NAME Key PERIOD _____

Solving Equations: REVIEW

1. $18 = 3(3x - 6)$

$18 = 9x - 18$

$+18 \quad +18$

$\frac{36}{9} = \frac{9x}{9}$

$x = 4$

2. $30 = -5(6n + 6)$

$30 = -30n - 30$

$+30 \quad +30$

$\frac{60}{-30} = \frac{-30n}{-30}$

$n = -2$

3. $-13 = 5(1 + 4m) - 2m$

$-13 = 5 + 20m - 2m$

$-13 = 5 + 18m$

$-5 \quad -5$

$\frac{-18}{18} = \frac{18m}{18}$

$m = -1$

4. $-\frac{4}{7}x + 2 = -18$

$-2 \quad -2$

$\left(-\frac{7}{4}\right)\left(-\frac{4}{7}\right)x = -20\left(-\frac{7}{4}\right)$

$x = 35$

5. $\frac{x}{-3} + 14 = 9$

$-14 \quad -14$

$-3 \cdot \frac{x}{-3} = -5 \cdot -3$

$x = 15$

6. $\frac{3}{2}(x + 5) = -24 \cdot \frac{3}{-12}$

$x + 7 = -36$

$-7 \quad -7$

$x = -41$

7. $-5n - 8(1 + 7n) = -8$

$-5n - 8 - 56n = -8$

$-61n - 8 = -8$

$+8 \quad +8$

$\frac{-61n}{-61} = \frac{0}{-61}$

$n = 0$

8. $5(2x + 6) = -4(-5 - 2x) + 3x$

$10x + 30 = 20 + 8x + 3x$

$10x + 30 = 20 + 11x$

$-10x \quad -10x$

$30 = 20 + 1x$

$-20 \quad -20$

$10 = x$

9. $-5(4x - 2) = -2(3 + 6x)$

$-20x + 10 = -6 - 12x$

$+20x \quad +20x$

$10 = -6 + 8x$

$+6 \quad +6$

$\frac{16}{8} = \frac{8x}{8}$

$x = 2$

10. $-11 - 5a = 6(5a + 4)$

$-11 - 5a = 30a + 24$

$+5a \quad +5a$

$-11 = 35a + 24$

$-24 \quad -24$

$\frac{-35}{35} = \frac{35a}{35}$

$-1 = a$

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11. $8(4k-4) = -5k-32$

$32k-32 = -5k-32$

$+5k \quad +5k$

$37k-32 = -32$

$+32 \quad +32$

$\frac{37k}{37} = \frac{0}{37}$

$k=0$

12. $6(x-2) = \frac{1}{3}(18x-36)$

$6x-12 = 6x-12$

$-6x \quad -6x$

$-12 = -12$

Infinite SOLUTION

13. $8x-2(x-3) = -3(x+7)$

$8x-2x+6 = -3x-21$

$6x+6 = -3x-21$

$+3x \quad +3x$

$9x+6 = -21$

$-6 \quad -6$

$\frac{9x}{9} = \frac{-27}{9}$

$x=-3$

14. $0.2(3x+5)-3 = 0.15(4x+3)$

$0.6x+1-3 = 0.6x+0.45$

$0.6x-2 = 0.6x+0.45$

$-0.6x \quad -0.6x$

$-2 = 0.45$

NO SOLUTION

15. $15\left(\frac{2}{5}x+4 = \frac{1}{3}x-\frac{4}{15}\right)$ LCD: 15

$\frac{15}{1}\cdot\frac{2}{5} = \frac{30}{5} = 6$ $\quad \frac{15}{1}\cdot\frac{-4}{15} = \frac{-60}{15} = -4$

$\frac{15}{1}\cdot\frac{1}{3} = \frac{15}{3} = 5$

$6x+60 = 5x-4$

$-5x \quad -5x$

$1x+60 = -4$

$-60 \quad -60$

$x=-64$

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16-20. Check the steps used to solve the following equations. Circle the step that contains the error and re-do the problem to get the correct answer.

16. $7x + 3(-4x - 5) = -65$

$7x - 12x - 15 = -65$

$5x - 15 = -65$ — combined like terms incorrectly

$5x = -50$

$x = -10$

re-do

$7x + 3(-4x - 5) = -65$

$7x - 12x - 15 = -65$

$-5x - 15 = -65$

$+15 \quad +15$

$-5x = -50$

$x = 10$

17. $-35n + 10 = -8(5 + 5n)$

$-35n + 10 = -40 - 40n$

$5n + 10 = -40$

$5n = 50$ — forgot negative

$n = 10$

$-35n + 10 = -8(5 + 5n)$

$-35n + 10 = -40 + -40n$

$+40n \quad\quad +40n$

$5n + 10 = -40$

$-10 \quad -10$

$\frac{5n}{5} = \frac{-50}{5}$

$n = -10$

18. $12(x + 26) = 16(x + 20)$

$12x + 312 = 16x + 320$

$312 = 4x + 320$

$-320 \quad -320$

$632 = 4x$ — inverse operations

$158 = x$

$12(x+26) = 16(x+20)$

$12x + 312 = 16x + 320$

$-12x \quad\quad -12x$

$312 = 4x + 320$

$-320 \quad\quad -320$

$\frac{-8}{4} = \frac{4x}{4}$

$x = -2$

19. $-3(10n + 3) - 2n = 7n - 9$

$-30n - 9 - 2n = 7n + 9$ — Wr0ng sign 0n 1he "9"

$-32n - 9 = 7n + 9$

$-39n - 9 = 9$

$-39n = 18$

$n = -18/39$

$-3(10n+3) - 2n = 7n - 9$

$-30n - 9 - 2n = 7n - 9$

$-32n - 9 = 7n - 9$

$-7n \quad\quad -7n$

$-39n - 9 = -9$

$+9 \quad\quad +9$

$\frac{-39n}{-39} = \frac{0}{39}$

$n = 0$

20. $-11 + 10(p + 10) = 4 - 5(2p + 11)$

$-11 + 10p + 100 = 4 - 10p + 55$

$10p + 89 = 59 - 10p$ — Distribution error

$20p + 89 = 59$

$20p = -30$

$p = -3/2$

$-11 + 10(p+10) = 4 - 5(2p+11)$

$-11 + 10p + 100 = 4 - 10p - 55$

$10p + 89 = -10p - 51$

$+10p \quad\quad +10p$

$20p + 89 = -51$

$-89 \quad\quad -89$

$\frac{20p}{20} = \frac{-140}{20}$

$p = -7$

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21. Jim makes $5 an hour at the surf shop. His boss gives him a one time bonus of $50. Sarah makes $8 an hour at the clothes store. Her boss gives her a one time bonus of $14.

a. After how many hours will their paychecks be the same?

n = the number of hours

Jim's earning = $5n+50$

Sarah's earning = $8n+14$

$5n+50 = 8n+14$

$-5n \quad -5n$

$50 = 3n+14$

$-14 \quad -14$

$\frac{36}{3} = \frac{3n}{3}$

$n = 12$

b. If they both work 15 hours, who will have a bigger paycheck? (show work)

Jim's earning $5(15)+50$

$75+50$

125

Sarah's earning $8(15)+14$

$= \$134$

Sarah will have the bigger paycheck

22. Billy receives $500 for his birthday. He wants to buy a *PS5*. The store is selling it for $275 and games for $75 each. How many games can he buy along with the *PS5*. *Write and solve an equation.*

X = # games Billy can buy **Equation**: $75x+275=500$

Solve:

$75x+275=500$

$-275 \quad -275$

$\frac{75x}{75} = \frac{225}{75}$

$x = 3$ games

23. Fill in the empty boxes to complete each equation with the given number of solutions. (you may use only numbers 0-9 as many times as needed)

A. Equation with NO SOLUTION

$7x+4-6x+3+x = \boxed{2}x+\boxed{4}$ ← any # other than 7

$2x+7$

B. Equation with ONE SOLUTION

$7x+4-6x+3+x = \boxed{5}x+\boxed{3}$ ← any # other than 2

$2x+7$

C. Equation with INFINITELY MANY SOLUTIONS

$7x+4-6x+3+x = \boxed{2}x+\boxed{7}$

$2x+7$