MA 162   EXAM 1   FALL 2018

NAME: _____ SECTION: _____

Do not remove this answer page — you will return the whole exam. You will be allowed two hours to complete this test. No books or notes may be used. You may use a graphing calculator during the exam, but NO calculator with a Computer Algebra System (CAS) or a QWERTY keyboard is permitted. We reserve the right to clear the memory on your calculator. Absolutely no cell phone use during the exam is allowed.

The exam consists of 16 multiple choice questions worth 5 points each and 3 short answer questions worth a total of 20 points. Record your answers to the Multiple Choice by filling in the single circle corresponding to the correct answer as shown below. In regards to the Multiple Choice portion, only this front page will be graded and no partial credit will be awarded.

· ● Ⓑ Ⓒ Ⓓ Ⓔ

All other work must be done in the body of the exam.

Multiple Choice Responses
Please indicate your answers for the multiple choice questions here by shading in your selections.

1 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**9** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
2 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**10** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
3 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**11** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
4 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**12** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
5 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**13** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
6 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**14** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
7 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**15** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
8 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ		**16** Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

The following table is for administrative purposes only.

MC	17	18	19	Total
80	8	6	6	100

Multiple Choice Questions
Indicate your answer choices by **shading** in your answers on the **cover page**.

1. (5 points) What is the x-intercept of the line $y = -6x + 5$?

   A. $(0, 5)$

   B. $\left(\frac{5}{6}, 0\right)$

   C. $(5, 0)$

   D. $\left(0, \frac{5}{6}\right)$

   E. None of the above are the x-intercept.

2. (5 points) For this question, consider the following points plotted in the coordinate plane.
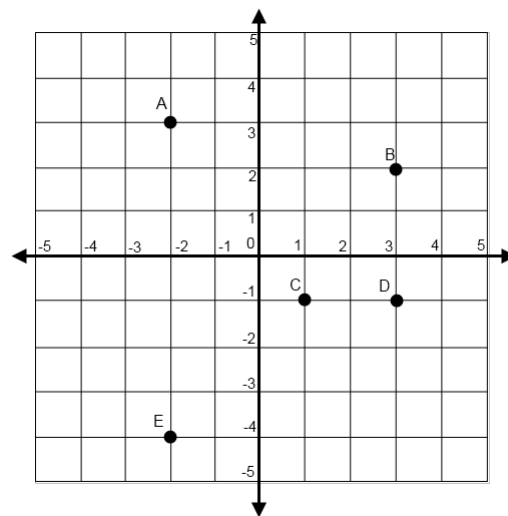
   Which quadrant is the point A located?

   A. Quadrant I

   B. Quadrant II

   C. Quadrant III

   D. Quadrant IV

   E. None of these are the right quadrant.

3. (5 points) What is the slope of the line that passes through the points $(2, -7)$ and $(-2, 4)$?

   A. $\frac{11}{4}$

   B. $\frac{4}{11}$

   C. $-\frac{11}{4}$

   D. $-\frac{4}{11}$

   E. The slope is undefined

4. (5 points) Find the equation of the line that passes through the point $(12, 15)$ and is parallel to the y-axis.

    A. $y = 15$

    B. $x = 12$

    C. $x = 15$

    D. $y = 12$

    E. None of these are the correct equation of the line.

5. (5 points) Find the slope-intercept form of the line with slope $\frac{1}{3}$ passing through the point $(9, 2)$.

    A. $y = \frac{1}{3}x - 1$

    B. $y = \frac{1}{3}x + 5$

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

    D. $y = \frac{1}{3}x - 5$

    E. None of these are the correct equation of the line.

6. (5 points) Find a value k such the the line passing through the points $(2, -5)$ and $(7, 5)$ is parallel to the line passing through the points $(3, 5)$ and $(7, k)$.

    A. $k = 3$

    B. $k = 13$

    C. $k = 5$

    D. $k = 8$

    E. None of these values of k are correct.

7. (5 points) What is the equation of the line passing through the point $(1,5)$ and perpendicular to the line $x + 3y = 6$. The choices are given in slope-intercept form.

    A. $y = -\frac{1}{3} - 4$

    B. $y = 3x + 5$

    C. $y = -3x + 8$

    D. $y = 3x + 2$

    E. None of these are the correct equation of the line.

8. (5 points) One line passes through the points $(7,7)$ and $(13,1)$. Another line passes though the points $(10,4)$ and $(4,10)$. How are these lines related?

    A. They are parallel with different y-intercepts

    B. They are parallel with the same y-intercept

    C. They are perpendicular

    D. The are neither perpendicular nor parallel

    E. None of the above describe how the lines are related.

9. (5 points) Which of the following describe the solution(s) to the system of equations

$$\begin{cases} 5x + 4y = 1 \\ 3x - 6y = 2 \end{cases}$$

    A. $(x, y) = \left(0, \frac{1}{4}\right)$

    B. $(x, y) = \left(\frac{1}{5}, 0\right)$

    C. $(x, y) = \left(\frac{1}{3}, -\frac{1}{6}\right)$

    D. There is no solution

    E. There are infinitely many solutions

10. (5 points) Find a value k such that the system of equations has no solution.

$$\begin{cases} 2x + 5y = 1 \\ -5x + ky = 2 \end{cases}$$

    A. $k = -2$

    B. $k = \frac{2}{25}$

    C. $k = -\frac{25}{2}$

    D. $k = 2$

    E. None of these.

11. (5 points) How many solutions can a system of 2 equations with 2 unknowns have?

    A. Exactly one

    B. Infinitely Many

    C. No Solutions

    D. All of the above

    E. None of the above.

12. (5 points) A contractor purchases a backhoe for $54000. Fuel and maintenance cost $5.43 per hour and the operator is paid $14.53 per hour. What is the cost function of operating the backhoe for x hours. Be sure to include the purchase price in the cost function.

    A. $C(x) = 19.96 + 54000x$

    B. $C(x) = 54019.96$

    C. $C(x) = 54000 + 14.53x$

    D. $C(x) = 54000 + 19.96x$

    E. None of the above.

13. (5 points) Creme Cookies sell their Colossal Creme Cookie for $5.50 each. The cost function for making x Colossal Creme Cookies is $C(x) = 10 + 2x$. Find the profit function for the amount of profit gained from selling x Colossal Creme Cookies.

   A. $P(x) = 5.50x$

   B. $P(x) = 3.50x$

   C. $P(x) = 3.50x - 10$

   D. $P(x) = 10 - 3.50x$

   E. None of the above.

14. (5 points) A car rental company offers two plans. Plan I charges $35 per day and $0.15 per mile. Plan II charges $0.20 per mile, but no flat daily fee. For what mileage do both plans charge the same amount?

   A. 100 miles

   B. 300 miles

   C. 500 miles

   D. 700 miles

   E. None of the above.

15. (5 points) The demand equation for UK key chains is $x + 7p - 3000 = 0$, where x is the quantity demanded per week and p is the wholesale unit price. The supply equation is $3x - 4p + 800 = 0$, where x is the quantity supplied per week at a wholesale price of p dollars each. Find the equilibrium price for the UK key chains.

    A. $256

    B. $392

    C. $432

    D. $152

    E. None of the above.

16. (5 points) For what value(s) of k will the system of equations have exactly one solution.

$$\begin{cases} 3x + 8y = 1 \\ -2x + ky = 2 \end{cases}$$

    A. $k = -\frac{16}{3}$

    B. $k = \frac{3}{16}$

    C. $k \neq \frac{3}{16}$

    D. $k \neq -\frac{16}{3}$

    E. None of the above.

Scrap paper

Short Answer Questions
Show all work to receive credit for the following problems.
If you provide work on the scrap paper, indicate that within the body of the problem.

17. (8 points) A theater has a seating capacity of 800 and charges $4 for children and $8 for adults. The receipts totaled $3500. We would like to know how many children attended the show. To do this, we need to set up a system of equations.

    Setup but **DO NOT SOLVE** this problem.

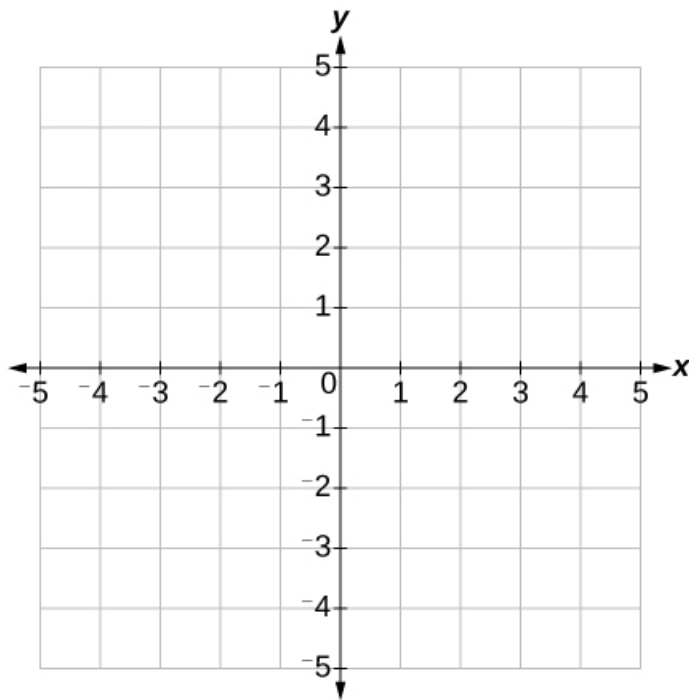   Your answer should be a system of equations with **VARIABLES CLEARLY DEFINED**.

Scrap paper

18. (6 points) Consider the following system of equations.

$$\begin{cases} 2x - 3y = 6 \\ 6x + 3y = 12 \end{cases}$$

Find the x and y-intercepts of each line and graph each line in the provided coordinate plane.

Line	x-intercept	y-intercept
$2x - 3y = 6$		
$6x + 3y = 12$		

Scrap paper

19. (6 points) Define a dependent system of equations and give an example of a dependent system of equations.

Scrap paper

Scrap paper