

Study Guide for Midterm Two

The midterm is 120 minutes long and will be given on Tuesday and Wednesday, October 20 and 21 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 section 3.4 through the end of chapter 5. 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 Friday, October 16 at 11:00 pm.
 Students who do not sign up will not be guaranteed a seat or test.

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.

In general, **do not use mixed numbers.** Instead, **use improper fractions** from here on out.

1. Simplify the expression or solve the equation, as appropriate.

Unless otherwise specified, use integers or simplified fractions only in your answers.

a) $-8 = \frac{4x}{7}$	b) $5(x - 2) - (3x + 6) = 6(5x + 3)$	c) $-5.5 + 4.6(3.5x - 9.1)$ Round your answer to the nearest tenth.
d) $\frac{5}{6} + 2x + 5 - \frac{7}{9}x$	e) $\frac{2}{9}(15x + 6)$	f) $\frac{7x}{8} + \frac{1}{2} - \frac{3x}{4} = 0$

2. Solve the inequality. Describe the solution set as in inequality, in interval notation, and in a graph.

a) $5(x - 2) \geq 15$	b) $\frac{3}{4}t - \frac{1}{2} \leq \frac{1}{4}$	c) $\frac{2b-4}{3} < \frac{3b-4}{4}$
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3. Determine whether the pair of lines is parallel, perpendicular, or neither.

$$y = \frac{6}{7}x + 10 \quad \text{and} \quad y = -\frac{7}{6}x - 10$$

4. A country's oil exports decreased approximately linearly from 1070 million barrels in 1996 to 530 million barrels in 2000. Find the average rate of change of the country's oil exports per year. Write your answer in a complete sentence in the context of the problem.

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

- a) -8 times the difference of the number and 3.
 - i. Translate the English phrase into a mathematical expression.
 - ii. Evaluate the expression for $x = -14$. Show all work for full credit.
- b) Two times the difference of a number and 7 is -10 .
 - i. Translate the English phrase into a mathematical equation.
 - ii. Solve the equation.

6. Find the equation of the line that fits the description. Write your answer in slope-intercept form (if appropriate). Use integers or simplified fractions for any numbers in your answer.

- a) Passes through $(-2, -3)$ and $(-8, -7)$
- b) Passes through $(8, -7)$ and has zero slope.
- c) Passes through $(9, 5)$ and has undefined slope.
- d) Passes through $(5, -3)$ and has slope $\frac{4}{5}$

7. The percentage of mothers who smoke cigarettes during pregnancy has declined approximately linearly from 13.9% in 1995 to 12.0% in 2000. Let t be the number of years since 1995 and p be the percentage of mothers who smoke cigarettes during pregnancy.

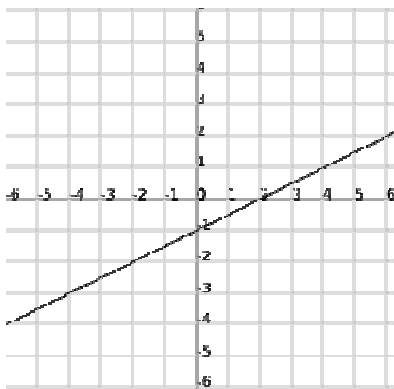
- a) Which variable is the independent variable?
- b) What is the slope? What does it mean in this situation?
- c) What is the p -intercept as an ordered pair? What does it mean in this situation?
- d) Find the equation of a linear model to describe the data.
- e) What is the t -intercept as an ordered pair? What does it mean in this situation?
- f) Predict the percentage of mothers who smoke cigarettes during pregnancy in 2010. Show all work and write your answer in a complete sentence.
- g) When did the percentage of mothers who smoked cigarettes during pregnancy reach 5%? Show all work and write your answer in a complete sentence. Round your answer to the nearest year.

8. (8 points) Find the x-intercept and y-intercept and then graph the equation.

$$4x + 8y = 16$$

- a) Slope-intercept form: _____
- b) x-intercept as an ordered pair: _____
- c) y-intercept as an ordered pair: _____
- d) Graph.

9. Write the equation of the line in slope-intercept form. Simplify your answer and use integers or simplified fractions.



There will be an extra credit quiz posted in MyMathLab that is **due at 11:00 pm on Monday, October 19.** 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%