Regents Exam Questions A.APR.D.7: Addition and Subtraction of Rationals 2b www.jmap.org

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

- 1 What is the least common denominator of  $\frac{1}{2}$ ,  $\frac{2}{7x}$ , and  $\frac{5}{x}$ ?
- 2 What is the sum of  $\frac{2}{x}$  and  $\frac{x}{2}$ ?
- 3 The sum of  $\frac{3}{x} + \frac{2}{5}$ ,  $x \neq 0$ , is
- 4 The reciprocal of the expression  $\frac{2}{x} + \frac{3}{1}$  is
- 5 The expression  $\frac{y}{x} \frac{1}{2}$  is equivalent to
- 6 Which expression is equivalent to  $\frac{a}{x} + \frac{b}{2x}$ ?
- 7 What is the sum of  $\frac{3}{7n}$  and  $\frac{7}{3n}$ ?
- 8 Expressed as a single fraction,  $\frac{3}{4x} \frac{2}{5x}$  is equal to

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

- 10 Which expression is equivalent to  $\frac{x^3}{x+3} \frac{9x}{x+3}$ ?
- 11 What is the sum of  $(y-5) + \frac{3}{y+2}$ ?
- 12 Expressed as a single fraction, what is  $\frac{1}{x+1} + \frac{1}{x}, x \neq 0, -1?$
- 13 The expression  $\frac{x}{x-1} + \frac{x}{x+1}$  is equivalent to

- 14 Expressed as a single fraction,  $\frac{3}{x-1} \frac{2}{x}$  is equivalent to
- 15 Expressed as a single fraction,  $\frac{5}{x-3} \frac{1}{x}$  is equivalent to
- 16 The expression  $\frac{6}{y-5} \frac{y+5}{y^2-25}$  is equivalent to
- 17 What is the sum of  $\frac{3}{x-3}$  and  $\frac{x}{3-x}$ ?
- 18 For all values of *b* for which the expressions are defined,  $\frac{b^2}{b-3} + \frac{9}{3-b}$  is equivalent to
- 19 The expression  $\frac{2}{\sin x} \frac{5}{\sin x 1}$  is equivalent to
- 20 If the probability that an event will occur is  $\frac{x}{y}$ , then the probability that the event will *not* occur is
- 21 If the probability that an event will occur is  $\frac{1}{x+1}$ , then the probability that the event will *not* occur is
- 22 If the probability that an event will *not* occur is  $\frac{1}{x^2}$ , then the probability that the event will occur is represented by

Name:

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1 ANS:
    14x
    The LCM of 2 and 7 is 14. The LCM of x and x is x. The LCD is 14x.
    REF: 060412a
2 ANS:
    \frac{4+x^2}{2x}
    \frac{(2 \times 2) + (x \times x)}{(x)(2)} = \frac{4 + x^2}{2x}
    REF: 010423a
3 ANS:
    2x + 15
       5x
     \frac{(3\times5)+(x\times2)}{(x)(5)} = \frac{15+2x}{5x} = \frac{2x+15}{5x}
    REF: 080207a
4 ANS:
    \frac{x}{2+3x}
    REF: 060327siii
5 ANS:
    \frac{2y-x}{2x}
    \frac{(2\times y) - (1\times x)}{(x)(2)} = \frac{2y - x}{2x}
    REF: 010016a
6 ANS:
    \frac{2a+b}{2x}
     \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
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7 ANS:  $\frac{58}{21n}$  $\frac{3}{7n} + \frac{7}{3n} = \frac{9n + 49n}{21n^2} = \frac{58n}{21n^2} = \frac{58}{21n}$ REF: 060727a 8 ANS:  $\frac{7}{20x}$  $\frac{3}{4x} - \frac{2}{5x} = \frac{15x - 8x}{20x^2} = \frac{7x}{20x^2} = \frac{7}{20x}$ REF: 010921a 9 ANS:  $\frac{9x+7}{2x}$ REF: 010118siii 10 ANS: x(x-3)REF: 010218siii 11 ANS:  $\frac{y^2 - 3y - 7}{y + 2}$  $\frac{(y-5)(y+2)+1\times 3}{y+2} = \frac{y^2+2y-5y-10+3}{y+2} = \frac{y^2-3y-7}{y+2}$ REF: 080505b 12 ANS: 2x + 1 $\overline{x^2 + x}$  $\frac{(1 \times x) + ((x+1) \times 1)}{(x+1)(x)} = \frac{x+x+1}{x^2+x} = \frac{2x+1}{x^2+x}$ REF: 069906a 13 ANS:  $\frac{2x^2}{x^2-1}$ 

REF: 068421b

14 ANS:  $\frac{x+2}{x(x-1)}$ REF: 018734siii 15 ANS:  $\frac{4x+3}{x^2-3x}$ REF: 089919siii 16 ANS:  $\frac{5}{y-5}$  $\frac{6}{y-5} - \frac{y+5}{y^2-25} = \frac{6}{y-5} - \frac{y+5}{(y+5)(y-5)} = \frac{6}{y-5} - \frac{1}{y-5} = \frac{5}{y-5}$ REF: 080805b 17 ANS: -1  $\frac{3}{x-3} + \frac{-x}{x-3} = \frac{3-x}{x-3} = -1$ REF: 010315b 18 ANS: b + 3REF: 088931siii 19 ANS:  $\frac{-3\sin x - 2}{\sin x(\sin x - 1)}$  $\frac{2}{\sin x} - \frac{5}{\sin x - 1} = \frac{2(\sin x - 1) - 5\sin x}{\sin x(\sin x - 1)} = \frac{2\sin x - 2 - 5\sin x}{\sin x(\sin x - 1)} = \frac{-3\sin x - 2}{\sin x(\sin x - 1)}$ REF: 060816b 20 ANS:  $\frac{y-x}{y}$ REF: 088619siii 21 ANS:  $\frac{x}{x+1}$ REF: 068522siii

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22 ANS: 
$$\frac{x^2 - 1}{x^2}$$

$$x^2$$

REF: 088523siii