



M314 ALGEBRA 2  
UNIT 1  
1.2-Solving Equations

Name: \_\_\_\_\_

Teacher: \_\_\_\_\_ Per: \_\_\_\_\_

**Concepts**

C5: I know what these words mean:

- Equation
- Linear Equation
- Quadratic Equation
- Cubic Equation
- Solve
- Unknown
- Inverse Operations
- Reciprocal

C6: I know the 6 inverse operations.

C7: I know the difference between variable and unknown.

**Skills**

S5: I can find the inverse operation for any operation.

S6: I can use the inverse operations in the proper order to solve equations.

	Group Work	Independent Work		
Skills		Practice	Above & Beyond	Eval.
S5: Inverse Operations	<input type="checkbox"/> G5a: Add/Subt./Mult./Divide <input type="checkbox"/> G5b: Exponents/Radicals <input type="checkbox"/> G5c: Mixed Operations	<input type="checkbox"/> P5a <input type="checkbox"/> <input type="checkbox"/> P5c <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
S6: Solving Equations	<input type="checkbox"/> G6a: Add/Subt./Mult./Divide <input type="checkbox"/> G6b: Exponents/Radicals <input type="checkbox"/> G6c: Mixed Operations	<input type="checkbox"/> P6a <input type="checkbox"/> P6b <input type="checkbox"/> P6c <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> AB6a <input type="checkbox"/> AB6b <input type="checkbox"/> AB6c	

## **Skill 5: Inverse Operations**

### **S5a: Inverse Operations with Addition, Subtraction, Multiplication and Division**

**Reciprocal:**

**Inverse Operations:**

**Examples:**

1. $x + 3$	2. $y - 8$	3. $6w$	4. $\frac{m}{5}$
5. $\frac{3}{4}x$	6. $7 + y$	7. $-2m$	8. $-\frac{h}{9}$

### **G5a: Group Work – Inverse Operations with $+$ , $-$ , $\cdot$ , $\div$**

1. $x - 9$	2. $14m$	3. $5 + p$	4. $\frac{2}{9}y$
5. $-\frac{n}{12}$	6. $-8x$	7. $r + 10$	8. $-\frac{v}{15}$

**P5a: Practice – Inverse Operations with  $+$ ,  $-$ ,  $\cdot$ ,  $\div$**

1. $7x$	2. $9+m$	3. $n-6$	4. $-\frac{c}{4}$
5. $h+8$	6. $-8x$	7. $\frac{u}{3}$	8. $\frac{4}{5}y$

## **S5b: Inverse Operations with Exponents and Radicals**

### **Examples:**

1. $x^2$	2. $y^3$	3. $w^5$
4. $\sqrt{m}$	5. $\sqrt[4]{n}$	6. $\sqrt[9]{r}$

### **G5b: Group Work – Inverse Operations with Exponents and Radicals**

1. $\sqrt[3]{y}$	2. $m^2$	3. $\sqrt[6]{d}$
4. $u^4$	5. $\sqrt{x}$	6. $w^{10}$

## S5c: Mixed Operations

### Examples:

1.

Ans:		
$\cdot 2$		
$+ 5$		13

2.

Ans:		
$- 4$		
$\cdot 3$		
$+ 7$		16

3.

Ans:		
$+ 1$		
$( )^2$		
$\cdot 4$		
$- 12$		24

4.

Ans:		
$+ 2$		
$\sqrt{\quad}$		
$\cdot 3$		
$- 6$		6

## G5c: Group Work – Mixed Operations

1.

Ans:		
$\cdot 3$		
$- 7$		8

2.

Ans:		
$\sqrt{\quad}$		
$\cdot -5$		
$+ 3$		-12

3.

Ans:		
$+ 6$		
$\cdot 2$		
$- 9$		15

4.

Ans:		
$(\quad)^2$		
$\cdot 3$		
$- 10$		38

5.

Ans:		
$- 2$		
$\sqrt{\quad}$		
$\cdot 4$		
$+ 5$		45

6.

Ans:		
$\cdot -1$		
$- 2$		
$(\quad)^2$		
$+ 8$		9

### P5c: Practice – Mixed Operations

1.

Ans:		
$\cdot 4$		
$+ 9$		57

2.

Ans:		
$- 4$		
$\cdot -3$		
$+ 8$		26

3.

Ans:		
$( )^2$		
$\cdot 2$		
$+ 5$		77

4.

Ans:		
$\sqrt{\quad}$		
$\cdot 6$		
$- 11$		1

5.

Ans:		
$+ 3$		
$\cdot 2$		
$( )^2$		
$- 7$		18

6.

Ans:		
$\cdot 3$		
$+ 4$		
$\sqrt{\quad}$		
$+ 13$		17

## Skill 6: Solving Equations

### S6a: Solving Equations involving addition, subtraction, multiplication, and division

**Solve/Solution:**

**Linear Equation:**

**Examples:**

1. Solve:  $5x+3=13$

$x$	=	
$\cdot 5$		
$+ 3$		13

2. Solve:  $7-4x=19$

$x$	=	
		19

3. Solve:  $2(x-7)+4=-6$

$x$	=	
$- 7$		
$\cdot 2$		
$+ 4$		$- 6$

4. Solve:  $6-3(x+8)=12$

$x$	=	
		12



### G6a: Group Work – Solving Equations involving +, −, •, and ÷

1. Solve:  $12 - 3x = -6$

$X$	=	

2. Solve:  $\frac{x}{6} + 2 = 8$

$X$	=	

3. Solve:  $-4(x + 2) + 13 = 5$

$X$	=	

## G6a: Group Work - Continued

4. Solve:  $9 + \frac{x-5}{4} = 11$

$X$	$=$	

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

6.  $\frac{(4x-1)}{3} + 7 = 10$

**P6a: Practice – Solving Equations involving +, −, •, and ÷**

1. Solve:  $2x+5=9$

$X$	$=$	

2. Solve:  $5-\frac{x}{6}=3$

$X$	$=$	

3. Solve:  $-2(x+6)-5=15$

$X$	$=$	

**P6a: Practice - continued**

4. Solve:  $\frac{x-4}{2} + 9 = 14$

$X$	$=$	

5. Solve:  $3(x+8)-11=15$

6. Solve:  $4 + \frac{(3x+2)}{2} = -7$

**AB6a: Above and Beyond – Solving Equations involving +, −, •, and ÷**

Solve the linear equations.

1. $4(2x+3)+2(x-5)=32$	2. $\frac{3x+5x+4}{4}-5=6$
3. $2(3x-5)-4(2x-1)=-2$	4. $(6-x)+4=-2$
5. $6x+30=15x+3(2x-5)$	6. $2(4x-1)-(3x-5)=12x-11$

## S6b: Solving Equations involving an exponent or a radical

**Quadratic Equation:**

**Cubic Equation:**

**Radical Equation:**

**\*\*Remember\*\*** →

$$(4)^2 =$$

$$(-4)^2 =$$

**Examples:**

1. Solve:  $x^2 - 2 = 23$

$x$	$=$	
$( )^2$		
$- 2$		$23$

2. Solve:  $\sqrt{x} - 4 = 2$

$x$	$=$	
$\sqrt{\phantom{x}}$		
$- 4$		$2$

3. Solve:  $3x^2 - 1 = 146$

$x$	$=$	

**S6b: Solving Equations involving an exponent or a radical - continued**

4. Solve:  $\frac{\sqrt{x}}{4} + 9 = 11$

$x$	=	

**G6b: Group Work – Solving Equations involving an exponent or radical**

1. Solve:  $x^2 + 5 = 41$

$X$	=	

2. Solve:  $\sqrt{x} + 8 = 18$

$X$	=	

### G6b: Group Work – continued

3. Solve:  $\frac{x^2}{3} + 6 = 9$

$X$	$=$	

4. Solve:  $2\sqrt{x} + 3 = 15$

$X$	$=$	

5. Solve:  $\sqrt{x+4} - 2 = 6$

6. Solve:  $2(x+3)^2 - 3 = 15$



### P6b: Practice – Solving Equations involving an exponent or a radical

1. Solve:  $x^2 - 5 = 59$

$X$	$=$	

2. Solve:  $\sqrt{x} - 12 = -5$

$X$	$=$	

3. Solve:  $-3(x^2 - 4) = -15$

$X$	$=$	

**P6b: Practice – continued**

4. Solve:  $2\sqrt{x-5}=16$

$X$	$=$	

5. Solve:  $(x-1)^2+5=30$

6. Solve:  $4\sqrt{x+3}-8=4$

## AB6b: Above and Beyond – Solving Equations involving an exponent or a radical

Solve.

1. $5\sqrt[3]{x} + 6 = 26$	2. $\frac{x^3}{3} - 5 = 4$
3. $\frac{\sqrt{4-5x}}{4} - 8 = -5$	4. $(1-2x)^2 + 5 = 6$
5. $-2(3x-1)^3 + 4 = -12$	6. $5x^2 + 2(x^2 - 7) = 14$