Worksheet #2—Arithmetic and Algebraic Fraction Problems

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Simplify each of the following problems to one single fraction.

(1) $\frac{1}{2}+\frac{1}{3}$

(2) $\frac{1}{5}+\frac{1}{3}$

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

(4) $\frac{2}{3}+\frac{3}{2}$

(5) $\frac{1}{1+\frac{1}{3}}$

(6) $\frac{1}{x}+\frac{1}{y}$

(7) $2\left(\frac{1}{5}+\frac{1}{3}\right)$

(8) $\frac{5}{12}+\frac{7}{18}$

(9) $1-\frac{1}{3}$

(10) $\frac{\frac{2}{5}}{\frac{3}{7}}$

(11) $1+\frac{1}{x}$

(12) $\frac{\frac{2}{3}}{\frac{3}{4}}$

(13) $\frac{5}{3}+\frac{2}{x}$

(14) $\left(\frac{2}{15}+\frac{1}{5}\right)\left(\frac{2}{3}+\frac{2}{5}\right)$

(15) $\frac{1}{2}+\frac{1}{2\,x}$

(16) $\frac{3}{a}-\frac{2}{b}$

(17) $\frac{5}{\frac{2}{3}}$

(18) $\left(\frac{2}{3}\right)\left(\frac{2}{7}\right)$

(19) $\left(\frac{1}{15}\right)\left(\frac{2}{11}\right)\left(\frac{5}{4}\right)$

(20) $\left(\frac{2}{x}\right)\left(\frac{3}{y}\right)$

(21) $\frac{2}{x+1}+\frac{1}{x}$

(22) $x+\frac{2}{3}$

(23) $x-1+\frac{2}{3}$

(24) $\frac{\frac{1}{4}}{5}$

(25) $\left(\frac{3}{x}\right)\left(2\,\frac{y}{5}\right)\left(\frac{x}{y^2}\right)$

(26) $\frac{1}{4}-\frac{1}{3}+\frac{1}{5}$

(27) $\left(\frac{2}{3}\right)\left(\frac{1}{5}\right)-\frac{2}{5}$

(28) $\frac{2}{3}+\frac{3}{2\,x}$

(29) $\left(\frac{2}{5}-\frac{1}{2}\right)\left(\frac{5}{3}+\frac{1}{4}\right)$

(30) $\frac{\frac{3}{2}+\frac{5}{2}}{\frac{1}{4}+\frac{1}{3}}$

(31) $\frac{\frac{5}{12}+\frac{3}{4}}{\frac{1}{6}+\frac{7}{3}}$

(32) $-\left(\frac{2}{3}\right)+\frac{3}{4}$

(33) $-\left(\frac{1}{2}\right)-\frac{2}{3\,a}+\frac{a}{2}$

(34) $\frac{1}{2}\,a-\frac{2\,a}{3}$

(35) $\frac{\frac{1}{2}+\frac{1}{a}}{\frac{1}{3}+\frac{1}{a}}$

(36) $\frac{5}{y+1}+\frac{1}{y}$

(37) $3 - \dfrac{x}{3}$

(38) $\dfrac{1}{4} + \dfrac{2}{3}\left(\dfrac{3}{4}\right)$

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

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

(41) $\dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c}$

(42) $\dfrac{3}{4} + \dfrac{1}{2} + \dfrac{5}{61} + \dfrac{1}{x}$

(43) $\dfrac{1}{x} + \dfrac{2}{y}$

(44) $\dfrac{\frac{1}{3}x - \frac{1}{2}}{\frac{x}{2}}$

(45) $\dfrac{1}{3} + \dfrac{1}{3x}$

(46) $3 - \dfrac{x}{x+1}$

(47) $\dfrac{1}{x} + \dfrac{1}{2x}$

(48) $\dfrac{1}{x} + \dfrac{1}{x+2}$

(49) $\dfrac{9}{x^2-9} + \dfrac{3}{x+3}$

(50) $\dfrac{x}{2} + \dfrac{2}{x}$

(51) $\dfrac{1}{1+\frac{1}{x}}$

(52) $\dfrac{3y}{2} - \dfrac{5x}{7}$

(53) $\dfrac{2}{3}x - \dfrac{2x}{5} - \dfrac{1}{2}$

(54) $\dfrac{\frac{1}{x^2} - \frac{1}{y^2}}{\frac{1}{x-y}}$

(55) $\dfrac{1}{2-\frac{1}{x}}$

(56) $\dfrac{1+\frac{1}{x}}{1-\frac{1}{x}}$

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

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

(59) $\dfrac{\frac{1}{2}+\frac{1}{x}}{\frac{1}{3}+\frac{1}{x}}$

(60) $\dfrac{x}{x+1} - \dfrac{1}{x+1}$

(61) $\dfrac{x}{x+1} + \dfrac{1}{x+1}$

(62) $\dfrac{2}{1+\frac{2}{x}}$

(63) $x - \dfrac{2}{x}$

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

(65) $2\dfrac{x}{x^2-4} + \dfrac{3}{x-2}$

(66) $\dfrac{1}{x} + \dfrac{3}{2x+1} - \dfrac{5}{2x}$

(67) $\dfrac{x}{y} + \dfrac{y}{x}$

(68) $\dfrac{\frac{x}{y}+\frac{y}{x}}{\frac{x}{y}-\frac{y}{x}}$

(69) $\left(\dfrac{1}{x} - 1\right)\left(\dfrac{1}{x} + 1\right)$

(70) $\dfrac{\frac{2}{x} - \frac{1}{x+1}}{\frac{1}{2x+2}}$

Answers: (1) $\frac{5}{6}$ (2) $\frac{8}{15}$ (3) $\frac{3}{4}$ (4) $\frac{13}{6}$ (5) $\frac{3}{4}$ (6) $\frac{y+x}{x\,y}$ (7) $\frac{16}{15}$ (8) $\frac{29}{36}$

(9) $\frac{2}{3}$ (10) $\frac{14}{15}$ (11) $\frac{x+1}{x}$ (12) $\frac{8}{9}$ (13) $\frac{5\,x+6}{3\,x}$ (14) $\frac{16}{45}$ (15) $\frac{x+1}{2\,x}$

(16) $\frac{3\,b-2\,a}{a\,b}$ (17) $\frac{15}{2}$ (18) $\frac{4}{21}$ (19) $\frac{1}{66}$ (20) $\frac{6}{x\,y}$ (21) $\frac{3\,x+1}{x\,(x+1)}$ (22) $\frac{3\,x+2}{3}$

(23) $\frac{3\,x-1}{3}$ (24) $\frac{1}{20}$ (25) $\frac{6}{5\,y}$ (26) $\frac{7}{60}$ (27) $-\frac{4}{15}$ (28) $\frac{4\,x+9}{6\,x}$ (29) $-\frac{23}{120}$

(30) $\frac{48}{7}$ (31) $\frac{7}{15}$ (32) $\frac{1}{12}$ (33) $\frac{3\,a^2-3\,a-4}{6\,a}$ (34) $\frac{-a}{6}$ (35) $\frac{3\,(a+2)}{2\,(a+3)}$

(36) $\frac{6\,y+1}{y\,(y+1)}$ (37) $\frac{-x+9}{3}$ (38) $\frac{3}{4}$ (39) $\frac{1}{2}$ (40) $\frac{3\,x+7}{6}$ (41) $\frac{b\,c+a\,c+a\,b}{a\,b\,c}$

(42) $\frac{325\,x+244}{244\,x}$ (43) $\frac{y+2\,x}{x\,y}$ (44) $\frac{2\,x-3}{3\,x}$ (45) $\frac{x+1}{3\,x}$ (46) $\frac{2\,x+3}{x+1}$ (47) $\frac{3}{2\,x}$

(48) $\frac{2\,(x+1)}{x\,(x+2)}$ (49) $\frac{3\,x}{(x-3)\,(x+3)}$ (50) $\frac{x^2+4}{2\,x}$ (51) $\frac{x}{x+1}$ (52) $\frac{21\,y-10\,x}{14}$

(53) $\frac{8\,x-15}{30}$ (54) $\frac{-y^3+x\,y^2+x^2\,y-x^3}{x^2\,y^2}$ (55) $\frac{x}{2\,x-1}$ (56) $\frac{x+1}{x-1}$ (57) $\frac{5\,x}{6}$ (58) $\frac{7\,x}{6}$

(59) $\frac{3\,(x+2)}{2\,(x+3)}$ (60) $\frac{x-1}{x+1}$ (61) 1 (62) $\frac{2\,x}{x+2}$ (63) $\frac{x^2-2}{x}$ (64) $\frac{2\,(x+1)}{(x-2)\,(x+2)}$

(65) $\frac{5\,x+6}{(x-2)\,(x+2)}$ (66) $\frac{-3}{2\,x\,(2\,x+1)}$ (67) $\frac{y^2+x^2}{x\,y}$ (68) $\frac{y^2+x^2}{-y^2+x^2}$ (69) $\frac{-x^2+1}{x^2}$

(70) $\frac{2\,(x+2)}{x}$