Math 3 Review

Name: _____ **Date:** _____

1. Three students took 3 different kinds of tests with the following results:

Marco scored 125	Amy scored 97	Monica scored 257
$\bar{x} = 111$	$\bar{x} = 85$	$\bar{x} = 233$
σ=12	σ=9	σ=21

Who has the lowest relative score?

A. Monica B. Amy C. Marco D. Marco and Amy

2. The standardized physics scores for eleventh graders at a particular high school are normally distributed with mean $\bar{x} = 600$ and a standard deviation $\sigma = 90$. What percent of these scores are between 570 and 620 (to 3 decimal places)?

A. 0.218 B. 0.222 C. 0.412 D. 0.631

3. The number of car accidents per month on a particular stretch of highway is normally distributed. The mean is 65 with a standard deviation of 7. What number of accidents per month could be expected to occur less than 5% of the time?

A. 90 accidents per month

B. 85 accidents per month

C. 75 accidents per month

D. 55 accidents per month

4. A principal wants to survey 150 students to determine which electives to offer during the next school year. There are 1,800 students in the school. Which procedure could the principal use to select a sample using a systematic random sample?

A. Obtain a list of all students. Start with the eighth student, and select every twelfth student until 150 students have been selected.

B. Select the first 150 students who enter the school.

C. Choose the fifth student to come into the cafeteria, and then select every third student who comes into the cafeteria until 150 students have been selected.

D. Place students' names on slips of paper and select 150 slips.

5. The following system of equations intersects at one point. What is the y-coordinate of this point?

$y = \frac{1}{2}x - 1 \qquad 3x - 2y = 1$

A. -5 B. $-\frac{5}{4}$ C. $\frac{3}{2}$ D. 1

6. Solve the following system of equations for x:

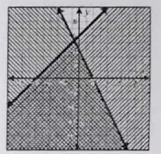
$-7x + 5y = 6$
$5x + 2y = 5$

A. $-\frac{5}{3}$ B. $-\frac{13}{11}$ C. $\frac{1}{3}$ D. $\frac{5}{3}$

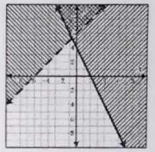
7. Which of the following is the graph of the solution set of the system?

$y - x > 6$
$2x + y \geq 4$

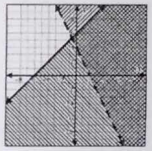
A.



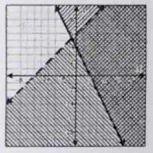
B.



C.



D.



23. Find all solutions to $4x^2 + 2x - 2 = 1$

A. $\left\{\frac{-1+\sqrt{13}}{4}, \frac{-1-\sqrt{13}}{4}\right\}$

B. $\left\{\frac{-1+\sqrt{10}}{4}, \frac{-1-\sqrt{10}}{4}\right\}$

C. $\left\{\frac{-1+\sqrt{13}}{8}, \frac{-1-\sqrt{13}}{8}\right\}$

D. $\{2, -6\}$

24. Which choice shows the solutions to the equation $8x^2 + 3x = -7$?

A. $\frac{-3 \pm i\sqrt{215}}{16}$ B. $\frac{3 \pm i\sqrt{215}}{16}$

C. $\frac{-3 \pm \sqrt{233}}{16}$ D. $\frac{3 \pm \sqrt{233}}{16}$

27. Which expression is equivalent to $(4 + 3i)^2 + (6 + i)^2$?

A. 23i B. $42 + 12i$

C. 45 D. $42 + 36i$

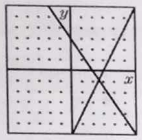
26. Nathalie kicked a soccer ball. The equation $h = -16t^2 + 50t$ describes the height of the ball t seconds after it was kicked. Approximately how many seconds went by before the ball hit the ground?

A. 0.8 seconds B. 2.6 seconds

C. 3.1 seconds D. 9.3 seconds

8. Refer to the graph of the system of linear equations. Use it to graph this system of inequalities:

$2y + 3x \geq 6$
$2x - y \geq 6$



Which ordered pairs are solutions to the system?

I. $(-4, -5)$

II. $(-1, -8)$

III. $(5, 0)$

IV. $(8, -3)$

A. I and II only B. I, II, and III only

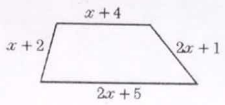
C. I, II, and IV only D. III and IV only

9. Simplify: $(x^3 + 6x - 4) - (2x^2 + 5x - 2)$

A. $-x^3 + 11x - 6$ B. $x^3 + 11x - 6$

C. $x^3 - 2x^2 + 11x - 6$ D. $x^3 - 2x^2 + x - 2$

10. The sides of a quadrilateral are shown below. Express the perimeter in terms of x.



A. $6x + 11$

B. $4x^2 + 12$

C. $6x + 12$

D. $3x + 6$

11. Simplify: $c^4(5c^3 + c^5)$

A. $5c^7 + c^9$ B. $5c^7 + 9c^9$

C. $5c^{12} + c^{20}$ D. $6c^{12} + 2c^{20}$

12. Simplify: $(2x - 3)(5x + 1)$

A. $7x^2 - 15x - 2$ B. $10x^2 + 2x - 3$

C. $10x^2 - 13x - 3$ D. $10x^2 - 15x - 3$

13. Find the quotient and remainder of $(x^3 + 8x^2 + 19x + 13) \div (x - 3)$.

A. $x^2 + 11x + 52 + \frac{13}{x-3}$ B. $x^2 + 11x + 52 + \frac{169}{x-3}$

C. $x^2 + 5x + 4 + \frac{1}{x-3}$ D. $x^2 + 11x + 52 - \frac{1}{x-3}$

14. Factor: $25a^2 - 4$

A. $(5a - 1)(5a - 4)$ B. $(5a - 2)(5a - 2)$

C. $(5a - 2)(5a + 2)$ D. $(5a + 1)(5a - 4)$

15. Factor completely: $21x^2 - 35x$

A. $7(3x^2 - 5x)$ B. $7x(3x - 6)$

C. $7x(3x - 5)$ D. $3x(7x - 12)$

16. Find one of the factors of: $25h^2 + 20h + 4$

A. $(5h + 1)$ B. $(h + 1)$

C. $(5h + 2)$ D. $(5h - 1)$

17. Find one of the factors of: $4x^2 - 12x + 9$

A. $(2x - 3)$ B. $(2x + 3)$

C. $(4x + 1)$ D. $(4x - 1)$

18. Solve: $x^2 - 6 = 10$

A. $\{6, -10\}$ B. $\{-6, 10\}$

C. $\{-\sqrt{2}, \sqrt{2}\}$ D. $\{-4, 4\}$

19. Solve: $(n - 9)(4n + 1) = 0$

A. $\{-\frac{1}{4}, -9\}$ B. $\{-\frac{1}{4}, 9\}$

C. $\{\frac{1}{4}, -9\}$ D. $\{\frac{1}{4}, 9\}$

20. Solve $8k^2 + 8 = k$.

A. $\frac{1 \pm i\sqrt{257}}{16}$ B. $\frac{-1 \pm i\sqrt{257}}{16}$

C. $\frac{-1 \pm i\sqrt{255}}{16}$ D. $\frac{1 \pm i\sqrt{255}}{16}$

21. Solve: $x^2 - x = 12$

A. 12, 1 B. −3, 4

C. −6, 2 D. −12, 1

22. Solve $4x^2 - 3x - 2 = 0$ using the quadratic formula.

A. $\frac{-3 \pm \sqrt{41}}{8}$ B. $\frac{3 \pm \sqrt{41}}{8}$

C. $\frac{4 \pm \sqrt{23}}{6}$ D. $\frac{4 \pm \sqrt{23}}{3}$

25. Jafco Manufacturing estimates that its profit, in hundreds of dollars, after producing x thousand units can be expressed as $P = -3x^2 + 24x + 2$. How many units must be produced to obtain the maximum profit?

A. 3200 B. 32 C. 4000 D. 4