

**Equivalent Complex Numbers Class Work**

Objective: You will be able to determine values that satisfy equivalent complex expressions.

★ Consider the expression:

$$4xi - 5 = y - 16i$$

**Think-Write-Pair-Share**

How could you determine the values of x and y?

Real  
 $-5 = y$   
 $y = -5$

Imag  
 $4xi = -16i$   
 $\frac{4x}{4} = \frac{-16}{4}$   
 $x = -4$

Practice: Determine the values of the variables in each expression.

1.  $1 + 3ri = 5ri - 8 + 2i + 4s$

Real  
 $1 = -8 + 4s$   
 $9 = 4s$   
 $s = \frac{9}{4}$

Imag  
 $3ri = 5ri + 2i$   
 $3r = 5r + 2$   
 $-2r = 2$   
 $r = -1$

2.  $2w - 6i + 1 = -3 - 64vi$

Real  
 $2w + 1 = -3$   
 $w = -2$

Imag  
 $-8i = -64vi$   
 $\frac{-8}{-64} = \frac{-64v}{-64}$   
 $v = \frac{1}{8}$

3.  $(i + 5)^2 + n = 10i - 9$

$(i+5)(i+5) + n = 10i - 9$   
 $-1 + 10i + 25 + n = 10i - 9$

$10i = 10i$

$-1 + 25 + n = -9$

$24 + n = -9$

$n = -33$

4.  $m + (i - 3)^2 = -3(2i - 4)$

$$m = 4$$

5.  $9yi - 7 = 45i + 3x - i^2$

$$x = -8/3$$

$$y = 5$$

6.  $4 - i^2 + 25hi = -\frac{1}{2}k - 100i$

$$h = -10 \quad k = -4$$

7.  $(2 + bi)(2 - bi) = -4$ ; challenge ☺

Create an acrostic poem in which each letter represents a phrase related to something you have learned about complex numbers.

I

M

A

G

I

N

E