $$\frac{2x}{x^2-4} \div \frac{4}{x^2-4x+4}+\frac{12}{x^2-4} \bullet \frac{2-x}{3}$$

[1] C

[2] A

[3] A

[4] A

[5] D

[6] A

[7] A

[2] $\frac{2x+3}{x(x+3)}$ or $\frac{2x+3}{x^2+3x}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made or the answer is not simplified completely.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $\frac{2x+3}{x(x+3)}$ or $\frac{2x+3}{x^2+3x}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[8]

[9] B

[10] D

[6] $\frac{x-4}{2}$, and appropriate work is shown.
[5] Appropriate work is shown, but one computational error is made.
[4] Appropriate work is shown, but two or more computational errors are made.
or [4] Appropriate work is shown, but -1 is not factored out.
[3] Appropriate work is shown, but one conceptual error is made, such as not following the correct order of operations.
[2] Appropriate work is shown, but one conceptual error and one computational error are made.
[1] Appropriate work is shown, but one conceptual error and two or more computational errors are made.
or [1] Appropriate work is shown, but two conceptual errors are made.
or [1] $\frac{x-4}{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[11]