Los Medanos College

Practice Math Competency Exam for *Associates Degree*

Please Read Carefully

The math competency requirement for an Associates Degree at Los Medanos College may be satisfied by course or exam. Students must either:

1. Complete Math 15, Math 18, Math-025A and Math-025B, or complete Math 25 or higher, with a grade of "C" or better, **-or-**
2. Score a grade of 4 or 5 on the AP calculus Exam, **-or-**
3. Pass the "Associates Degree Math Competency Exam."
   Note: No grade or units are received for passing the competency exam. Results do not transfer and are valid only at LMC.

Exam Information

Time: 90 minutes.

Passing Score: 20 out of 25 problems correct.

When/Where: The exam is scheduled individually in MA 107. Please contact the Math Lab Coordinator at **(925) 439-2181 ext 3470 (8am –5pm)** or **ext 3358 (5pm – 9pm)** in order to make an appointment.

Appointment Date: _____

Topics: Elementary Algebra

Preparation: Study the attached sample problems. Review as needed.

You may use: Calculator, pencil, and eraser. No graphing calculators are allowed; scratch paper will be provided.

Identification: Photo ID required - Drivers License/CA ID or a Passport.

Results: Usually available within 1 week.

Repeat Attempts: Exam may be taken a total of three times. If the exam is not passed after the third attempt, use one of the options listed above to satisfy the AA degree math proficiency.

Answers

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

1. The length of a rectangular tennis court is five feet more than twice the width. The length is 83 feet. Find the width.

(a) 171 ft. (b) 44 ft. (c) 39 ft. (d) 156 ft. (e) None of these

2. When graphing a system of linear equations that has no solution, one obtains:

(a) Parallel lines (b) Intersecting lines (c) Coinciding lines
(d) No graph (e) None of these

3. Which simplification is incorrect?

(a) $5x(x-y)+y(4x-y)=5x^2-xy-y^2$ (b) $3(x-y)+2(x+y)=5x$

(c) $\frac{5x}{7}-\frac{2x}{3}=\frac{x}{21}$ (d) $\frac{5x}{7}+\frac{2x}{7}=x$ (e) None of these

4. The statement "twice the sum of ten and a number n" translates into the algebraic expression:

(a) $2(10)+n$ (b) $2(n+10)$ (c) $2n+10$
(d) $10+\frac{n}{2}$ (e) None of these

5. The polynomial $2x^3-x^2+6x-3$ factors into:

(a) $(2x+1)(x^2-3)$ (b) $(2x-1)(x^2-3)$ (c) $(2x-1)(x^2+3)$

(d) $(2x+1)(x^2+3)$ (e) None of these

6.What is the remainder when $P(x)=x^3+x^2-7x+5$ is divided by $x+5$?

(a) 60 (b) 12 (c) 0 (d) 5 (e) None of these

7. Using the quadratic formula, which of the following quadratic equations has no real solutions?

(a) $2x^2+x+1=0$ (b) $3x^2+2x-1=0$ (c) $2x^2+2x-1=0$

(d) $x^2+2x-3=0$ (e) None of these

8. $5x + 2y = 7$
$6x - 3y = 4$
Eliminating x from the given linear system leads to:

(a) $3y = 22$ (b) $27y = 22$ (c) $3y = 62$ (d) $27y = 62$ (e) None of these

9. A total of \$13,000 is invested in two funds paying 7% and 9% simple interest. The combined annual interest for the two funds is \$1,020. If x represents the amount invested at 7% and y the amount invested at 9%, the mathematical model for this investment is represented by which system of equations?

(a) $0.09x + 0.07y = 1020$
$x + y = 13,000$

(b) $0.07x + 0.09y = 13,000$
$x + y = 1,020$

(c) $0.07x + 0.09y = 1020$
$x + y = 13,000$

(d) $0.09x + 0.07y = 13,000$
$x + y = 1,020$

(e) None of these

10. Choose the line which is parallel to $y = -\frac{1}{3}x + 4$.

(a) $x - 3y = 4$ (b) $3x + y = 4$ (c) $x + 3y = 4$

(d) $3x - y = 4$ (e) None of these

11. $(3x^3 + 4x^2 - 5)$ subtracted from $(x^3 - 3x + 5)$ is:

(a) $-2x^3 + 4x^2 - 3x$ (b) $-2x^3 - 4x^2 - 3x + 10$ (c) $2x^3 + 4x^2 + 3x - 10$

(d) $2x^3 - 4x^2 + 3x - 10$ (e) None of these

12. The solution to the equation $\frac{2}{x} - \frac{3}{4} = \frac{5}{x}$ is:

(a) $x = 6$ (b) $x = -4$ (c) $x = -\frac{1}{4}$ (d) $x = 4$ (e) None of these

13. Multiplying $(4 + \sqrt{x})(3 - 2\sqrt{x})$, $x \geq 0$ and simplifying results is:

(a) $12 - 2x$ (b) $12 - 2x - 5\sqrt{x}$ (c) $12 - 5\sqrt{x}$ (d) $7 - \sqrt{x}$ (e) None of these

14. A solution to the equation $\sqrt{5-x} = 2 + \sqrt{9+2x}$ is:

(a) $x = 1$ (b) $x = 8$ (c) $x = -4$ (d) $x = 4$ (e) None of these

15. Solve $\sqrt{x-1} + \sqrt{x-3} = 2$

(a) $\frac{4}{9}$ (b) $\frac{11}{4}$ (c) $\frac{13}{4}$ (d) $\frac{2}{3}$ (e) None of these

16. The solution of the inequality $-4 \leq 4 - 2x < 4$ is:

(a) $0 < x \leq 4$ (b) $0 \leq x < 4$ (c) $-4 \leq x < 0$

(d) $-4 < x \leq 0$ (e) None of these

17. The solution to the linear equation $\frac{x}{3} + \frac{x-2}{4} = -\frac{1}{6}$ is:

(a) $x = -\frac{4}{7}$ (b) $x = \frac{4}{7}$ (c) $x = \frac{7}{4}$ (d) $x = 0$ (e) None of these

18. When simplified, the sum $\frac{3+2x}{4x^2-1} + \frac{2x-1}{4x^2-1}$ reduces to:

(a) $\frac{2}{2x+1}, x \neq -\frac{1}{2}$ (b) $\frac{2}{2x-1} + \frac{1}{2x+1}$ (c) $\frac{2}{2x-1}, x \neq \frac{1}{2}$

(d) $\frac{4}{4x^2-1}$ (e) None of these

19. Which of the following statements is false?

(a) $(-x)^4 = -x^4$ (b) $(x^3)^2 = x^6$ (c) $(2x)^3 = 2x \cdot 2x \cdot 2x$

(d) $2x^3 = 2 \cdot x \cdot x \cdot x$ (e) $(-x)^3 = -x^3$

22. Rationalize the denominator of the following expression: $\frac{2}{\sqrt{5}+1}$

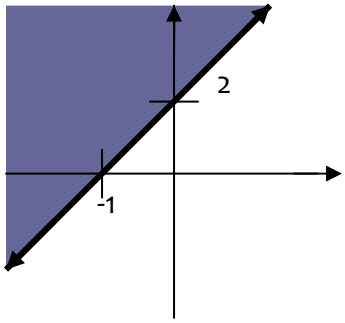
(a) $\frac{2\sqrt{5}-2}{4}$ (b) $\frac{2\sqrt{5}-2}{6}$ (c) $\frac{2\sqrt{5}+2}{(\sqrt{5}+1)^2}$ (d) $\frac{1}{2}$ (e) $\frac{2}{13}$

20. Determine which of the following statements is incorrect

(a) $|-2+3-5| = |-2| + |3| + |-5|$ (b) $|-2+3-5| = |-4|$ (c) $|-2+3-5| - 4 = 0$

(d) $|-2+3-5| > 0$ (e) $|-4| = |4|$

21. Determine the inequality of the following graph:



(a) $y \geq -2x + 2$ (b) $y < -2x + 2$ (c) $y > 2x + 2$ (d) $y < 2x + 2$ (e) $y \geq 2x + 2$

23. Simplify the following expression: $\sqrt{x^2y^5} - x\sqrt{9y^5} - xy\sqrt{25y^3}$

(a) $7xy^2\sqrt{y}$ (b) $-4xy^2 - 5xy\sqrt[3]{y}$ (c) $-7xy^2\sqrt{y}$

(d) $-4x\sqrt[5]{y} - 5xy\sqrt[3]{y}$ (e) None of these

24. Solve the following linear system

$x = 3 - 2y$

$2x + 4y = 6$

(a) No Solutions (b) Infinitely many solutions (c) $x = 0, y = \frac{3}{2}$ (d) $x = 1, y = 1$

(e) None of these

25. If the discriminant, $b^2 - 4ac$, of a quadratic equation with rational coefficients is less than 0, then the solutions are:

(a) Rational and negative (b) Imaginary (c) Rational and equal

(d) Rational and unequal (e) None of the these