

Study Guide for Midterm One

The midterm is 60 minutes long and will be given on Tuesday, February 17, 2009 at the beginning of class. Please arrive early so that we can start on time. The test will cover all of chapters 1, 2, and section 3.1. To study for this test, go through your homework, previous quizzes, class handouts, and class examples. The test is closed book and closed notes. You will need your calculator for the test. You may not share calculators or use mine. Please seek help in the Math Lab and Learning Center early and frequently.

Be familiar with the instructions specified in the homework and class handouts. The wording on the test will be similar. It is important to not just know how to do a problem, but to understand what exactly the problem is asking you to do.

Any use of other electronic devices such as cell phones and mp3 players will result in a 0 on the exam.

- Variables & constants
- Types of numbers
- Scattergrams
- Exact linear relationships
- Expressions
- Fractions
- Adding, subtracting, multiplying, and dividing real numbers
- Ratios and percents
- Order of operations
- Graphing equations in the form $y=mx+b$

Below are some problems and instructions that are representative of what you will see on the test. See your textbook, homework, and class handouts for additional problems.

Circle which set or sets each number belongs to.

a) 10	Counting	Integer	Rational	Irrational	Real
b) $-\frac{8}{3}$	Counting	Integer	Rational	Irrational	Real

The number of low-carbohydrate (low-carb) ice cream products in the years 2000, 2001, 2002, 2003, and 2004 is 0, 2, 9, 19, and 62, respectively. Let n be the number of low-carb ice cream products.

- a) Use points on a number line to describe the given values of n . Find the average of the values and indicate it on the number line.
- b) Did the number of low-carb ice cream products increase, decrease, stay approximately constant, or none of these between 2000 and 2004, inclusive? Explain.
- c) Did the annual increases in the number of low-carb ice cream products increase, decrease, stay constant, or none of these between 2000 and 2004, inclusive? Explain.

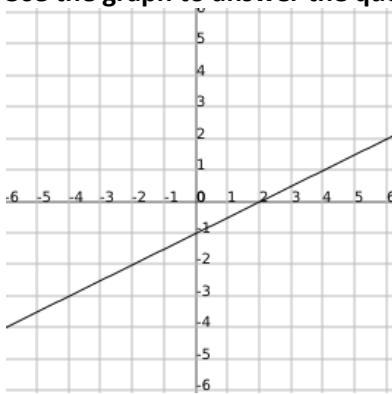
A rectangle has an area of 36 square feet. Let W be the width (in feet), L be the length (in feet), and A be the area (in square feet).

- a) Sketch three possible rectangles of area 36 square feet.
- b) Which of the symbols W , L , and A are variables? Explain.
- c) Which of the symbols W , L , and A are constants? Explain.

Let c be the total cost (in dollars) of n tickets to a Cold Play concert. What is the dependent variable?

An airplane drops from 32,500 feet to 27,800 feet. Find the change in altitude. Show all work for credit.

Use the graph to answer the questions.



- Find y when $x = -4$
- Find x when $y = 1$.
- What is the y -intercept of the line? Write your answer as an ordered pair.
- What is the x -intercept of the line? Write your answer as an ordered pair.

The proposed 1776-foot-tall Freedom Tower at the site where New York's World Trade Center once stood would be the world's tallest full-service building (not counting antenna). The John Hancock Tower in Boston is 790 feet tall. Find the unit ratio of the height of the Freedom Tower to the height of the John Hancock Tower. What does your result mean in this situation?

Evaluate the following expressions for $a = 2$, $b = -5$, $c = -4$, and $d = 10$. Show all work for credit.

- $ac + c \div a$
- $b^2 - 4ac$
- $\frac{-b-c^2}{2a}$
- $2c^2 - 5c + 3$

A person is laid off from work. Let B be the balance (in thousands of dollars) in her checking account at t months since she was laid off. Some pairs of t and B are shown in the table. Write your answers in complete sentences.

t (months)	B (thousands of dollars)
2	16
3	14
5	10
6	8
8	4

- Create a scattergram of the data. Then draw a linear model.
- What was the balance 4 months after the person was laid off?
- When was the balance \$6 thousand?
- What is the B -intercept? What does it mean in this situation?
- What is the t -intercept? What does it mean in this situation?

For the following problems, let x be a number. Translate the English phrase into a mathematical expression. Then evaluate the expression for $x = -4$.

- The number minus the quotient of -12 and the number.
- 7 more than the product of -2 and the number

A stock was worth \$42 last year. Let v be the value (in dollars) of the stock today. The expression $\frac{100(v-42)}{42}$ represents the percent growth of the investment. Evaluate the expression for $v = 45$. Round your result to the second decimal place. What does your result mean in this situation? Write your answer in a complete sentence.

Which of the given ordered pairs satisfy the given equation? Show all work for full credit.

$$y = -5x + 8 \quad (-2, 3), (0, 8), (3, -7)$$

Graph $y = \frac{1}{2}x + 3$

- y -intercept as an ordered pair:
- Make a table with at least 3 values
- Graph