

Math 200 - Test 3
April 24, 2012

Name _____

Score _____

Show all work to receive full credit. Supply explanations where necessary.

1. (5 points) Write an application problem (i.e. a word problem) involving the division fact $12 \div 4 = 3$ where the division is best represented by the following model.

(a) Repeated subtraction

(b) Set (partition)

2. (5 points) What is the difference between $5 \div 0$ and $0 \div 5$? Which is defined? Why? Which is not defined? Why not? Explain clearly and carefully.

3. (6 points) Use any algorithm except the standard algorithm to compute each product. Use a different algorithm for each part.

(a) 678×54

(b) $45_{\text{six}} \times 324_{\text{six}}$

4. (2 points) Use the short division algorithm to compute $8739 \div 7$. Be sure that I can follow your use of this particular algorithm.

5. (2 points) Use one of the computational estimation techniques of section 3.5 to estimate the following sum. Briefly describe your strategy.

$$6200 + 5842 + 6512 + 5512 + 6319$$

6. (7 points) Use a **different** model to model each of the following.

(a) $3 + (-5)$

(b) $-4 - (-7)$

(c) $-5 - 2$

7. (3 points) Clearly state the rule for adding two integers with opposite signs. Give an example that illustrates your rule.

8. (3 points) Abigail thought that $-36 \div (-4)$ should be a negative number, because “that’s what makes sense.” Use the missing-factor model to help Abigail with her problem.

9. (6 points) Use a **different** multiplication model to model product.

(a) $3 \times (-5)$

(b) $-4 \times (-3)$

10. (1 point) What is the additive inverse of $x - y + 5$ and why?

11. (5 points) Test the number 28,586,580 for divisibility by 2, 3, 4, 5, 6, 8, 9, 10, and 11. Explain your reasoning!

12. (3 points) Find the prime factorization of 4200. Then determine its number of positive divisors.

13. (2 points) Describe a test that could be used to determine if an integer is divisible by 20. Explain how you know your test is valid.