To Clear Fractions: ① Get common denominator
② Multiply every term in equation by common denominator

Pre-Algebra B Name/Date **solutions**

WS 20.1 – Solving Special Equations

Solve each equation by clearing fractions.

1. $\frac{x}{2}+\frac{5x}{6}=\frac{1}{9}$ ·18 ·18 ·18

$9x+15x=2$

$24x=2$

$x=\frac{2}{24}$

$\boxed{x=\frac{1}{12}}$

2. $\frac{n-2}{5}+\frac{n}{3}=\frac{n}{2}+1$ ·30 ·30 ·30 ·30

$6(n-2)+10n=15n+30$

$6n-12+10n=15n+30$

$16n-12=15n+30$

$-15n \quad -15n$

$n-12=30$

$\boxed{n=42}$

3. $2d-2=\frac{d}{3}-\frac{5d}{6}-\frac{7d}{2}$ ·6 ·6 ·6 ·6 ·6

$12d-12=2d-5d-21d$

$12d-12=-24d$

$-12d \quad -12d$

$-12=-36d$

$\frac{-12}{-36}=d$

$\frac{1}{3}=d \Rightarrow \boxed{d=\frac{1}{3}}$

4. $\frac{4m}{7}-3(m-2)+\frac{m}{2}=\frac{5m}{4}-\frac{m}{7}+1$

$\frac{4m}{7}\cdot 28 - 3m\cdot 28 + 6\cdot 28 + \frac{m}{2}\cdot 28 = \frac{5m}{4}\cdot 28 - \frac{m}{7}\cdot 28 + 1\cdot 28$

$16m-84m+168+14m=35m-4m+28$

$-54m+168=31m+28$

$-31m \quad -31m$

$-85m+168=28$

$-85m=-140$

$m=\frac{-140}{-85}$

$\boxed{m=\frac{28}{17}}$

5. $2(3x-1)+\frac{3x}{8}-\frac{1}{6}=\frac{x}{4}-\frac{2}{3}(6x-12)$

$6x\cdot 24 - 2\cdot 24 + \frac{3x}{8}\cdot 24 - \frac{1}{6}\cdot 24 = \frac{x}{4}\cdot 24 - 4x\cdot 24 + 8\cdot 24$

$144x-48+9x-4=6x-96x+192$

$153x-52=-90x+192$

$+90x \quad +90x$

$243x-52=192$

$243x=244$

$\boxed{x=\frac{244}{243}}$

When all variables cancel out: If equation is true (balanced scale) → infinitely many solutions

If equation is false (unbalanced scale) → no solution

Solve each equation.

6. $2y - 4 = 2(y - 3)$

$2y - 4 = 2y - 6$

$-2y \quad -2y$

$-4 = -6$

Variables have cancelled and equation is false.

No solution

7. $2y - 4 = 2(y - 2)$

$2y - 4 = 2y - 4$

$-2y \quad -2y$

$-4 = -4$

Variables have cancelled and equation is true.

Infinitely many solutions. (All numbers work)

8. $-4 + 5(x + 1) = 2x + 3(x + 1)$

$-4 + 5x + 5 = 2x + 3x + 3$

$5x + 1 = 5x + 3$

$-5x \quad -5x$

$1 = 3$

Variables have cancelled and equation is false.

No Solution

9. $6(4 - 2x) = -2(5x - 5) - 2x$

$24 - 12x = -10x + 10 - 2x$

$24 - 12x = -12x + 10$

$+12x \quad +12x$

$24 = 10$

Variables have cancelled and equation is false.

No solution

10. $5 + \frac{k}{2} + \frac{k}{4} = \frac{3k}{2} + 5 - \frac{3k}{4}$ (·4 on each term)

Clear fractions!

$20 + 2K + K = 6K + 20 - 3K$

$20 + 3K = 3K + 20$

$-3K \quad -3K$

$20 = 20$

Variables have cancelled and equation is true.

Infinitely many solutions (All numbers work)