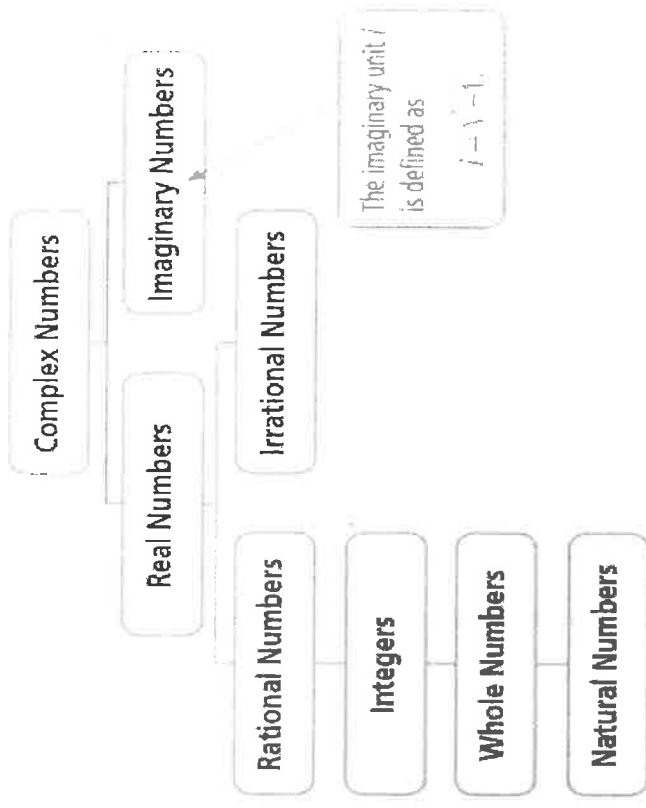


Complex Numbers



Hmm... If $i = \sqrt{-1}$, then what would i^2 be equal to?

i chart

i	$\sqrt{-1}$	i^2	-1	i^3	$-i$	i^4	1
i^5	$\sqrt{-1}$	i^6	-1	i^7	$-i$	i^8	1
i^9	$\sqrt{-1}$	i^{10}	-1	i^{11}	$-i$	i^{12}	1
i^{13}	$\sqrt{-1}$	i^{14}	-1	i^{15}	$-i$	i^{16}	1
i^{17}	$\sqrt{-1}$	i^{18}	-1	i^{19}	$-i$	i^{20}	1
i^{21}	$\sqrt{-1}$	i^{22}	-1	i^{23}	$-i$	i^{24}	1
i^{25}	$\sqrt{-1}$	i^{26}	-1	i^{27}	$-i$	i^{28}	1
i^{29}	$\sqrt{-1}$	i^{30}	-1	i^{31}	$-i$	i^{32}	1
i^{33}	$\sqrt{-1}$	i^{34}	-1	i^{35}	$-i$	i^{36}	1
i^{37}	$\sqrt{-1}$	i^{38}	-1	i^{39}	$-i$	i^{40}	1

Do you see the pattern?

Multiply CoMPlEx NuMBers

$$4i(-6 + i)$$

$$(9 - 2i)(-4 + 7i)$$

Operations with Complex Numbers

$$(8 - i) + (5 + 4i)$$

$$(7 - 6i) - (3 - 6i)$$

$$13 - (2 + 7i) + 5i$$

FIND i to any power

i^n

means multiply i times itself n times.

The powers of i are cyclic (they repeat in a cycle of 4).

DIVIDE n by 4

LOOK at the remainder

remainder = 1, i^n equals i

remainder = 2, i^n equals -1

remainder = 3, i^n equals $-i$

remainder = 0, i^n equals 1
(this means, n is divisible by 4)

How does "i" help us in Alg 2?

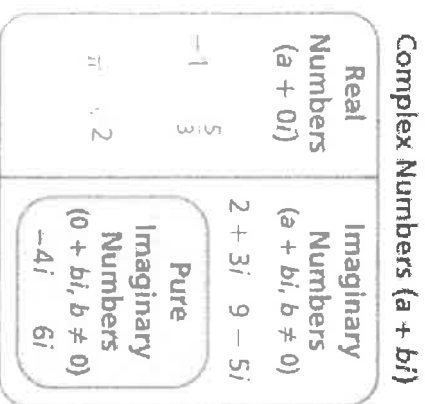
$$\sqrt{-25}$$

$$\sqrt{-72}$$

$$-5\sqrt{-9}$$

$$4\sqrt{-20}$$

What is a complex number???



Equality of Complex Numbers

$a + bi = c + di$ if and only if $a=c$ and $b=d$

Try it:

Find the value of x and y .

$$2x - 7i = 10 + yi$$