Section 5.5

TERMINOLOGY 5.5

For the following term, provide 1) a definition in your own words, 2) the formal definition (as provided by your text or instructor), and 3) an example of the term using a drawing or problem. A sample filled-out form is available in the Introduction.

Complex Fraction

Your definition	
Formal definition	
Example	

READING AND SELF-DISCOVERY QUESTIONS 5.5

1. What is the correct Order of Operations for working with algebraic expressions that contain fractions?

   The Order of Operations is the same as it is for expressions without fractions.

2. How would you explain the process of rewriting a complex fraction to another student?

   You must multiply the numerator by the reciprocal of the denominator.

CRITICAL THINKING QUESTION 5.5

1. Why would you want to add grouping symbols (parentheses or brackets) to a complex fraction problem?

   To make sure that we follow the Order of Operations. (Though parentheses aren't usually written in complex fractions, it is understood that they exist.)

DEMONSTRATE YOUR UNDERSTANDING 5.5

CHALLENGE QUESTION

For each of the following numbers, write a complex fraction that, when simplified, yields that number. Show your work and validate the solution. **Student answers will vary; these are samples.**

a) 1 $\dfrac{\frac{x}{y}}{\frac{x}{y}}$	c) 0 $\dfrac{0}{\frac{1}{x}+3}$
b) −4 $\dfrac{\frac{-4(x+1)}{x+1}}{\frac{1}{2}+\frac{1}{2}}$	d) $\frac{1}{2}$ $\dfrac{\frac{(x+3)}{x+3}}{\frac{3}{4}+\frac{5}{4}}$

IDENTIFY AND CORRECT THE ERRORS 5.5

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Simplify: $\dfrac{\left(\frac{1}{2}\right)}{\left(\frac{4x}{5}\right)}$	**The student failed to invert the fraction in the denominator before multiplying.**	$=\left(\frac{1}{2}\right)\left(\frac{5}{4x}\right)$ $=\left(\frac{5}{8x}\right)$ $=\mathbf{\frac{5}{8x}}$
Worked Solution *(What is wrong here?)* $=\left(\frac{1}{2}\right)\left(\frac{4x}{5}\right)$ $=\left(\frac{4x}{10}\right)$ $=\mathbf{\frac{2x}{5}}$		