

MA 201 Exam 3

Name:

You may NOT use a calculator on this exam. As always, remember to show ALL your work and explain your answers.

1. (8 points) Write and solve a word problem using rational numbers (not integers) which demonstrates the missing factor model for division.

2. (8 points) Write and solve a word problem for the fact $3\frac{1}{2} \times 1\frac{3}{5} = 5\frac{2}{3}$.

3. (a) (12 points) Using pictures, explain to me as if I am a 4th grade student why $6 \times_{12} 3 = 6$.

(b) Write a word problem which illustrates this identity.

4. (8 points) Explain the difference between a fraction and a rational number.

5. (a) (8 points) Find a number between $\frac{1}{3}$ and $\frac{2}{7}$.

(b) What property allows you to do this?

6. (a) (12 points) Use a Mail-Time story, to write and solve a word problem which illustrates the equation $(-200) + 500 = 300$.

(b) How would the story change if the equation was $(-200) - (-500) = 300$?

7. (a) (16 points) Using the number line, explain why $3 < 5$. (Write words not just a picture.)

(b) Using a method different from the number line, explain why $\frac{2}{3} < \frac{7}{9}$.

8. (a) (12 points) Give the definition of a proper fraction $\frac{a}{b}$.

(b) Give the definition of equivalent fractions $\frac{a}{b}$ and $\frac{c}{d}$.

(c) Use the colored regions model to show the equivalence of two fractions that you choose.

9. (16 points) Your student claims that $2\frac{4}{9} = \frac{8}{9}$.

(a) What is the student's mistake? Give a reason for making the mistake.

(b) How would you explain to the student the correct way to write $2\frac{4}{9}$ as an improper fraction?