

## UNIT 2: Solving and Operations

### Concepts:

- Linear equations and inequalities
- Absolute value equations and inequalities
- Rational exponents
- Radical equations
- Add, Subtract, Multiply, Divide Functions
- Composition of Functions
- Inverses

Solve each equation.

1.  $4(x+2) - 7 = 13$

2.  $\frac{3x-6}{8} + 9 = 6$

3.  $7x + 8 = 71 - 2x$

4. (a) Write the formula for the perimeter of a rectangle:

(b) Re-arrange the formula and solve for w (width):

Solve each inequality.

5.  $\frac{8x+10}{-7} > 2$

6.  $-24 < 3x - 9 \leq 12$

7.  $7x - 12 \leq 24 - 2x$

Solve each absolute value equation or inequality. (Make sure to check for extraneous solutions)

8.  $|-4 + 5x| = 16$

9.  $3|-8x| + 8 = 80$

10.  $\frac{|7x+4|}{8} = 3$

11.  $|x-2| < 8$

12.  $|x+5| - 6 \leq -5$

13.  $9|3x-2| + 6 > 51$

Simplify using the properties of exponents.

14.  $(x^2x^4)^{\frac{1}{2}}$

15.  $(2^33)^2$

16.  $\frac{x^{\frac{2}{3}}}{x^{\frac{3}{4}}}$

Re-write the following expressions using rational exponents.

17.  $\sqrt[5]{10}$

18.  $\sqrt[4]{x^7}$

Write the expression in simplest form.

19.  $\sqrt{48}$

20.  $\sqrt[3]{27x^4}$

21.  $\sqrt{72x^2}$

22.  $4\sqrt[6]{7} - \sqrt[6]{7}$

23.  $\sqrt[4]{32} \bullet \sqrt[4]{8}$

Solve each radical equation. Check for extraneous solutions.

24.  $10 + \sqrt{10m-1} = 13$

25.  $1 = \sqrt{x-5}$

26.  $\sqrt[3]{x^2-1} = 2$

27.  $x = \sqrt{-70+17x}$

28. Find the inverse of the function  $y=3x-2$ .

19. Let  $f(x)=4x-2$  and  $g(x)=\frac{x+2}{4}$ .

Are  $f(x)$  and  $g(x)$  inverses of each other?