

Math 111, Spring 2006

Final Exam

Name (print): _____

Instructor's name: _____

Directions

1. Time limit: 1 hour 50 minutes.
2. To receive credit on any problem, you must show work that explains how you obtained your answer or you must explain how you obtained your answer.
3. Write your work *in pencil* in the provided spaces. Your work must be neat, organized, and legible. Draw a box around your answers.
4. You may use a calculator, but you may not use any notes, books, or other resources. You may not use a cell phone, PDA, etcetera.
5. If a problem does not specify that an answer be written in fraction notation, mixed number notation, or decimal notation, then write the answer in the notation that you think is most appropriate for the problem. *All numerical fractions must be expressed in lowest terms.*
6. You are expected to do your own work. You are neither to receive nor to give any help on the exam.

I have read the directions.

Signature: _____

Student ID number: _____

1. Simplify each expression.

(a) $(-3)^2 - 3^2$

(d) $\frac{4(5)}{3^2 - 9}$

(b) $\frac{-45 \div (-5)(3)}{-5 - 4(0 - 8)}$

(e) $4^{-1} + 3^{-1}$

(c) $\frac{8}{5} + \frac{3}{x}$

2. How many $\frac{3}{4}$ -cup containers can be filled with $2\frac{1}{2}$ cups of flour?

3. Fill in the following table so that the numbers across each row are equal.

Fraction/mixed	Decimal	Percent
	0.55	
$2\frac{3}{8}$		
		1.46%

4. Round each of the following to the stated place value.

(a) 2.4695; thousandth

(c) $\sqrt{27}$; tenth

(b) $\pi/6$; hundredth

(d) -3415 ; ten

5. Solve the following equations.

(a) $4(x + 3) - x = 4 - 2x$

(b) $\frac{x}{8} - 2 = x + \frac{3}{4}$

(c) $0.2x + 0.5(4 - x) = 0.3(4)$

(d) $\frac{3}{4}x = 2\frac{1}{2}$

6. A number plus one-fourth of the number equals 15. Write an equation to find the number.
(Do not solve the equation.)

7. The gasoline gauge in your car shows that the gas tank is $\frac{1}{4}$ full. It takes 12 more gallons to fill the tank. How much gasoline does the tank hold when full?

8. Simplify the following expressions.

(a) $3x^2y - 2xy + y^2 - 5x^2y + 3xy - y^2$ (c) $\frac{124}{340}$

(b) $(x^2yz^6)(x^2y^5z^4)$ (d) $\frac{8mn^5}{12m^2n^3}$

9. Multiply.

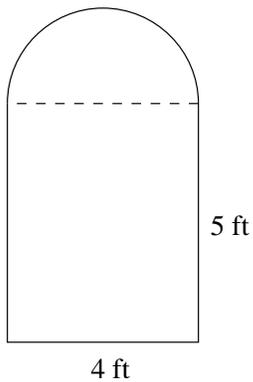
(a) $-3ab^2(4a - 5b)$ (b) $(5x - 2)(5x + 2)$

10. Complete the following ordered pairs for the equation $3x - y = 4$, plot and label the pairs, and graph the equation.

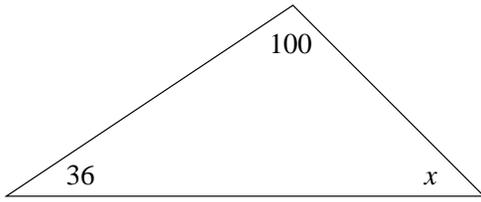
(____, 2), (0, ____), (____, -1)

11. A rectangle has width 7.5 inches and length 10 inches. Find the length of the diagonal.

12. A window is in the shape of a rectangle crowned by a semicircle with dimensions shown below. Find the area of the window. Round to the nearest one-tenth of one square foot.



13. A triangle has interior angles 100° , 36° , and x° as shown below. Find x .



14. Jimmy's monthly allowance was raised from \$12 to \$15. What was the percent increase?

15. Prime factorize 495.

16. To make the perfect blend of grape milk requires mixing 3 cups of grape juice with 5 cups of whole milk. How many cups of grape juice and whole milk are needed to mix 10 cups of grape milk?

17. Name the property that is illustrated. Fill in the blank with

- **A** for associative law
- **C** for commutative law
- **Id** for identity property
- **Inv** for inverse property
- **D** for distributive law
- **X** if none of the properties

(a) _____ $2 + (7 + 3) = (2 + 7) + 3$

(c) _____ $2 + (3 + 7) = 2 + (7 + 3)$

(b) _____ $2(7 + 3) = 2(7) + 2(3)$

(d) _____ $2 \cdot (7 \cdot 3) = (2 \cdot 7) \cdot 3$

End of the exam.