Regents Exam Questions
A.APR.D.7: Addition and Subtraction of Rationals 2
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Name: _____

A.APR.D.7: Addition and Subtraction of Rationals 2

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

1) $9x$ 2) $2x$ 3) $14x$ 4) $14x^2$

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

1) 1 2) $\frac{2+x}{2x}$ 3) $\frac{4+x}{2x}$ 4) $\frac{4+x^2}{2x}$

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

1) $\frac{1}{x}$ 2) $\frac{2x+15}{5x}$ 3) $\frac{5}{x+5}$ 4) $\frac{2x+15}{x+5}$

4 The reciprocal of the expression $\frac{2}{x} + \frac{3}{1}$ is

1) $\frac{2+3x}{x}$ 2) $\frac{x}{2+3x}$ 3) $2x+3$ 4) $2+3x$

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

1) $\frac{2y-x}{2x}$ 2) $\frac{x-2y}{2x}$ 3) $\frac{1-y}{2x}$ 4) $\frac{y-1}{x-2}$

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

1) $\frac{2a+b}{2x}$ 2) $\frac{2a+b}{x}$ 3) $\frac{a+b}{3x}$ 4) $\frac{a+b}{2x}$

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

1) $\frac{1}{n}$ 2) $\frac{10}{21n}$ 3) $\frac{42}{21n}$ 4) $\frac{58}{21n}$

8 Expressed as a single fraction, $\frac{3}{4x} - \frac{2}{5x}$ is equal to

1) $-\frac{1}{x}$ 2) $\frac{1}{9x}$ 3) $\frac{1}{20x}$ 4) $\frac{7}{20x}$

9 Expressed in simplest form, $\frac{5x+3}{x} - \frac{x-1}{2x}$ is

1) $\frac{4x+4}{3x}$ 2) $\frac{2x+2}{x}$ 3) $\frac{9x+7}{2x}$ 4) $\frac{9x-5}{2x}$

10 Which expression is equivalent to $\frac{x^3}{x+3} - \frac{9x}{x+3}$?

1) $\frac{-9x}{x+3}$ 2) $\frac{x}{x+3}$ 3) $\frac{x^2}{x+3}$ 4) $x(x-3)$

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

1) $y-5$ 2) $\frac{y^2-7}{y+2}$ 3) $\frac{y-2}{y+2}$ 4) $\frac{y^2-3y-7}{y+2}$

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

1) $\frac{2x+3}{x^2+x}$ 2) $\frac{2x+1}{x^2+x}$ 3) $\frac{2}{2x+1}$ 4) $\frac{3}{x^2}$

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13 The expression $\dfrac{x}{x-1} + \dfrac{x}{x+1}$ is equivalent to

1) 1 2) $\dfrac{2x}{x^2-1}$ 3) -2 4) $\dfrac{2x^2}{x^2-1}$

14 Expressed as a single fraction, $\dfrac{3}{x-1} - \dfrac{2}{x}$ is equivalent to

1) $\dfrac{1}{x(x-1)}$ 2) $\dfrac{x-2}{x(x-1)}$ 3) $\dfrac{x+2}{x(x-1)}$
4) $\dfrac{3x-2}{x(x-1)}$

15 Expressed as a single fraction, $\dfrac{5}{x-3} - \dfrac{1}{x}$ is equivalent to

1) $\dfrac{6x-3}{x^2-3x}$ 2) $\dfrac{4x+3}{x^2-3x}$ 3) $\dfrac{4x+3}{2x-3}$ 4) $\dfrac{4}{x^2-3x}$

16 The expression $\dfrac{6}{y-5} - \dfrac{y+5}{y^2-25}$ is equivalent to

1) $\dfrac{5}{y-5}$ 2) $\dfrac{5}{y+5}$ 3) $\dfrac{5y}{y-5}$ 4) $\dfrac{5y}{y+5}$

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

1) 1 2) -1 3) $\dfrac{x+3}{x-3}$ 4) 0

18 For all values of b for which the expressions are defined, $\dfrac{b^2}{b-3} + \dfrac{9}{3-b}$ is equivalent to

1) -1 2) $\dfrac{1}{3-b}$ 3) $b-3$ 4) $b+3$

19 The expression $\dfrac{2}{\sin x} - \dfrac{5}{\sin x - 1}$ is equivalent to

1) $\dfrac{-3}{\sin x(\sin x - 1)}$ 2) $\dfrac{-3}{\sin x - 1}$
3) $\dfrac{-3\sin x - 2}{\sin x(\sin x - 1)}$ 4) $\dfrac{-3\sin x - 2}{\sin x - 1}$

20 If the probability that an event will occur is $\dfrac{x}{y}$, then the probability that the event will *not* occur is

1) $-\dfrac{x}{y}$ 2) $-\dfrac{y}{x}$ 3) $\dfrac{1-x}{y}$ 4) $\dfrac{y-x}{y}$

21 If the probability that an event will occur is $\dfrac{1}{x+1}$, then the probability that the event will *not* occur is

1) $x+1$ 2) $-\dfrac{1}{x+1}$ 3) $\dfrac{x}{x+1}$ 4) $-\dfrac{x}{x+1}$

22 If the probability that an event will *not* occur is $\dfrac{1}{x^2}$, then the probability that the event will occur is represented by

1) -1 2) 0 3) x^2 4) $\dfrac{x^2-1}{x^2}$

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Answer Section

1 ANS: 3
   The LCM of 2 and 7 is 14. The LCM of x and x is x. The LCD is $14x$.

   REF: 060412a

2 ANS: 4
   $$\frac{(2 \times 2) + (x \times x)}{(x)(2)} = \frac{4 + x^2}{2x}$$

   REF: 010423a

3 ANS: 2
   $$\frac{(3 \times 5) + (x \times 2)}{(x)(5)} = \frac{15 + 2x}{5x} = \frac{2x + 15}{5x}$$

   REF: 080207a

4 ANS: 2   REF: 060327siii

5 ANS: 1
   $$\frac{(2 \times y) - (1 \times x)}{(x)(2)} = \frac{2y - x}{2x}$$

   REF: 010016a

6 ANS: 1
   $$\frac{(a \times 2x) + (x \times b)}{(x)(2x)} = \frac{2ax + bx}{2x^2} = \frac{x(2a + b)}{2x^2} = \frac{2a + b}{2x}$$

   REF: 089911a

7 ANS: 4
   $$\frac{3}{7n} + \frac{7}{3n} = \frac{9n + 49n}{21n^2} = \frac{58n}{21n^2} = \frac{58}{21n}$$

   REF: 060727a

8 ANS: 4
   $$\frac{3}{4x} - \frac{2}{5x} = \frac{15x - 8x}{20x^2} = \frac{7x}{20x^2} = \frac{7}{20x}$$

   REF: 010921a

9 ANS: 3   REF: 010118siii

10 ANS: 4   REF: 010218siii

11 ANS: 4
   $$\frac{(y - 5)(y + 2) + 1 \times 3}{y + 2} = \frac{y^2 + 2y - 5y - 10 + 3}{y + 2} = \frac{y^2 - 3y - 7}{y + 2}$$

   REF: 080505b

1

12 ANS: 2

$$\frac{(1\times x)+((x+1)\times 1)}{(x+1)(x)}=\frac{x+x+1}{x^2+x}=\frac{2x+1}{x^2+x}$$

REF: 069906a

13 ANS: 4   REF: 068421b
14 ANS: 3   REF: 018734siii
15 ANS: 2   REF: 089919siii
16 ANS: 1

$$\frac{6}{y-5}-\frac{y+5}{y^2-25}=\frac{6}{y-5}-\frac{y+5}{(y+5)(y-5)}=\frac{6}{y-5}-\frac{1}{y-5}=\frac{5}{y-5}$$

REF: 080805b

17 ANS: 2

$$\frac{3}{x-3}+\frac{-x}{x-3}=\frac{3-x}{x-3}=-1$$

REF: 010315b

18 ANS: 4   REF: 088931siii
19 ANS: 3

$$\frac{2}{\sin x}-\frac{5}{\sin x-1}=\frac{2(\sin x-1)-5\sin x}{\sin x(\sin x-1)}=\frac{2\sin x-2-5\sin x}{\sin x(\sin x-1)}=\frac{-3\sin x-2}{\sin x(\sin x-1)}$$

REF: 060816b

20 ANS: 4   REF: 088619siii
21 ANS: 3   REF: 068522siii
22 ANS: 4   REF: 088523siii