Name: _____ Class: _____ Date: _____ ID: A

Review- Rational Expressions and Equations

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Simplify the rational expression. State any restrictions on the variable.

A 1. $\frac{b^2 - 3b - 40}{b + 5}$ $b \neq 5$ $\frac{(b-8)(b+5)}{b+5}$

a. $b - 8$; $b \neq -5$
b. $b + 8$; $b \neq 5$
c. $-b - 8$; $b \neq 5$
d. $-b + 8$; $b \neq -5$

Multiply or divide. State any restrictions on the variables.

A 2. $\frac{7c^6}{8d^3} \cdot \frac{8d^3}{7c^5}$ $\frac{7c}{24d^3}$ $d \neq 0$ $c \neq 0$

a. $\frac{7c}{24d^3}$, $c \neq 0$, $d \neq 0$
b. $\frac{7c^{11}}{24d^9}$, $c \neq 0$, $d \neq 0$
c. $\frac{24d^3}{7c}$, $c \neq 0$, $d \neq 0$
d. $\frac{7}{24}c^{11}d^9$, $c \neq 0$, $d \neq 0$

C 3. $\frac{d}{d+4} \cdot \frac{d^2 + 6d + 8}{d^2 - 2d}$ $\frac{(d+4)(d+2)}{d(d-2)}$ $\frac{d(d+2)}{d-2}$ $d \neq -4$ $d \neq 2$ $d \neq 0$

a. $\frac{d+2}{d-2}$, $d \neq -4, 0, 2$
b. $\frac{d+2}{d-2}$, $d \neq -4, 2$
c. $\frac{d^2 + 2d}{d-2}$, $d \neq -4, 0, 2$
d. $\frac{d^2 + 2d}{d-2}$, $d \neq -4, 2$

A 4. If R is the total resistance for a parallel circuit with two resistors of resistances r_1 and r_2, then $\frac{1}{R} = \frac{1}{r_1} + \frac{1}{r_2}$. Find the resistance r_1 if the total resistance R is 65 ohms and r_2 is 90 ohms. Round your answer to the nearest ohm if necessary.

a. 234 ohms b. 5695 ohms c. 324 ohms d. 38 ohms

$5850r\left(\frac{1}{65} = \frac{1}{r_1} + \frac{1}{90}\right)$
$90r = 5850 + 65r$
$25r = 5850$
$r = 234$

D 5. $\frac{k^2 - k - 56}{k^2 - 13k + 40} - \frac{3}{k-5}$ $\frac{(k-8)(k+7)}{(k-8)(k-5)} - \frac{3}{k-5}$

a. $\frac{k+7}{k-5}$
b. $\frac{k^2 - k - 59}{k^2 - 13k + 40}$
c. $k + 4$
d. $\frac{k+4}{k-5}$ $\frac{k+7-3}{k-5} = \frac{k+4}{k-5}$

A 6. $\frac{x^2 - 4x + 3}{x^2 - 7x + 12} + \frac{x^2 - 5x + 4}{x^2 - 6x + 5}$ $\frac{(x-3)(x-1)}{(x-4)(x-3)} + \frac{(x-4)(x-1)}{(x-5)(x-1)}$

a. $\frac{2x^2 - 14x + 21}{(x-4)(x-5)}$
b. $\frac{2x^2 - 9x + 7}{2x^2 - 13x + 17}$
c. $\frac{x^2 - 14x + 21}{(x-4)(x-5)}$ $\frac{x-1}{x-4} + \frac{x-4}{x-5}$
d. $\frac{2x^2 - 9x + 7}{(x-4)(x-5)}$ $\frac{(x-1)(x-5) + (x-4)(x-4)}{(x-4)(x-5)}$ $\frac{x^2 - 6x + 5 + x^2 - 8x + 16}{(x-4)(x-5)}$ $\frac{2x^2 - 14x + 21}{(x-4)(x-5)}$

Simplify the complex fraction.

D 7. $\frac{\frac{2}{2t} - \frac{1}{4t}}{\frac{3}{3t} + \frac{3}{5t}}$ $\frac{4-1}{4t} \div \frac{15+9}{15t}$ $\frac{3}{4t} \cdot \frac{15t}{24} = \frac{15}{32}$

a. $\frac{2}{9}$
b. $\frac{9}{2}$
c. $\frac{32}{15}$
d. $\frac{15}{32}$

D 8. $\frac{\frac{m-3}{m^2 - 4m - 5}}{\frac{m+2}{m+1}}$ $\frac{m-3}{(m-5)(m+1)} \cdot \frac{m+1}{m+2} = \frac{m-3}{(m-5)(m+2)}$

a. $\frac{(m-3)(m-5)}{(m+2)(m+5)}$
b. $\frac{(m-3)(m+2)}{(m+1)^2(m-5)}$
c. $\frac{(m-3)(m+2)}{(m+1)(m-5)}$
d. $\frac{m-3}{(m+2)(m-5)}$

Solve the equation. Check the solution.

A 9. $\frac{-4}{x+5} = \frac{2}{x+3}$ $-4(x+3) = 2(x+5)$ $-4x - 12 = 2x + 10$ $-22 = 6x$ $-\frac{22}{6} = x$

a. $-\frac{11}{3}$
b. $-\frac{7}{6}$
c. $-\frac{5}{3}$
d. $-\frac{11}{2}$

A 10. $\frac{a}{a^2 - 9} + \frac{2}{a-3} = \frac{1}{a+3}$ $a + 2(a+3) = 1(a-3)$ $a + 2a + 6 = a - 3$ $3a - 6 = a - 3$ $2a = -9$ $a = -\frac{9}{2}$ $a = -4.5$

a. -4.5
b. -3
c. -3 and 3
d. 4.5

B 11. $\frac{4}{3g} + \frac{5}{3g} = 6$ $3g$ $4 + 5 = 6(3g)$ $9 = 18g$ $\frac{9}{18}$ $\frac{1}{2} = g$

a. $\frac{1}{4}$
b. $\frac{1}{2}$
c. 3
d. $\frac{3}{8}$