Name: Notes/Example	Date:	Period:

Lesson 1.2 Solving Equations

Solving Equations

1. Clear fractions and decimals.
2. Distribute
3. Collect like terms on each side of the equations.
4. Use inverse operations to move the variable terms to one side of the equation and number terms on the opposite sides.
5. Isolate the variable.

Ex1: $\frac{3(5-3x)}{-4} = -15$

1. $\frac{3(5-3x)}{-4} \cdot (-4) = (-15)(-4)$
2. $3(5-3x) = 60$
   $15 - 9x = 60$
4. $-15 \quad -15$
   $-9x = 45$
5. $\frac{-9x}{-9} = \frac{45}{-9}$
   $x = -5$

Ex2: $16 - (7m+3) = 8(1-m)$

2. $16 - 7m - 3 = 8 - 8m$
3. $13 - 7m = 8 - 8m$
4. $-13 \quad -13$
   $-7m = -5 - 8m$
   $+8m \quad +8m$
   $m = -5$

Ex3: $\frac{5}{6}w + 21 = -\frac{1}{3}(2w-9)$

1. $6\left(\frac{5}{6}w\right) + 6(21) = 6 \cdot -\frac{1}{3}(2w-9)$
   $5w + 126 = -2(2w-9)$
2. $5w + 126 = -4w + 18$
4. $+4w \quad +4w$
   $9w + 126 = 18$
   $-126 \quad -126$
   $\frac{9w}{9} = \frac{-108}{9}$
5. $w = -12$

Ex4: $-5(8p+6) = 5 - 5p$

2. $-40p - 30 = 5 - 5p$
4. $+30 \quad +30$
   $-40p = 35 - 5p$
   $+5p \quad +5p$
   $\frac{-35p}{-35} = \frac{35}{-35}$
5. $p = -1$

Special Cases

Ex5: $1+3c=5(1-c)+8c$

2. $1+3c=5-5c+8c$
3. $1+3c=5+3c$

$3c+1 \neq 3c+5$ ∅ because can not be =

4. $-1 \quad -1$

$3c=4+3c$

$-3c \quad -3c$

$0=4$ If you continue

$0 \neq 4$ no solution

Ex6: $40-8x=-8(x-5)$

2. $40-8x=-8x+40$

$-8x+40=-8x+40$ Same expression on both sides. ANY value of x will make it true. If you continue...

4. $+8x \quad +8x$

$40=4$

All real numbers

Literal Equations

1. Locate the variable you are asked to solve for in the equation.
2. Identify operations on the variable
3. Use inverse operations to isolate the variable

Ex7: $C=2\pi r$ solve for π

$\frac{C}{2} = \frac{2\pi r}{2}$

$\frac{C}{2r} = \frac{\pi r}{r}$

$\frac{C}{2r} = \pi$

Ex8: $\frac{a+b}{c}=5$ solve for b

$\frac{c}{1}\left(\frac{a+b}{c}\right)=5 \cdot c$

$a+b=5c$

$-a \quad -a$

$b=5c-a$

Ex9: solve for x

$3x-3y=24$

$+3y \quad +3y$

$\frac{3x}{3} = \frac{24}{3} + \frac{3y}{3}$

$x=8+y$

Ex10: $S=(n-2)180$ solve for n

$\frac{S}{180} = \frac{(n-2)180}{180}$

$\frac{S}{180} = n-2$

$+2 \quad +2$

$\frac{S}{180}+2=n$

finish Lit. 9/1