Do 1-3 and either 4 or 5

Name:_____

Compare each pair of fractions (find which one is larger) using fraction bars or fraction circles. The goal of this activity is for you to find new ways of thinking about fractions. Each set of fractions follows a rule.

- It is your job to find the rule and write it in a way that says what the rule does, and which kinds of fractions it works for.
- None of your rules should be "find a common denominator" or "compare the decimal versions" because you are looking for new insights.
- You need to explain why your rule makes sense.
- It is also your job to make sure your rule is well stated (it should always work for the types of fractions you specify). Your rules should say something like if there are two fractions and they [have some property] then the one that [has this property] is the larger of the two fractions.

A useful word: **unit fraction** means a fraction with a 1 in the numerator. Every fraction has a unit fraction associated with it. For example, the unit fraction associated with 3/4 is 1/4. You should be looking for rules that you can explain using the size of a unit fraction and the number of unit fractions.

1. Find a rule that tells you which is larger in the first 3 pairs of fractions.

$\frac{a}{b}$	< >	$\frac{c}{d}$	Rule: If ... Then...
$\frac{3}{7}$		$\frac{2}{7}$	
$\frac{7}{10}$		$\frac{9}{10}$	
$\frac{14}{9}$		$\frac{13}{9}$	
$\frac{a}{b}$	< >	$\frac{c}{d}$	Which of these does the rule apply to (why or why not)?
$\frac{4}{21}$		$\frac{8}{21}$	
$\frac{7}{12}$		$\frac{5}{6}$	
$\frac{86}{100}$		$\frac{90}{121}$	

Why does rule #1 make sense? (make sure that you are including your "if" condition to help you explain why it makes sense)

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2. Find a rule that tells you which is larger in the first 4 pairs of fractions.

$\frac{a}{b}$	< >	$\frac{c}{d}$	Rule
$\frac{1}{6}$		$\frac{1}{5}$	
$\frac{1}{7}$		$\frac{1}{9}$	
$\frac{3}{4}$		$\frac{3}{5}$	
$\frac{11}{7}$		$\frac{11}{9}$	
$\frac{a}{b}$	< >	$\frac{c}{d}$	Which of these does the rule work for (why or why not)?
$\frac{8}{26}$		$\frac{8}{21}$	
$\frac{7}{10}$		$\frac{4}{7}$	
$\frac{90}{120}$		$\frac{100}{130}$	
$\frac{91}{115}$		$\frac{2}{5}$	
$\frac{55}{23}$		$\frac{55}{21}$	

Why does rule #2 make sense?

3. Explain which is bigger of these two and how you know (use size of unit fractions and number of unit fractions to explain):

$\frac{3}{7}$		$\frac{2}{8}$

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4. Find rule #3:

$\frac{a}{b}$	< >	$\frac{c}{d}$	Rule
$\frac{8}{9}$		$\frac{9}{10}$	
$\frac{7}{8}$		$\frac{5}{6}$	
$\frac{5}{7}$		$\frac{7}{9}$	
$\frac{8}{11}$		$\frac{7}{10}$	
$\frac{a}{b}$	< >	$\frac{c}{d}$	Which of these does the rule work for (why or why not)?
$\frac{7}{12}$		$\frac{5}{6}$	
$\frac{98}{125}$		$\frac{85}{104}$	
$\frac{90}{120}$		$\frac{100}{130}$	

Why does rule #3 make sense?

5. Look in the Common Core Math Standards: http://www.corestandards.org/Math/
Find the standard(s) that most closely relate to this investigation. Tell what standard(s) they are and explain how this investigation relates to those standard(s).