Elementary Algebra
Math 115
Common Final Examination
(SAMPLE)

THIS TEST BOOKLET MUST NOT BE TAKEN FROM THE ROOM

Please read the following carefully:

General instructions:
- On the scantron, <u>write and bubble in,</u> as appropriate:
  - Last name, first initial, middle initial
  - For "Social Security No," enter Student ID
  - For "Test ID," enter Section #
  - For "Teacher," print instructor name
  - For "Subject," enter Math 115
  - **In order for your exam to be properly graded, for question number 1, please bubble in the version letter for your exam. The version letters A, B, C, or D, appear on the top right corner of this page.**

- Please turn off all cell phones before exam
- No student may leave the room and then return
- When finished, take exam to the instructor in the room and exit quietly
- **No** iPods or graphing calculators are allowed during the exam
- A non-graphing calculator may be used

Test instructions:
1) There are 30 multiple-choice questions in Part I and 6 free response questions in Part II
2) Show your work directly on the test booklet.
3) Recommended time management:
   Part I – 30 multiple-choice questions, approximately 1 hour and 15 minutes
   Part II – <u>Choose 4 out of 6</u> free response questions, approximately 45 minutes
4) Scratch paper is provided at the end of the exam booklet. Return scratch paper with the test.
5) Work must be shown in a clear and logical manner for both Part I and Part II.
6) Mark the letter of your choice on the scantron provided
7) On the free-response part, partial credit will be given based on the clarity and logic of your solution.
8) You are allowed to use a scientific calculator, but not a graphing calculator or computer.
9) Work as quickly as you can on the multiple-choice portion. Do not spend too much time on any one question. If you find a question difficult to answer, go to the next one. You may have time to return to the difficult question later.

DO NOT OPEN THE TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO
Good luck!

L. A. Mission College   Version A
Math 115   (SAMPLE)
Common Final Examination

Part I
Multiple Choice Questions

Do not open this booklet until told to do so
When finished, place answer sheet and scratch paper in the booklet and return to instructor

Student Name: _____

Student ID # :   _____

Instructor Name: _____

Section Number: _____

Multiple Choice Score [   ]   Free Response Score [   ]

Total Score [   ]

Math 115 Common Final Examination
Part I   Multiple Choice Questions

1. In order for your exam to be properly graded, please bubble in "A" for this question.

2. Find the slope of the straight line determined by the two points $(-2,-5)$, $(3,-5)$

    a) undefined   b) 0   c) 2   d) −2

3. Simplify $5-3|2-7|$

    a) −10   b) 10   c) 20   d) 5

4. Evaluate $-4x^2 - 9y^2$ for $x = -1$ and $y = -2$

   a) 13   b) −40   c) −13   d) 0

5. Rationalize the denominator and simplify: $\dfrac{7}{3 - \sqrt{2}}$

   a) $3 - \sqrt{2}$ b) $3\sqrt{2}$ c) $\dfrac{7}{3 + \sqrt{2}}$ d) $3 + \sqrt{2}$

6. Factor completely: $x^2 - 4xy - 12y^2$

   a) $(x+2)(x-6)$ b) $(x+2y)(x-6y)$ c) $(x-2y)(x+6y)$ d) $(x-2y)(x-6y)$

7. Solve: $\dfrac{2}{x-2} + 2 = \dfrac{x}{x-2}$

    a) $x = 2$ b) no solution   c) $x = 0$ d) $x = -2$

8. Solve: $5(t-4) - 3(t-2) = 12$

    a) $t = 13$ b) $t = 19$ c) $t = -7$ d) $t = 7$

9. Simplify $5\sqrt{50} - 2\sqrt{18} - 6\sqrt{8}$

    a) $7\sqrt{2}$ b) $-3\sqrt{24}$ c) $3\sqrt{24}$ d) $6\sqrt{6}$

10. Factor completely: $50 - 2x^2$

    a) $(10-x)(5+2x)$ b) $(10+x)(5-2x)$ c) $2(25-x^2)$ d) $2(5-x)(5+x)$

11. Solve : $\dfrac{5}{2x-6} + \dfrac{1}{x-3} = \dfrac{7}{2}$

    a) $x = 4$ b) $x = 6$ c) $x = -6$ d) $x = \dfrac{1}{2}$

12. Simplify $\left(\dfrac{18x^{-1}}{9x} \right)^{-2}$

    a) $4x^2$ b) $2x^4$ c) $4x^4$ d) $\dfrac{x^4}{4}$

13. Perform the indicated operation(s) and simplify $\dfrac{2x^2 - x - 3}{(x+1)^2} \div \dfrac{4x^2 - 12x + 9}{10x - 15}$
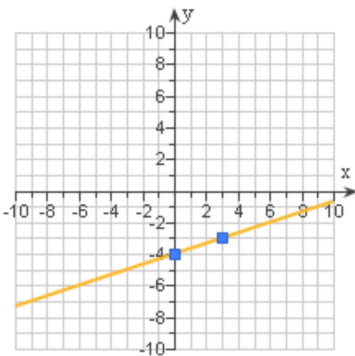
a) $\dfrac{5}{(x+1)^2}$ b) $5(x+1)$ c) $\dfrac{5}{x+1}$ d) $\dfrac{x+1}{5}$
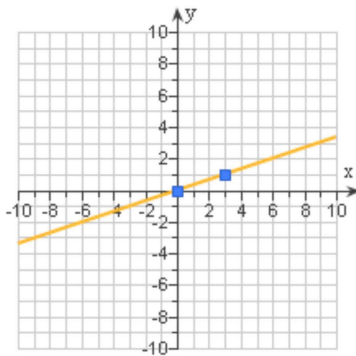
14. Find the graph of $y = \dfrac{1}{3}x - 4.$
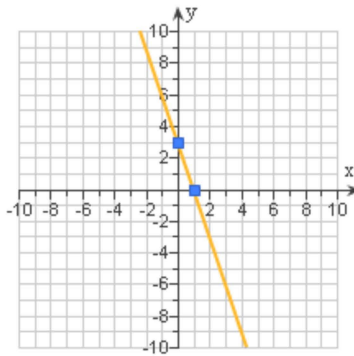
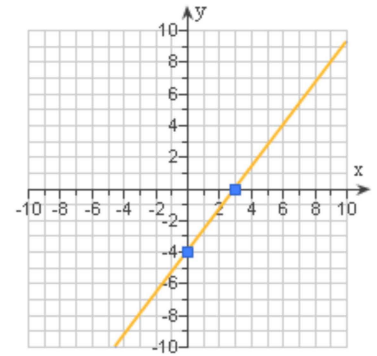a)   b)   c)   d)

15. Perform the indicated operation and simplify: $\dfrac{x^2}{x-2} - \dfrac{4}{x-2}$

a) $x + 2$ b) $x - 2$ c) $\dfrac{x^2 - 4}{x - 2}$ d) $\dfrac{x^2 - 4}{(x-2)(x-2)}$

16. Solve: $\sqrt{6x-5}=3$

   a) $x=\dfrac{7}{3}$ b) $x=\dfrac{5}{6}$ c) $x=\dfrac{4}{3}$ d) $x=\dfrac{3}{4}$

17. A collection of nickels and dimes is worth $2.90. The number of dimes is one less than twice the number of nickels. How many dimes are in the collection?

   a) 23   b) 12   c) 29   d) 13

18. Simplify: $\dfrac{\dfrac{3}{xy}+\dfrac{2}{y}}{\dfrac{1}{x}-\dfrac{6}{y}}$

   a) $\dfrac{3+2x}{y-6}$ b) $\dfrac{3+2x}{xy-6}$ c) $\dfrac{3+2x}{y-6x}$ d) $\dfrac{3}{y-3}$

9

19. Solve $V = \dfrac{1}{3}\pi r^2 h$ for h

    a) $h = 3V\pi r^2$ b) $h = 3Vr^2$ c) $h = \dfrac{3V}{\pi r^2}$ d) $h = \dfrac{3V}{r^2}$

20. Solve: $6x + 3 - 8x > -3$. The solution in interval form is:

    a) $(-\infty, -3)$ b) $(-\infty, \infty)$ c) $(-\infty, 3)$ d) $(3, \infty)$

21. Find the product and simplify: $(x+2)(x^2 + 4x + 4)$

    a) $x^3 + 2$ b) $x^3 + 8$ c) $x^3 + 6x^2 + 12x + 8$ d) $x^3 + 12x + 8$

22. Perform the indicated operations and simplify: $-5(2x-1)-3\big[x-(4x-3)\big]$

  a) $-x-14$ b) $-19x-4$ c) $x+4$ d) $-x-4$

23. Divide: $(x^2-9x-30)\div(x-12)$

  a) $x+3+\dfrac{6}{x-12}$ b) $x-3+\dfrac{30}{x-12}$ c) $x+6$ d) $x+6+\dfrac{3}{x-12}$

24. Find the solution for the system: $\begin{pmatrix} x+2y=4 \\ 2x-y=3 \end{pmatrix}$

  a) $(4,3)$ b) $(2,-1)$ c) $(-1,2)$ d) $(2,1)$

25. When solving a system of linear equations, the following result is obtained: $5 = 5$
This means the system has:

a) no solution   b) one solution   c) infinitely many solutions   d) the solution is 5

26. Determine the equation of the straight line containing $(2, -3)$ and having a slope of $-\dfrac{3}{4}$.

a) $3x + 4y = -6$ b) $3x + 4y = 3$ c) $4x + 3y = -6$ d) $4x + 3y = -9$

27. One more than five times a certain number is equal to eleven less than nine times the number. Find the number.

a) 3   b) 5   c) 11   d) 55

28. If the perimeter of a rectangle is 80 inches and its length is 24 inches, find its width.

    a) 16 in.   b) 8 in.   c) 12 in.   d) 24 in

29. Solve: $(x-7)^2 = 6$

    a) $\{6,7\}$ b) $\{\pm\sqrt{6}\}$ c) $\{7\pm\sqrt{6}\}$ d) $\{6\pm\sqrt{7}\}$

30. Solve: $3x^2 - x - 3 = 0$

    a) $\left\{\dfrac{1\pm\sqrt{37}}{6}\right\}$ b) $\left\{\dfrac{-1\pm\sqrt{37}}{6}\right\}$ c) $\left\{\dfrac{1\pm\sqrt{37}}{3}\right\}$ d) $\left\{\dfrac{-1\pm\sqrt{37}}{3}\right\}$

31. The sum of two whole numbers is 112 and the difference is 0. Find the two numbers.

a) 62, 50   b) 50, 50   c) 60, 52   d) 56, 56

32. (This does not count toward your grade.)

Indicate your agreement or disagreement with the statement.
" My instructor completed all necessary topics for the course."

a) Agree

b) Disagree

c) No opinion

End of Part I – Multiple Choice Questions

Continue on the next page for Part II – Free Response Questions

Instructions:
1) Do **ONLY** 4 out of the 6 following questions.
2) Work must be shown in clear and logical manner to obtain credit. Remember, no work, no credit!
3) Write all your work in the space provided.

1. At a classical music concert, there were three times as many women as men. A total of 600 people attended the concert. How many men and how many women attended?

2. Two cars start from the same place traveling in opposite directions. One car travels 4 miles per hour faster than the other car. Find their speeds if after 5 hours they are 520 miles apart.

3. The total receipts from a concert amounted to $2600. Student tickets were sold at $4 each and non-student tickets at $6 each. The number of student tickets sold was five times the number of non-student tickets sold. How many student tickets and how many non-student tickets were sold?

4. One solution contains 40% alcohol, and a second solution contains 70% alcohol. How many liters of each solution should be mixed to make 30 liters that contain 50% alcohol?

5. If the area of a circle is 78.5 square inches, find the radius of the circle. (Use 3.14 as an approximation for π).

6. Find the length and width of a rectangle if its length is 4 meters less than twice the width, and the area of the rectangle is 96 square meters.

End of the Exam

SCRATCH PAPER
NOTHING HERE WILL BE GRADED

<u>YOU MAY DETACH THIS PAGE</u>

SCRATCH PAPER
NOTHING HERE WILL BE GRADED

YOU MAY DETACH THIS PAGE

Answer Key for Math 115 Sample Common Final Exam

1. Correct version
2. b
3. a
4. b
5. d
6. b
7. b
8. a
9. a
10. d
11. a
12. d
13. c
14. a
15. a
16. a
17. a
18. c
19. c
20. c
21. c
22. d
23. a
24. d
25. c
26. a
27. a
28. a
29. c
30. a
31. d

Word Problems
1. 150 men and 450 women.
2. 50 mph and 54 mph.
3. 100 non-student tickets and 500 student tickets.
4. 20 liters of 40% alcohol and 10 liters of 70% alcohol.
5. The radius of the circle is 5 inches.
6. The width is 8 m and the length is 12 m.