Name _____

Date: _____

Number Systems and Characteristics of Functions

Into which group does each number go?

	Natural	Whole	Integers	Rational	Irrational	Real	Imaginary	Complex
22.5								
3/8								
$\sqrt[3]{14}$								
4-7i								
13i								
-18								
$\sqrt{-18}$								
2i -18.4								
0								
9/4								

Identify the property or equation that justifies each missing step or equation in the following table. <u>Check your work when you finish!</u>

Equation	Steps
1. $\frac{1}{2}x - \frac{1}{6}(x - 42) = 13.5$	Given
2.	
3.	
4.	
5.	

Is it Rational?

For each of the numbers below decide whether it is rational or irrational. Explain your reasoning.

Rational or Irrational?	Detailed reason why:
1. 5	
2. $\left(5+\sqrt{5}\right)\left(5-\sqrt{5}\right)$	
3. 0.575	
4. $\sqrt{5}$	
5. $5+\sqrt{7}$	
6. $\dfrac{\sqrt{10}}{2}$	
7. $5.\overline{75}$	
8. $\dfrac{5}{7}$	
9. $\left(7+\sqrt{5}\right)\left(5-\sqrt{5}\right)$	

In the right-hand column, write whether you _agree_ or _disagree_ with each statement.

10. Arlo says, " $0.\overline{57}$ is an irrational number."

11. Hao says, "No, Arlo, it is rational because $0.\overline{57}$ can be written as a fraction."

12. Eli says, "Maybe Hao's correct, you know. 'Cause $0.\overline{57} = \dfrac{57}{100}$."

13. Korbin says, "Hang on. The decimal for $0.\overline{57}$ would go on forever if you tried to write it. That's what the bar thing means, right?"

14. Hank says, "And because it goes on forever, that _proves_ $0.\overline{57}$ has _got_ to be irrational."