

M316 Exam 2

November 20, 2008

Name _____

This is a closed book, closed note exam. It consists of 4 pages, plus an extra credit problem. Each page is worth 25 points, and the extra credit problem is worth 10 points. You may not use a calculator on this exam. Good luck!

1. Last year there were 12 dogs enrolled in obedience training at Cuddly Canine obedience school. At the end of the year, 8 of these 12 dogs graduated. That same year, 21 dogs were enrolled at Pretty Puppy obedience school, and 15 of them graduated. Which school had a better rate of success? Justify your answer, as though you were explaining it to someone who is not yet comfortable with the concept of equivalent fractions.

2. For each of the two problems below, select the model from the list that fits. After briefly justifying your choice, solve the problem.

Models:

- + Combine, increase
- Take-away, comparison, missing addend
- × Repeated addition, area, Cartesian product
- ÷ Partitioning, repeated subtraction, missing factor

- (a) Christy buys $\frac{3}{4}$ of a pint of ice cream from the Russian grocery store. When she gets home, she eats $\frac{1}{3}$ of a pint of it. How much ice cream does she have left?

- (b) Yousif is baking brownies. His recipe calls for $\frac{3}{4}$ of a cup of sugar for each batch. If he has 9 cups of sugar, how many batches can he make?

3. For each of the following arithmetic problems, write a corresponding word problem:

(a) $(-30) - (-60)$

(b) $(-5) \cdot (-7)$

4. (a) Determine the prime factorization of 60.

(b) The number 58564 can be written as $11^4 \cdot 2^2$. How many factors does this number have? (Note that you do not have to explicitly find all the factors, but you may if you like.)

(c) Dave changes the oil in his car every 98 days. He vacuums his apartment every 35 days. Today he did both. How long will it be before he does both on the same day again?

Extra Credit: Prove that the cube root of 5 ($\sqrt[3]{5}$) is not a rational number.