Name: Key Date: _____ Block: _____

9.1 Solving Linear Systems by Substitution

Bell Work

#1

○	□	□	Row sum = 46
△	△	△	Row sum = 27
□	△	△	Row sum = 32
□	□	△	Row sum = 37
Column sum = 55	Column sum = 46	Column sum = 41	

△ = 9 ○ = 18 □ = 14

#2

□	□	○	Row sum = 46
○	○	○	Row sum = 18
△	○	△	Row sum = 40
△	□	△	Row sum = 54
Column sum = 60	Column sum = 52	Column sum = 46	

△ = 17 ○ = 6 □ = 20

#3

□	□	△	Row sum = 56
□	○	□	Row sum = 47
□	△	○	Row sum = 55
△	□	△	Row sum = 64
Column sum = 72	Column sum = 71	Column sum = 79	

△ = 24 ○ = 15 □ = 16

#4

△	△	○	Row sum = 42
○	□	□	Row sum = 18
△	□	□	Row sum = 27
○	□	△	Row sum = 30
Column sum = 50	Column sum = 32	Column sum = 35	

△ = 17 ○ = 8 □ = 5

Vocabulary

- Substitution method: solve one equation for one variable, substitute that value into the other equation, and solve for the other variable

Example 1: Solve using substitution.

$4x + 5y = 26$ ①

$3x = y - 9$

→ Rearrange: $3x + 9 = y$ ②

Sub ② into ①

$4x + 5(3x+9) = 26$

$4x + 15x + 45 = 26$

$19x = -19$

$x = -1$ ✓

$y = 6$ ✓

Example 2: Tony invested $2000, part at an annual interest rate of 8% and the rest at an annual interest rate of 10%. After one year, the total interest was $190.

a) Create a linear system to model this situation.

let x be the amt invested at 8%

let y be the amt invested at 10%

$x + y = 2000$ → Rearrange... $x = 2000 - y$ ②

$.08(x) + .10(y) = 190$ ①

sub ② into ①.

b) Solve. How much money did Tony invest at each rate?

$.08(2000-y) + .10y = 190$

$160 - .08 + .10y = 190$

$160 + 0.02y = 190$

$0.02y = 30$

$y = \$1500$ ✓

$x = \$500$ ✓

Example 3: Admission to an airshow costs $80 for a car with 2 adults and 3 kids. Admission for a car with 2 adults is $50. Determine the cost for one child and one adult.

let x rep the cost for a child.

let y rep the cost for an adult.

$2y = 50$

$y = 25$ ② ✓

$2y + 3x = 80$ ①

sub ② into ①

$2(25) + 3x = 80$

$3x = 30$

$x = 10$ ✓