Unit 3 Lesson 11: Introducing the Number *i*

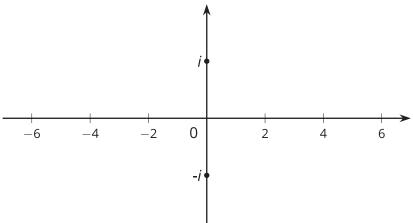
1 Math Talk: Squared (Warm up)

Student Task Statement

Find the value of each expression mentally.

 $\left(2\sqrt{3}\right)^2 \\ \left(\frac{1}{2}\sqrt{3}\right)^2 \\ \left(2\sqrt{-1}\right)^2 \\ \left(\frac{1}{2}\sqrt{-1}\right)^2$

2 It is *i* Images for Launch



Student Task Statement

Find the solutions to these equations, then plot the solutions to each equation on the imaginary or real number line.

1. $a^2 = 16$

2.
$$b^2 = -9$$

3.
$$c^2 = -5$$

					-4 <i>i</i> -							
					-3 <i>i</i> -							
					-2 <i>i</i> -	_						
					;							
-6	-	4	_	2	0		2	2	2	1	(5
-6		-4		2	0 _;-		2	2	2	1	(5
-6	-	-4		2			2	2		1		5
-6	-	4		2	<i>i</i> -		2	2		1	(5
-6	-	4		2	-i- -2i-			2		1	(5

3 The *i*'s Have It

Student Task Statement

Write these imaginary numbers using the number *i*.

1. √-36

- 2. √-10
- 3. -√-100
- 4. -√-17

4 Complex Numbers

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				į•						
6	_	4	 2	0	 -	2	2	1	6	>
 6		4	 2	0	 4	2	2	1	6	5
 6		4	 2	0	 2	2	2	1	(
 6		4	 2	0		2	2	1	6	
6		4	2	0		2		1	6	5
6		4	2	0		2		1		

Student Task Statement

1. Label at least 8 different imaginary numbers on the imaginary number line.

			<i>i</i> •					
-6				 1				L
	-4	-2	0	 2	2	 1	6	5
	4	-2	0	 2	<u>}</u>	 1	6	5
	4	_2	0	 2	2	 1		5
		_2	0	2	2	 1		5
		2	0	2	<u>}</u>	1		

2. When we add a real number and an imaginary number, we get a **complex number**. The diagram shows where 2 + i is in the complex number plane. What complex number is represented by point *A*?

	A					
			<i>i</i>	2+i		
-6	-4	-2	0	2	4	6
-6	4	-2	0	2	4	6
-6	4	-2	0	2	4	6
6	-4	-2	0	2	4	6
6	-4	-2	0	2	4	6
6	-4	-2	0	2	4	6

- 3. Plot these complex numbers in the complex number plane and label them.
 - a. -2 **—** *i*
 - b. -6 + 3*i*
 - c. 5 + 4*i*
 - d. 1 3*i*