

**Math 70  
Final Exam  
Winter 2011**

Name: \_\_\_\_\_

1. Your exam contains 11 questions and 7 pages; Please make sure you have a complete exam.
2. The entire exam is worth 130 points. Point values vary and these are indicated on each problem. You have 1 hour and 50 minutes for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive partial credit unless all work is shown. If in doubt, ask for clarification.
4. Simplify your answers as much as possible.
5. Put a box around your final answer where applicable.
6. If you need extra space, attach a sheet to the back of the exam and clearly indicate this.
7. Be sure to **check your answers!** (especially your negative signs)

Problem	Total Points	Score
1	19	
2	5	
3	5	
4	6	
5	6	
6	22	
7	16	
8	13	
9	5	
10	13	
11	20	
Total	130	

1. (19 pts.) Perform the indicated operations. Simplify as much as possible.

(a) (5 pts.)  $\frac{1}{3} - \frac{5}{6} + \frac{7}{9}$

(b) (5 pts.)  $\frac{3\frac{1}{5}}{\frac{1}{4}}$

(c) (4 pts.)  $-7.2 + 9.56$

(d) (5 pts.)  $3 + 5(3 - 4)^2$

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2. (5 pts.) Scientific Notation:

(a) (2 pts.) Write  $2.178 \times 10^6$  in decimal form.

(b) (3 pts.) A water molecule is 0.000000278 millimeters. Write this number in scientific notation.

3. (6 pts.) Out of 180 kids in a school, 100 kids are boys. What percentage of the school kids are boys? (Round to the nearest percentage.)

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4. (6 pts.) A \$90 sweater is on sale for 70% off. Find the amount of the discount and the sale price. (Not including tax.)

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5. (5 pts.) Currency Conversion: Supposing that the current exchange rate is  $\$1 = 0.7$  Euros, how many US dollars can you get for 35 Euros? (i.e. How many US dollars are in 35 Euros?)

6. (22 pts.) Solve the following equations. (Remember that you can check your answers.)

(a) (4 pts.)  $12 = 6.3 + x$

(b) (5 pts.)  $\frac{3}{4}t = 12$

(c) (8 pts.)  $6(x + 4) - 2x = x + 9$

(d) (5 pts.)  $2y + \frac{1}{3} = \frac{11}{15}$

7. (16 pts.) Perform the indicated operations and simplify as much as possible.

(a) (4 pts.)  $(4x + 2)(x - 3)$

(b) (4 pts.)  $7y^2(y^3 - y + 3)$

(c) (4 pts.)  $(5x^2 - 3x + 7) - (x^2 - 4x - 2)$

(d) (4 pts.) Evaluate  $2w^3 + 6w + 11$  for  $w = -1$ .

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8. (13 pts.) Simplify as much as possible. Write your answer with only positive exponents.

(a) (3 pts.)  $9^{-2}$

(c) (2 pts.)  $(-2)^0$

(b) (4 pts.)  $(8x^3y)^5$

(d) (4 pts.)  $\frac{20a^3b^4}{4a^3b^6}$

9. (5 pts.) Suppose you go on a 440 mile road trip that takes you 8 hours. What was your average speed?  
(Include units.)

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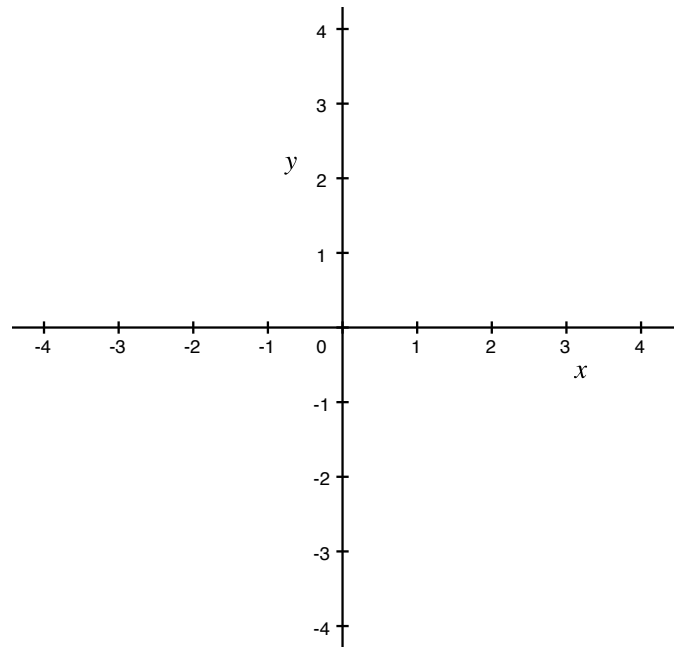
10. (13 pts.)

- (a) (8 pts.) Find the missing coordinate of each ordered-pair solution to the equation  $2x + y = 1$ .

(2 , ?)

(? , 3)

- (b) (5 pts.) Sketch a graph of the linear equation  
 $2x + y = 1$   
on the given axes using **at least 3 points**.  
(Label the points you use.)



11. (20 pts.) For the following two word problems, **list unknowns**, clearly **define a variable**, use an **equation** to solve, and state your **answer in a sentence**.

- (a) (10 pts.) A 50-foot long pipe is cut into two pieces. The short piece is 11 feet shorter than the long piece.

Find the length of both pieces.

- (b) (10 pts.) A gardener has 150 feet of fencing and he wants to build a rectangular garden. He wants the length to be four times the width.

In order to have a perimeter of 150 feet, what should the length and the width be?