

MA 201 Final Exam

Name:

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

1. (a) (16 points) Give the definition of an irrational number.

(b) Give an example of an irrational number.

(c) Convert $0.2140404040\dots$ to a fraction. (You do not need to simplify.)

2. (8 points) Write and solve an word problem which illustrates the fact $4 \times 3 = 12$ using a multiplication tree.

3. (a) (10 points) List all the factors of 36.

(b) How many factors does 600 have?

4. (8 points) Write and solve a word problem which illustrates the fact $9 \div 3 = 3$ using drops of colored counters.

5. (6 points) Use the Euclidean algorithm to simplify $\frac{1050}{1764}$.

6. (a) (8 points) Represent 1.23 with one of the three basic decimal representations we learned in class.

(b) Now, write 1.23 in expanded exponential form.

(c) Why do we teach the representation in part (a) first?

7. (8 points) Using clock arithmetic,

(a) Solve $4 +_7 6$

(b) Solve $3 -_9 5$

8. (8 points) Write and solve a word problem to illustrate the fact $2\frac{1}{2} - 1\frac{5}{6} = \frac{2}{3}$ using Colored Regions. (This time don't use fraction strips.)

9. (8 points) Your student tell you that $211 - 199 = 22$.

(a) What is wrong with this statement?

(b) What could be a reason for the student's mistake?

(c) How would you explain the correct way to solve this problem?

10. (6 points) Write and solve a word problem which uses deductive reasoning.

11. (6 points) Solve $5.4 \times 10^0 \div 1.5 \times 10^{-3}$.

12. (8 points) Write and solve a compound interest problem. Remember, you don't have to simplify your answer.

13. (a) (Bonus 10 points) Solve $381_9 - 136_9$.

(b) Write and solve a word problem using the Eliminate Possibilities strategy.