Mathematics9 Date _____

Unit 8 Solving Equations & Inequalities

8.0 Equation Solving With Integers

Recall: To **solve** an equation means to find the value of the variable which satisfies the equation
[Reviewed in 7.0 already]

Ex. Solve: $2x + 6 = 20$

$-6 \quad -6$

$\frac{2x}{2} = \frac{14}{2}$

$x = 7$

★ isolate the variable
★ opposite operations on both sides
★ SAMDEB

Equations with Variable on Both Sides

★ isolate variable terms from constant terms

Ex. Solve:

a) $8x = 3x - 15$

$-3x \quad -3x$

$\frac{5x}{5} = \frac{-15}{5}$

$x = -3$

b) $6x - 5 = 2x + 7$

$-2x \quad +5 \quad -2x \quad +5$

$\frac{4x}{4} = \frac{12}{4}$

$x = 3$

c) $-5 - 8t = -9t - 7$

$+7 \quad +8t \quad +8t \quad +7$

$\frac{2}{-1} = \frac{-t}{-1}$

$-2 = t$

★

$-q = 5$

$q = -5$

d) $-5m - 2 = 3m - 2$

$+5m \quad +2 \quad +5m \quad +2$

$\frac{0}{8} = \frac{8m}{8}$

$0 = m$

e) $z - 2 = 2z - 4$

$-z \quad +4 \quad -z \quad +4$

$2 = z$

$-b = -8$

$b = 8$

Unsimplified Equations

★ simplify each side first
↳ distribute, like terms

Ex. Solve:

a) $3(a-3)+7=5a-8-4a$

$3a-9+7=a-8$

$3a-2=a-8$
$-a \quad +2 \quad -a \quad +2$

$\frac{2a}{2}=\frac{-6}{2}$

$a=-3$

b) $7-3(5t-10)=67$

$7-15t+30=67$

$-15t+37=67$
$-37 \quad -37$

$\frac{-15t}{-15}=\frac{30}{-15}$

$t=-2$

c) $6p-(5p+5)=-8-2(p+12)$

$6p-5p-5=-8-2p-24$

$p-5=-2p-32$
$+2p \quad +5 \quad +2p \quad +5$

$\frac{3p}{3}=\frac{-27}{3}$

$p=-9$

Practice: Worksheet (#41/42) – all work (show all steps) on separate sheet