

Study Guide for Midterm

The midterm is 120 minutes long and will be given on Monday and Tuesday, July 13 and 14 at 2:00 and 4:30 pm. **The test will be given in Building 3, Room 142.** Please arrive early to get checked in so that you get the entire two hours to work on the test. The test will cover chapter 1 through section 3.3. To study for this test, go through your homework, quizzes, and StudyPlan. 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 early and frequently.

Be familiar with the instructions specified in the homework and study guide. 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. **Some problems with multiple parts will span several sections and chapters.** Some examples are included in this study guide.

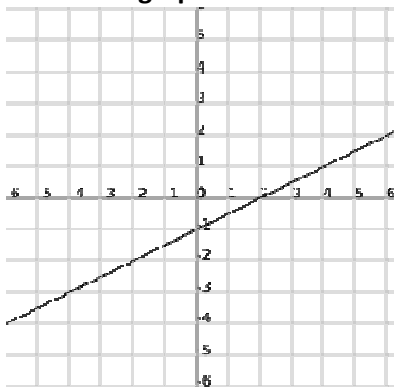
You must bring a photo ID and a calculator to the exam.
Students without a photo ID will not be allowed to take the exam.

Make sure you sign up online to take the test by Thursday, July 9 at 11:00 pm. Students who do not sign up will not be guaranteed a seat or test. Signups will begin on Monday, July 6.

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

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

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



- a) Find x when $y = 1$.
- b) What is the slope of the line?
- c) What is the y -intercept of the line? Write your answer as an ordered pair.
- d) What is the x -intercept of the line? Write your answer as an ordered pair.

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

a) $\frac{a}{d} \div \frac{b}{c}$	b) $b^2 - 4ac$	c) $\frac{-b-c^2}{2a}$	d) $2c^2 - 5c + 3$
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4. Perform the indicated operations and simplify your answers. **Show all work for credit!**
 Unless otherwise specified, your answers should be integer or simplified fraction.

a) $2(5)^2 - 6 \div 2 + 1$	b) $5[3 + 2(4 - 2)]$	c) $9(4 - 6)^2 - 2(2 - 4)^3$
d) $(-5)^2$	e) $\left(\frac{3}{5}\right)^2$	f) $\frac{-15(-8)}{10 - (-10)}$

5. Use your calculator to perform the indicated operations. Round the result to two decimal places.

$$18.67 - 36.9(22.4) + 12.38 \div 5.72$$

6. For the following problems, let x be a number.

- a) Subtract 14 from the quotient of the number and -2 .
 - i. Translate the English phrase into a mathematical expression.
 - ii. Evaluate the expression for $x = -14$. Show all work for full credit.
- b) 7 more than the product of -2 and the number
 - i. Translate the English phrase into a mathematical expression.
 - ii. Evaluate the expression for $x = -14$. Show all work for full credit.

7. Plot the ordered pairs below in a coordinate system.

$(-4, 2)$, $(5, 0)$, $(0, -3)$, $(-3, -6)$

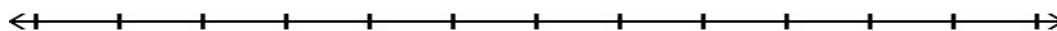
8. Use the slope formula to find the slope of the line that passes through the two given points.

$(6, 7)$ and $(8, 1)$

- a) Slope (Write your answer as an integer or simplified fraction): _____
- b) Is the line increasing, decreasing, horizontal, or vertical?

9. The number of complaints (in thousands) of identity theft in the years 1999, 2000, 2001, and 2002 is, 148, 173, 208, and 247, respectively. Let n be the number of complaints (in thousands).

- a) Use points on a number line to describe the values of n . Be sure to label the units on the number line.



- b) Find the average of the values you plotted in part (a). Round your answer to the nearest integer.
- c) Did the number of complaints increase, decrease, stay approximately constant, or none of these between 1999 and 2002, inclusive? Explain your reasoning.
- d) Did the increases in the number of complaints per year increase, decrease, stay approximately constant, or none of these between 1999 and 2002, inclusive. Explain your reasoning.

10. Consider the numbers below. Which of these numbers are the given type of number?

$$\left\{ \frac{4}{5}, -3, 0.2, 0, -\pi, 5.8, \sqrt{64}, -\sqrt{5} \right\}$$

- a) The counting numbers are: _____
- b) The negative integers are: _____
- c) The integers are: _____
- d) The rational numbers are: _____
- e) The irrational numbers are: _____
- f) The real numbers are: _____

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

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

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

- a) y-intercept as an ordered pair: _____
- b) Slope: _____
- c) Graph

13. Let r be the revenue (in millions of dollars) of a company for the year that is t years since 2000. Some pairs of values of t and r are shown in the table to the right.

t (years)	r (millions of dollars)
0	7
1	10
3	16
4	19
6	25

- a) Create a scattergram of the data. Then draw a linear model. **Be sure to label your axes and the units.**
- b) When was the revenue \$13 million? Write your answer in a complete sentence in the context of the problem.
- c) Predict the revenue in 2010. Write your answer in a complete sentence in the context of the problem.
- d) What is the r –intercept of the model? What does it mean in this situation? Write your answer in a complete sentence in the context of the problem.

14. Let n be the average number of cars sold per week by a car dealership at t years since 1990. What does the ordered pair (15, 25) represent? Write your answer in a complete sentence.

15. Perform the indicated operations and simplify your answers. **Show all work for credit!**
 Unless otherwise specified, your answers should be integer or simplified fraction.

a) $\frac{2}{11} \cdot \frac{3}{7}$	b) $\frac{2}{3} \div 6$	c) $\frac{3}{14} + \frac{5}{4}$
d) $-\frac{1}{11} - \left(-\frac{10}{11}\right)$	e) $\left(\frac{3}{5}\right)^2$	f) $\frac{3}{7} \left(-\frac{4}{5}\right)$

There will be an extra credit quiz posted in MyMathLab that is due at 11:00 pm on Sunday, July 12. These are additional problems similar to the ones above. The extra credit is worth up to 10 points on your midterm. The number of points will be determined by the tens digit (or tens and hundreds digit in the case of 100%) of your quiz score. You will get three attempts as usual. Try to do it without help the first time to see if you really understand the material.

Examples of extra credit points:

9 points for a score of 98.2%, 5 points for a score of 52.8%, 10 points for a score of 100%