

**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, write and bubble in, as appropriate:
 - Last name, first initial, middle initial
 - Social security number
 - For “Test ID,” enter Section #
 - For “Teacher,” print instructor name
 - For “Subject,” enter Math 115

- Please turn off all cell phones before exam
- No student may leave the room and then return
- When finished, leave exam on desk and exit quietly
- Keep photo ID on desk
- No cell phones, Palm Pilots or graphing calculators are allowed
- Scientific calculators are allowed

Test instructions:

- 1) There are 30 multiple-choice questions and 4 out of 6 free response questions.
- 2) Write in this test booklet.
- 3) Recommended time management:
 - Part I – 30 multiple-choice questions, approximately 1 hour and 15 minutes
 - Part II – Choose 4 out of 6 free response questions, approximately 45 minutes
- 4) Scratch paper is provided at the end of the exam booklet.
- 5) Work must be shown in a clear and logical manner for both Part I and Part II.
- 6) On the multiple-choice part, credit will be given based on the correct answers only.
- 7) Mark the letter of your choice on the scantron provided.
- 8) On the free-response part, partial credit will be given based on the clarity and logic of each step.
- 9) You are allowed to use a scientific calculator, but not a graphing calculator or computer.
- 10) 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
Math 115 SAMPLE
Common Final Examination**

**Do not open this booklet until told to do so
When finished, place answer sheet and scratch paper in the
booklet and leave them on the desk**

Student Name: _____

Social Security # : _____

Instructor Name: _____

Section Number: _____

Multiple Choice Score

Free Response Score

Total Score

Math 115 Common Final Examination
Part I Multiple Choice Questions

1. 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 e) 100, 12
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 e) $\frac{1}{2}$
3. Simplify $5 - 3|2 - 7|$
- a) -10 b) 10 c) 20 d) 5 e) -5

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

a) 13

b) -40

c) -13

d) 0

e) 40

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

a) $3-\sqrt{2}$

b) $3\sqrt{2}$

c) $\frac{7}{3+\sqrt{2}}$

d) $\frac{7}{3-\sqrt{2}}$

e) $3+\sqrt{2}$

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

a) $(x+2)(x-6)$

b) $(x+2y)(x-6y)$

c) $(x-2y)(x+6y)$

d) $(x-2y)(x-6y)$

e) not factorable

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

a) $x = 2$

b) no solution

c) $x = 0$

d) $x = -2$

e) $x = 1$

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

a) $t = 13$

b) $t = 19$

c) $t = -7$

d) $t = 7$

e) $t = 0$

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

a) $7\sqrt{2}$

b) $-3\sqrt{24}$

c) $3\sqrt{24}$

d) $6\sqrt{6}$

e) $12\sqrt{6}$

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

- a) $(10-x)(5+2x)$ b) $(10+x)(5-2x)$ c) $2(25-x^2)$ d) $2(5-x)(5+x)$ e) not factorable

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

- a) $x = 4$ b) $x = 6$ c) $x = -6$ d) $x = \frac{1}{2}$ e) no solution

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

- a) $4x^2$ b) $2x^4$ c) $4x^4$ d) $\frac{4}{x^4}$ e) $\frac{x^4}{4}$

13. Perform the indicated operation(s) and simplify $\frac{2x^2 - x - 3}{(x+1)^2} \div \frac{4x^2 - 12x + 9}{10x - 15}$

a) $\frac{5}{(x+1)^2}$

b) $5(x+1)$

c) $\frac{5}{x+1}$

d) $\frac{x+1}{5}$

e) $\frac{(x+1)^2}{5}$

14. Find the domain of $f(x) = \frac{x}{3x-4}$

a) $x \neq 0$

b) $x \neq 4$

c) $x \neq 3$

d) $x \neq \frac{4}{3}$

e) all real numbers

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

a) $x+2$

b) $x-2$

c) $\frac{x^2-4}{x-2}$

d) $\frac{x^2-4}{(x-2)(x-2)}$

e) $\frac{x+2}{x-2}$

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

a) $x = \frac{7}{3}$

b) $x = \frac{5}{6}$

c) $x = \frac{4}{3}$

d) $x = \frac{3}{4}$

e) \emptyset

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

e) 20

18. Given $f(x) = 4x - 5$, find $f(2)$

a) -3

b) -5

c) 3

d) 8

e) -8

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

a) $h = 3V\pi r^2$

b) $h = 3Vr^2$

c) $h = \frac{3V}{\pi r^2}$

d) $h = \frac{3V}{r^2}$

e) $h = \frac{3V}{\pi}$

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

a) $(-\infty, -3)$

b) $(-\infty, \infty)$

c) $(-\infty, 3)$

d) $(3, \infty)$

e) $(-3, 3)$

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) $x^3 + 12x + 8$

e) $6x^3 + 12x^2 + 12x$

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

- a) $-x-14$ b) $-19x-4$ c) $x+4$ d) $-x-9$ e) $-x-4$

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

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

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

- a) $(4,3)$ b) $(2,-1)$ c) $(-1,2)$ d) $(2,1)$ e) no solution

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 $-\frac{3}{4}$.

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

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 e) 2

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

e) 20 in.

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

a) $\{6, 7\}$

b) $\{\pm\sqrt{6}\}$

c) $\{7 \pm \sqrt{6}\}$

d) $\{6 \pm \sqrt{7}\}$

e) $\{6, -1\}$

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

a) $\left\{\frac{1 \pm \sqrt{37}}{6}\right\}$

b) $\left\{\frac{-1 \pm \sqrt{37}}{6}\right\}$

c) $\left\{\frac{1 \pm \sqrt{37}}{3}\right\}$

d) $\left\{\frac{-1 \pm \sqrt{37}}{3}\right\}$

e) $\{3, -1\}$

31. (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

32. Important: to ensure proper grade, please bubble in “A” for this question

End of Part I – Multiple Choice Questions

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

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 EXAM

**SCRATCH PAPER
NOTHING HERE WILL BE GRADED**

DO NOT DETACH THIS PAGE

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YOU MAY DETACH THIS PAGE

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Answer Key for Math 115 Sample Common Final Exam

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

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.