NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

Determine the value of the variable in each equation.

1. $\frac{1}{2}x = 7$

$\frac{2}{1}\cdot\frac{1}{2}x = 7\cdot\frac{2}{1}$

$x = 14$

2. $\frac{1}{4}y - 1 = 4$

$\frac{1}{4}y - 1 = 4$

$+1 \quad +1$

$\frac{4}{1}\cdot\frac{1}{4}y = 5\cdot\frac{4}{1}$

$y = 20$

3. $b + \frac{1}{3} = \frac{2}{3}$

$b + \frac{1}{3} = \frac{2}{3}$

$-\frac{1}{3} \quad -\frac{1}{3}$

$b = \frac{1}{3}$

4. $\frac{x}{3} = 8$

$3\cdot\frac{x}{3} = 8\cdot 3$

$x = 24$

5. $\frac{w}{5} = -2$

$5\cdot\frac{w}{5} = -2\cdot 5$

$w = -10$

6. $c - \frac{1}{4} = \frac{3}{4}$

$c - \frac{1}{4} = \frac{3}{4}$

$+\frac{1}{4} \quad +\frac{1}{4}$

$c = \frac{4}{4} \rightarrow c = 1$

7. $\frac{m}{4} = -3$

$4\cdot\frac{m}{4} = -3\cdot 4$

$m = -12$

8. $\frac{-2r}{7} = 6$

$\frac{7}{-2}\cdot\frac{-2}{7}r = 6\cdot\frac{7}{-2}$

$r = \frac{42}{-2} \rightarrow r = -21$

9. $-5 = \frac{-x}{6}$

$6\cdot -5 = -\frac{x}{6}\cdot 6$

$\frac{-30}{-1} = \frac{-x}{-1}$

$x = 30$

10. $-\frac{5}{6}p = \frac{3}{4}$

$\frac{6}{-5}\cdot\frac{-5}{6}p = \frac{3}{4}\cdot\frac{6}{-5}$

$p = \frac{18}{-20} \rightarrow p = \frac{-9}{10}$

11. $\frac{3n}{4} = \frac{-1}{2}$

$\frac{4}{3}\cdot\frac{3n}{4} = -\frac{1}{2}\cdot\frac{4}{3}$

$r = -\frac{2}{3}$

12. $2y - \frac{3}{5} = \frac{1}{2}$

$2y - \frac{3}{5} = \frac{1}{2} = \frac{5}{10}$

$+\frac{3}{5} \quad +\frac{3}{5} = \frac{6}{10}$

$\frac{1}{2}\cdot 2y = \frac{11}{10}\cdot\frac{1}{2}$

$y = \frac{11}{20}$

13. $\frac{1}{4}x + x = -3 + \frac{1}{2}x$

LCD: 4

$4\left(\frac{1}{4}x + x\right) = \left(-3 + \frac{1}{2}x\right)4$

$x + 4x = -12 + 2x$

$5x = -12 + 2x$

$-2x \quad\quad -2x$

$\frac{3x}{3} = \frac{-12}{3}$

$x = -4$

14. $\frac{1}{3} + 2m = m - \frac{3}{2}$

LCD: 6

$6\left(\frac{1}{3} + 2m\right) = \left(m - \frac{3}{2}\right)6$

$2 + 12m = 6m - 9$

$-6m \quad\quad -6m$

$2 + 6m = -9$

$-2 \quad\quad -2$

$\frac{6m}{6} = \frac{-11}{6}$

$m = \frac{-11}{6}$

15. $b + \frac{2}{3} = \frac{1}{4}b - 1$

LCD: 12

$12\left(b + \frac{2}{3}\right) = \left(\frac{1}{4}b - 1\right)12$

$12b + 8 = 3b - 12$

$-3b \quad\quad -3b$

$9b + 8 = -12$

$\frac{9b}{9} = \frac{-20}{9}$

$b = \frac{-20}{9}$

16. $\frac{2}{5}(w - 2) = -3$

$\frac{5}{2} \cdot \frac{2}{5}(w - 2) = -3 \cdot \frac{5}{2}$

$w - 2 = -\frac{15}{2}$

$w - \frac{4}{2} = -\frac{15}{2}$

$+\frac{4}{2} \quad\quad +\frac{4}{2}$

$w = -\frac{11}{2}$

17. $\frac{3}{4}(2m + 1) = 2$

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

$2m + 1 = \frac{8}{3}$

$2m + \frac{3}{3} = \frac{8}{3}$

$\frac{1}{2} \cdot 2m = \frac{5}{3} \cdot \frac{1}{2}$

$m = \frac{5}{6}$

18. $\frac{2}{3}(3p + 1) = 5$

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

$3p + 1 = \frac{15}{2}$

$3p + \frac{2}{2} = \frac{15}{2}$

$\frac{1}{3} \cdot 3p = \frac{13}{2} \cdot \frac{1}{3}$

$p = \frac{13}{6}$

19. $\frac{x}{10} + \frac{3x}{5} = \frac{7}{2}$

LCD: 10

$10\left(\frac{x}{10} + \frac{3x}{5}\right) = \left(\frac{7}{2}\right)10$

$x + 6x = 35$

$\frac{7x}{7} = \frac{35}{7}$

$x = 5$

20. $12 - \frac{4m}{3} = \frac{m}{6}$

LCD: 6

$6\left(12 - \frac{4m}{3}\right) = \left(\frac{m}{6}\right)6$

$72 - 8m = m$

$\frac{72}{9} = \frac{9m}{9}$

$m = 8$

21. $\frac{4y}{9} - \frac{2y}{3} = 10$

LCD: 9

$9\left(\frac{4y}{9} - \frac{2y}{3}\right) = (10)9$

$4y - 6y = 90$

$\frac{-2y}{-2} = \frac{90}{-2}$

$y = -45$

22. $\frac{y + 3}{5} - \frac{3y}{10} = 7$

LCD: 10

$10\left(\frac{y+3}{5} - \frac{3y}{10}\right) = (7)10$

$2(y + 3) - 3y = 70$

$2y + 6 - 3y = 70$

$-y + 6 = 70$

$\frac{-y}{-1} = \frac{64}{-1}$

$y = -64$

23. $\frac{x - 4}{4} - \frac{x}{3} = 6$

LCD: 12

$12\left(\frac{x-4}{4} - \frac{x}{3}\right) = (6)12$

$3(x - 4) - 4x = 72$

$3x - 12 - 4x = 72$

$-x - 12 = 72$

$-x = 84$

$x = -84$

24. $\frac{b + 5}{3} + 4 = -16$

LCD: 3

$3\left(\frac{b+5}{3} + 4\right) = (-16)3$

$b + 5 + 12 = -48$

$b + 17 = -48$

$b = -65$

REVIEW—Lowest Common Denominator (LCD)

Determine the LCD of each set of functions.

25. $\frac{1}{3}, \frac{1}{6}, \frac{1}{9}$

LCD = 18

3: 3, 6, 9, 12, 15, 18, 21
6: 6, 12, 18, 24
9: 9, 18, 27

26. $\frac{1}{2}, \frac{1}{4}, \frac{3}{8}$

LCD = 8

2: 2, 4, 6, 8, 10, 12, 14, 16, 18
4: 4, 8, 12, 16, 20, 24
8: 8, 16, 24, 32

27. $\frac{2}{5}, \frac{1}{3}$

LCD = 15

28. $\frac{2}{5}, \frac{1}{3}, \frac{2}{3}$

LCD = 15

29. $\frac{2}{5}, \frac{1}{3}, \frac{5}{2}$

LCD = 30

30. $\frac{7}{8}, \frac{3}{16}, \frac{4}{32}$

LCD = 32

31. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$

LCD = 12

32. $5, \frac{6}{7}$

LCD = 7

33. $\frac{10}{11}, \frac{19}{22}, \frac{1}{2}$

LCD = 22

34. $\frac{5}{6}, \frac{7}{8}, \frac{9}{10}$

LCD = 120

Spiral REVIEW—Solving Equations

Determine the value of the variable in each equation. Check your solutions.

35. $2(2 - 3x) = 3(3 + x) + 4$

$4-6x=9+3x+4$
$4-6x=13+3x$
$4=13+9x$
$-9=9x$
$x=-1$

36. $5(m + 1) + 6 = 3(4 + m) + (2m - 1)$

$5m+5+6=12+3m+2m-1$
$5m+11=5m+11$
$-5m \quad -5m$
$11=11$
Infinite Solutions

37. $14 - (6 - 3c) = 4c - c$

$14-6+3c=4c-c$
$8+3c=3c$
$-3c \quad -3c$
$8=0$
No Solution

38. $3y - 2(y - 19) = 9y - 3(9 - y)$

$3y-2y+38=9y-27+3y$
$y+38=12y-27$
$38=11y-27$
$65=11y$
$y=\frac{65}{11}$

39. $3(3h - 1) = 4(h + 3)$

$9h-3=4h+12$
$5h=15$
$h=3$

40. $(5t + 9) - (3t - 13) = 2(11 + 2t)$

$5t+9-3t+13=22+4t$
$2t+22=4t+22$
$22=2t+22$
$0=2t$
$t=0$

41. $1 - 2t = 2(1 - t)$

$1-2t=2-2t$
$+2t \quad +2t$
$1\neq 2$
No Solution

42. $5(3 - m) = 15m + 15$

$15-5m=15m+15$
$15=10m+15$
$0=10m$
$m=0$

43. $-9x + 12x = 3(2 - x)$

$3x=6-3x$
$+3x \quad +3x$
$6x=6$
$x=1$

44. $10(0.2 + 0.4c) = 10c + 0.2 - 6c$

$2+4c=4c+0.2$
$-4c \quad -4c$
$2\neq 0.2$
No Solution