Math 111, Spring 2004
Final Exam

Name (print): _____

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.
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. Find the prime factorization of the number 242.

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2. Evaluate and simplify $-2(3)(-5) + \dfrac{|-8|}{-2^2}$.

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3. For each of the following, if it is an equation, then solve the equation; if it is an expression, then simplify the expression.

   (a) $y - (-1) = -4 - 8$

   (b) $\dfrac{m}{-4} - 11 = 9$

   (c) $-43d - 2a + 5a - d$

   (d) $4(y - 15) = 0$

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4. Given the formula

$$C = \frac{5(F-32)}{9},$$

where C is the temperature in degrees Celsius and F is the temperature in degrees Fahrenheit, convert 77°F to degrees Celsius.

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5. A preschool charges \$12 for a child to attend its morning session or \$8 to attend the afternoon session. No child can attend both. The preschool has an enrollment of 40 children. If the daily receipts are \$372, how many children attend the morning session?

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6. Perform the indicated operations.

   (a) $\left(\frac{2}{5}\right)\left(-\frac{1}{3}\right)\left(\frac{1}{2}\right)$

   (b) $\frac{3t}{5} \div \frac{-t}{3}$

   (c) $3\frac{7}{8} - 2\frac{1}{16}$

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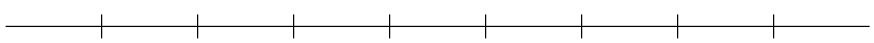
7. Graph the five numbers -2.1, -2.98, $+3.7$, $2\frac{7}{8}$, and $\sqrt{9}$ on the number line. Label the number line appropriately.



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8. Perform the indicated operations.

   (a) $-7.2 - |-3.1 - 3|$

   (b) $-21.21 \div 3.8$ (round the answer to the nearest tenth)

   (c) $\left(\frac{3}{8}\right)(-3.2) + 4.5\left(-\frac{1}{9}\right)$

   (d) $-5\sqrt{36} + 7\sqrt{9}$

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9. Tom bought three CDs at \$14.20 each and two CDs at \$11.99 each. If the tax was \$4.66, how much change did Tom receive if he paid for his purchase with a \$100 bill?

10. During the month of March, Molly filled her gas tank four times with the following amounts: 18.52 gallons, 14.9 gallons, 19.34 gallons, and 16.8 gallons. What was the average amount of gallons that she filled her gas tank with during the month of March?

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11. The packaging label on a box of cereal says that one serving size is 1.1 ounces. If the package weight is 14.3 ounces, how many servings are there in the box of cereal?

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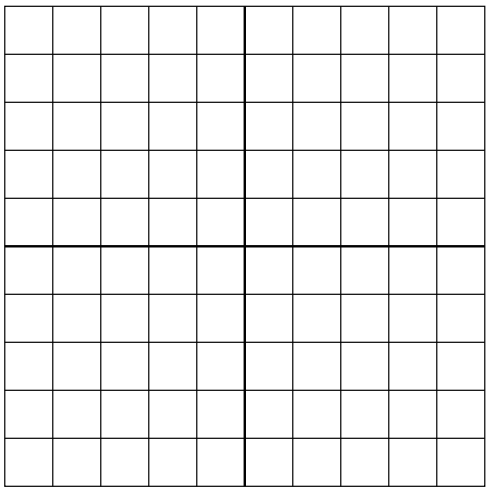
12. Plot each of the following points on the coordinate axes and label each point with its corresponding letter.

$$A(1,4), \quad B(-3,1), \quad C(0,-4), \quad D(-2,-3)$$



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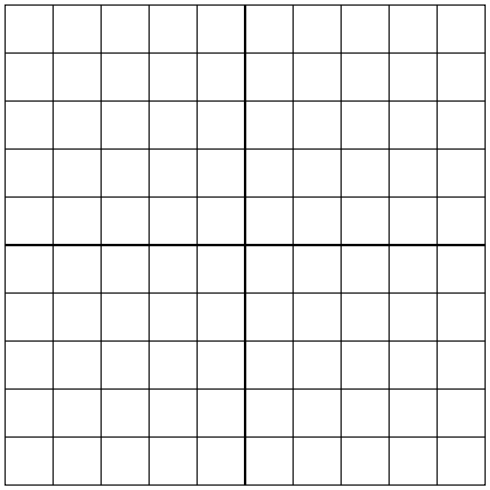
13. Is the point $(-2, 3)$ a *solution* of the equation $3x - 5y = -21$?

14. Complete the chart and draw the graph of $y = 3x - 2$. Label any points that you plot.



x	y
-1	
2	
	7

15. Thirty-nine and six-tenths is 44% of what number?

16. Find $1\frac{1}{4}\%$ of \$3,000.

17. What percent of 120 is 75?

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18. Fill in the following table. Each row should be filled in with the same number in the appropriate notation.

Fraction notation	Decimal notation	Percent notation
29/100	0.29	
	7.03	
1/50		2%
		$8\frac{1}{2}\%$
47/50		
3/16		

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19. On April 1, 2004, the *Sacramento Bee* on-line reported the following at `http://www.sacbee.com/content/politics/ca/story/8717574p-9645001c.html`.

> After two years without an increase in California's minimum wage of $6.75 an hour, lawmakers took an initial step Wednesday toward giving the state's lowest-paid workers a $1 hourly raise by 2006.

What would be the percent increase in the minimum wage in 2006 should the $1 raise be adopted?

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20. Solve the proportion equation $\frac{44}{100} = \frac{39.6}{x}$.

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21. In Macadia Forest lives a troop of iMonkeys. To estimate the number of iMonkeys living there, a team of iCavemen caught, tagged, and released 58 iMonkeys. Two moons later, the same team of iCavemen returned to Macadia Forest and caught 50 iMonkeys, of which 29 were previously tagged. Estimate the number of iMonkeys that live in Macadia Forest to the nearest one.

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22. A 16-inch diameter pizza is cut into twelve equal-sized slices and a 12-inch diameter pizza is cut into eight equal-sized slices. Which is larger (in area): one slice of the 16-inch pizza or one slice of the 12-inch pizza? Hint: The area of a circle of radius r is πr^2. Use $\pi \approx 3.141$.

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23. Find the area of the figure shown below. All lengths are in inches and all angles are 90°. The figure is not drawn to scale.