

CP Algebra 2



Summer Assignment

Name: _____ Period: __

The purpose of this packet is to both convey to students the foundational skills needed to be successful in this course and to provide them an opportunity to self-assess and develop these skills prior to entering the class. In order to be successful in this and all subsequent math courses at Servite, students must master and retain the content and skills from all previous math courses. As such, we ask that you please work on this assignment with integrity and diligence always striving to meet the intended purpose and goal of this assignment.

Directions: There are 63 multiple choice questions. You **must show all work** on separate paper. Label all work and box your answer. neat. You **may not** use a calculator. For every word problem, write your answer in the form of a sentence. After you make an honest attempt at a problem, check your answer. If your answer is incorrect, try to identify where you went wrong, review the topic, and redo the problem correctly.

This packet will be **collected** on the **second day** of school. You will be given a homework grade for completing this packet. Per Servite School policy, if this packet is not turned in on the second day of school, you will receive half credit if it is turned in the following day. After that, you will receive a zero for this packet. An assessment will be given at the beginning of the school year to make sure you have mastered all pre-requisites. This assessment will count as a quiz grade.

Have a great summer and we are looking forward to seeing you in August!

I understand that I have to show all my work and cannot use a calculator.

(Student Signature)

(Date)

I have checked to see that my child have shown all work and completed all problems without the use of a calculator.

(Parent/Guardian Signature)

(Date)

1. A theater has 25 rows, each with 12 seats. At a certain performance there were, on average, 3 empty seats per row. What was the attendance at that performance?
- (A) 225 (B) 264 (C) 297 (D) 300 (E) 375
-

2. A P-model car costs 15 percent more than a V-model car. If the V-model costs \$7,000, what is the cost of the P-model?
- (A) \$5,950 (B) \$7,105 (C) \$8,005 (D) \$8,050 (E) \$8,500
-

3. The sale price of a photography book is 20 percent off the list price. If the sale price of the book is \$10, what is the list price?
- (A) \$7.50 (B) \$8.00 (C) \$12.00 (D) \$12.50 (E) \$14.00
-

4. The operating budget of the Western Robotics Company was \$300 million last year. If the operating budget this year is 12 percent less than last year, what is this year's operating budget, in millions of dollars?
- (A) 36 (B) 264 (C) 274 (D) 288 (E) 336
-

5. The sale price of Kathy's new briefcase was reduced 30% from the original price of \$80. What was the sale price of the briefcase?
- (A) \$30 (B) \$40 (C) \$50 (D) \$56 (E) \$104
-

6. Which of the following numbers is between 3.74 and $3\frac{4}{5}$?

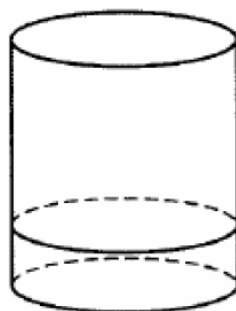
- (A) $3\frac{9}{10}$ (B) 3.72 (C) 3.82 (D) $3\frac{1}{2}$ (E) $3\frac{3}{4}$
-

7. 0.12 0.018 0.04 0.004

In which of the following are the four decimals above listed in order from greatest to least?

- (A) 0.12 0.018 0.04 0.004
(B) 0.12 0.04 0.018 0.004
(C) 0.018 0.12 0.004 0.04
(D) 0.018 0.004 0.12 0.04
(E) 0.04 0.004 0.12 0.018
-

8.



The figure above shows a right circular cylindrical vessel that is exactly one-quarter full. If 7 liters of liquid are added, the vessel will be exactly three-fifths full. What is the total capacity of the vessel, in liters?

- (A) 14 (B) 20 (C) 21 (D) $\frac{9\pi}{20}$ (E) 21π
-

9. Marshall is making corn bread. His recipe calls for $3\frac{1}{2}$ cups of cornmeal, but he wants to make only half the amount given in the recipe. How many cups of cornmeal should he use?
- (A) $1\frac{1}{4}$ (B) $1\frac{1}{2}$ (C) $1\frac{3}{4}$ (D) 5 (E) 7
-

10. Maria worked in a library. She was paid at the rate of \$6.00 per hour. If she worked from 10:30 A.M. to 4:45 P.M. on Tuesday, how much money did she earn?
- (A) \$30.00 (B) \$33.00 (C) \$34.50 (D) \$36.00 (E) \$37.50
-

11. A certain medicine is prescribed in an amount proportional to a patient's body weight. If a patient weighing 70 kilograms requires 210 milligrams of this medicine, then the amount of medicine required for a patient weighing 80 kilograms is
- (A) 220 mg (B) 230 mg (C) 240 mg (D) 250 mg (E) 290 mg
-

12. Joel mixed 3 tablespoons of plant fertilizer with 2 liters of water. In order to obtain the same ratio of fertilizer to water, how many tablespoons of fertilizer must he mix with 5 liters of water?
- (A) $3\frac{1}{3}$ (B) 6 (C) 7 (D) $7\frac{1}{2}$ (E) 8
-

13. How many dollars will x pens cost if 5 such pens cost y dollars?
- (A) $\frac{xy}{5}$ (B) $\frac{5}{xy}$ (C) $5xy$ (D) $\frac{y}{5x}$ (E) $\frac{x}{5y}$
-

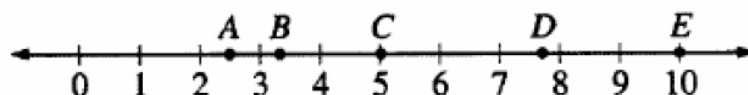
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14. In a music class of 30 students, there are 6 more females than males. How many females are in the class?

(A) 6 (B) 12 (C) 18 (D) 24 (E) 36

15. A roast is to be cooked 20 minutes for each pound of weight. If a roast weighing 7 pounds needs to be ready for dinner at 6:00 P.M., which of the following would be the best time to put the roast into the oven?

(A) 2:30 P.M. (B) 3:00 P.M. (C) 3:30 P.M. (D) 4:00 P.M. (E) 4:30 P.M.

16.



Which point on the number line above could represent $\sqrt{10}$?

(A) A (B) B (C) C (D) D (E) E

17.

$\sqrt{24}$ is a number between

(A) 0 and 1 (B) 1 and 2 (C) 2 and 3 (D) 3 and 4 (E) 4 and 5

18. If $x = -1$ and $y = 6$, then $x^2 + 3xy =$

(A) 19 (B) 17 (C) 16 (D) -16 (E) -17

19. If $t = -2$, then $3t^2 - 5t - 6 =$

- (A) -28 (B) -8 (C) -4 (D) 8 (E) 16
-

20. If $b = 6$ and $h = 10$, then $\frac{1}{2}bh =$

- (A) 8 (B) 15 (C) 16 (D) 30 (E) 60
-

21. $\frac{4r^3s^5}{10r^8s^6} =$

- (A) $\frac{2r^5s}{5}$ (B) $\frac{2r^{11}s^{11}}{5}$ (C) $\frac{2s}{5r^5}$ (D) $\frac{2}{5r^5s}$ (E) $\frac{1}{6r^5s}$
-

22. $(a^2c^3)(ab^2c) =$

- (A) ab^2c^2 (B) $a^2b^2c^3$ (C) $a^3b^2c^4$ (D) $a^3b^3c^4$ (E) $a^4b^2c^5$
-
-

-
23. $(27a^{12}b^6)^{\frac{1}{3}} =$
- (A) $3a^4b^2$ (B) $9a^4b^2$ (C) $9a^{12}b^6$ (D) $81a^{12}b^6$ (E) $81a^{36}b^{18}$
-

24. $16^{-\frac{1}{2}} =$
- (A) -8 (B) -4 (C) $\frac{1}{8}$ (D) $\frac{1}{4}$ (E) 256
-

25. A thermostat is set at a temperature T that is neither less than 68° nor greater than 78° . Which of the following inequalities describes all values of T ?
- (A) $68^\circ \leq T$
(B) $68^\circ < T < 78^\circ$
(C) $68^\circ \leq T < 78^\circ$
(D) $68^\circ < T \leq 78^\circ$
(E) $68^\circ \leq T \leq 78^\circ$
-

26. This year José earned 3 times as much money as he earned last year. If José earned T dollars this year and he earned L dollars last year, which of the following equations represents the relationship between T and L ?
- (A) $3L = T$ (B) $\frac{L}{3} = T$ (C) $T \times L = 3$ (D) $\frac{L}{3} = \frac{T}{3}$ (E) $\frac{L}{3} = \frac{3}{T}$
-

27. $(y^2 - 3y + 6) - (3y^2 + 4y - 5) =$
- (A) $-2y^2 + y - 11$ (B) $-2y^2 + y + 1$ (C) $-2y^2 + y + 11$
(D) $-2y^2 - 7y + 1$ (E) $-2y^2 - 7y + 11$
-

28. $-2r(3r^2 - 2rs) =$

- (A) $6r^3 + 4rs$ (B) $6r^3 - 4r^2s$ (C) $-6r^3 + 2rs$
(D) $-6r^3 + 4r^2s$ (E) $-6r^3 - 4r^2s$
-

29. $(x - 6)(3x - 4) =$

- (A) $3x^2 - 22x + 24$ (B) $3x^2 - 22x - 24$ (C) $3x^2 - 18x + 24$
(D) $3x^2 - 14x - 24$ (E) $3x^2 - 14x + 24$
-

30. One factor of $x^2 + 2x - 8$ is

- (A) $x - 1$ (B) $x - 2$ (C) $x - 4$ (D) $x - 6$ (E) $x - 8$
-

31. $(3x^3y)(-2x^2y^3) =$

- (A) $-6x^5y^4$ (B) $-6x^6y^3$ (C) xy^{-2} (D) x^6y^3 (E) $6x^5y^3$
-

32. $\frac{4 + 8x}{2} =$

- (A) $4x$ (B) $6x$ (C) $2 + 4x$ (D) $2 + 8x$ (E) $4 + 4x$
-

33. $x^{-2} =$

- (A) $\frac{1}{x^2}$ (B) \sqrt{x} (C) $-x^2$ (D) $x^{\frac{1}{2}}$ (E) $x^{-\frac{1}{2}}$
-

34. If $2az - 5z = 2$, then $z =$

- (A) $-\frac{2}{3a}$ (B) $\frac{2+5a}{2a}$ (C) $\frac{1}{a-5}$ (D) $\frac{2}{2a-5}$ (E) $7-2a$
-

35. If $4x - 1 = 5x + 3$, then $x =$

- (A) -4 (B) $-\frac{4}{9}$ (C) $\frac{2}{9}$ (D) $\frac{4}{9}$ (E) 2
-

36. If $3x - d = c$, then $x =$

- (A) $c + d - 3$ (B) $d + \frac{c}{3}$ (C) $\frac{d-c}{3}$ (D) $\frac{c-d}{3}$ (E) $\frac{c+d}{3}$
-

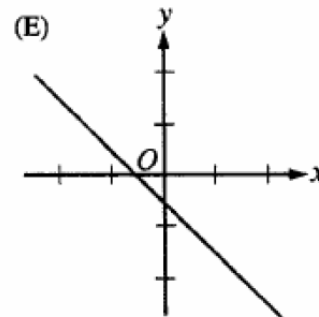
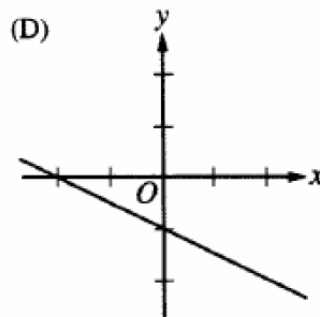
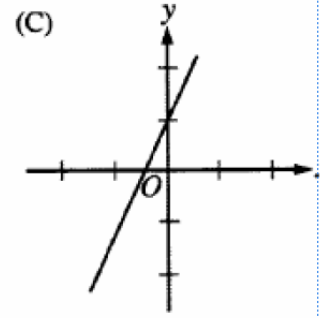
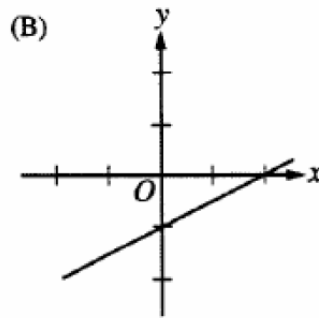
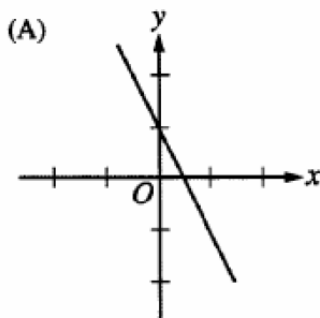
37. What is the slope of the line through the points $(2, 2)$ and $(4, 3)$?

- (A) $-\frac{1}{2}$ (B) $-\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{3}{4}$ (E) 2
-

38. Which of the following lines is parallel to the line with equation $2y + 4x = 3$?

- (A) $y + 2x = 3$ (B) $y - 2x = 3$ (C) $2y - 4x = 3$
(D) $-2y + 4x = 3$ (E) $4y + 2x = 3$
-

39. Which of the following is the graph of a line with a slope of $-\frac{1}{2}$?



40. If the point $(2, 4)$ is on the line $y = 6x + b$, then $b =$

- (A) -22 (B) -8 (C) 12 (D) 16 (E) 26
-

41. $-3x < 5$ is equivalent to

- (A) $x < -15$ (B) $x < -\frac{5}{3}$ (C) $x > -15$ (D) $x > -\frac{5}{3}$ (E) $x > -\frac{3}{5}$
-

42. $1 - 2x \leq 2 + x$ is equivalent to

- (A) $x \geq -\frac{1}{3}$ (B) $x \geq 1$ (C) $x \leq -\frac{1}{3}$ (D) $x \leq \frac{1}{3}$ (E) $x \leq 1$
-

43. A car travels 80 miles on 3 gallons of gas. At the same rate (in miles per gallon), how many miles will the car be expected to travel on 5 gallons of gas?

- (A) 48 (B) 130 (C) $130\frac{2}{3}$ (D) $133\frac{1}{3}$ (E) 160
-

44.

WEATHER BALLOON TEMPERATURES

Height	Temperature
1,000 feet	23°
2,000 feet	20°
3,000 feet	17°

A weather balloon is released and as it rises in the air it records the temperature, in degrees Celsius, as shown in the table above. If the temperature continues to decrease at a constant rate, the temperature at 5,500 feet will be

- (A) 12.5° (B) 11° (C) 9.5° (D) 8° (E) 6.5°
-

45. If $a = -2$, then $|5 - a| - |a - 8| =$

- (A) -13 (B) -3 (C) 7 (D) 13 (E) 17
-

46. For $x > 0$, $\sqrt{4x^2} + \sqrt{9x^2} =$

- (A) $\sqrt{13}x$ (B) $5x$ (C) $13x$ (D) $5x^2$ (E) $13x^2$
-

47. $\sqrt{100x^{36}} =$

- (A) $100x^{18}$ (B) $50x^{18}$ (C) $10x^{18}$ (D) $50x^6$ (E) $10x^6$
-

48. If $f(x) = 3x^2 - 4x + 1$, then $f(-2) =$

49. A factor of $4a^2 - 9b^2$ is

- (A) $4a + 9b$ (B) $4a - 9b$ (C) $3a + 2b$ (D) $2a + 3b$ (E) $a - b$
-

50. One factor of $18x^2 - 32$ is

- (A) $9x - 32$ (B) $9x - 16$ (C) $3x - 2$ (D) $3x + 4$ (E) $9x + 4$
-

51. $\frac{2}{3x} - \frac{1}{x} =$

- (A) $\frac{1}{3}$ (B) $\frac{1}{2x}$ (C) $\frac{1}{3x}$ (D) $-\frac{1}{3x}$ (E) $-\frac{2}{3x^2}$
-

52. One solution of the equation $(2x - 9)(5x + 2) = 0$ is

- (A) $-\frac{9}{2}$ (B) $-\frac{5}{2}$ (C) $\frac{2}{9}$ (D) $\frac{2}{5}$ (E) $\frac{9}{2}$
-

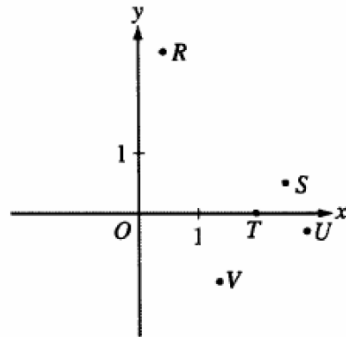
53. If $3x + 5y = 4$ and $x = 3 - 2y$, then $y =$

- (A) -13 (B) -5 (C) $-\frac{5}{3}$ (D) $\frac{13}{3}$ (E) 5
-

54. If $\begin{cases} 4x - 3y = 17 \\ 2x + 5y = -11 \end{cases}$, then $y =$

- (A) -3 (B) -2 (C) $\frac{7}{5}$ (D) 3 (E) $\frac{13}{3}$
-

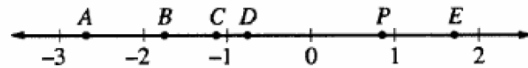
55.



If $a < b$, which point in the figure above could have coordinates (a, b) ?

- (A) R (B) S (C) T (D) U (E) V
-

56.



If x is the coordinate of point P shown on the number line above, which of the following points has coordinate $-2x$?

- (A) A (B) B (C) C (D) D (E) E
-



57.

Which of the following represents all values of x in the interval graphed on the number line above?

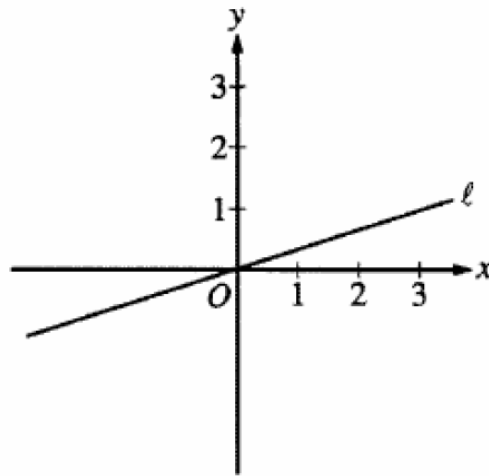
- (A) $x \leq -3$ and $x \leq 7$
- (B) $x \geq -3$ and $x \geq 7$
- (C) $x \leq -3$ or $x \geq 7$
- (D) $-3 \leq x \leq 7$
- (E) $7 \leq x \leq -3$

58.

Which of the following points is NOT on the graph of $y = x^2 + 7$?

- (A) $(0, -7)$ (B) $(0, 7)$ (C) $(-1, 8)$ (D) $(1, 8)$ (E) $(2, 11)$
-

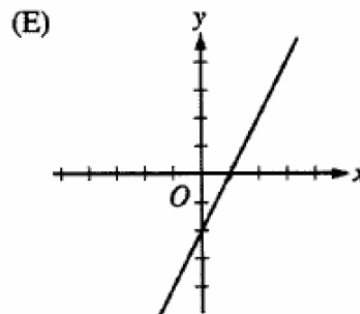
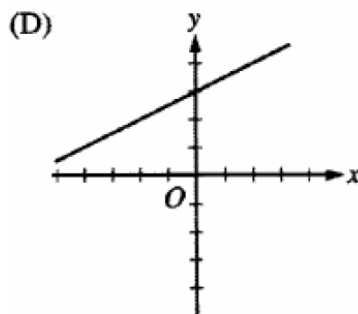
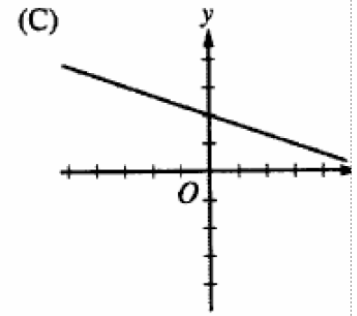
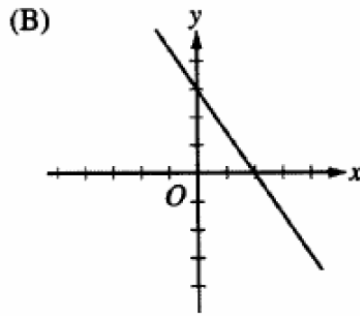
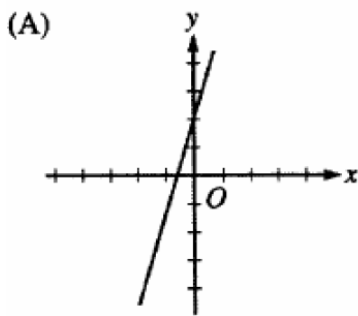
59.



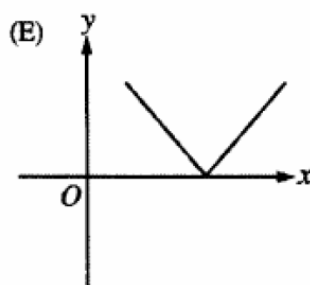
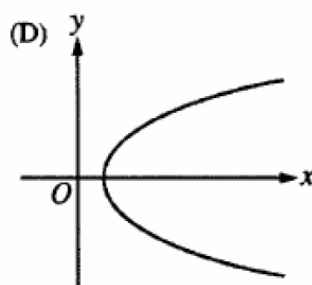
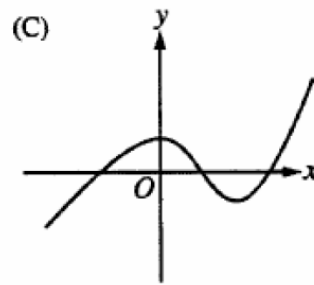
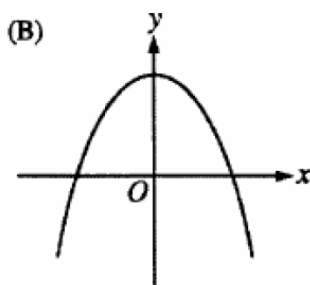
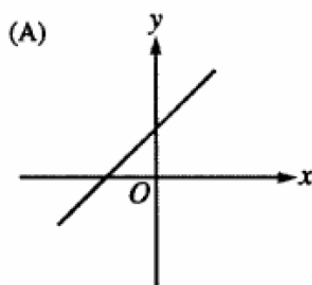
Which of the following is an equation of line ℓ in the figure above?

- (A) $y = \frac{1}{3}$ (B) $y = \frac{1}{3}x$ (C) $y = 3x$ (D) $y = -\frac{1}{3}x$ (E) $y = -3x$
-

60. Which of the following could be the graph of $y = 3x + 2$?



61. Which of the following is the graph of a linear function?



62. If the distance between the points $(x, 11)$ and $(1, -1)$ is 13, then which of the following could be a value of x ?

- (A) 2 (B) 4 (C) 5 (D) 6 (E) 12

63. In the coordinate plane, which of the following is the midpoint of the line segment with endpoints $(2, 5)$ and $(6, 1)$?

- (A) $(8, 6)$ (B) $(4, 3)$ (C) $(4, 4)$ (D) $\left(\frac{7}{2}, \frac{7}{2}\right)$ (E) $\left(\frac{3}{2}, \frac{5}{2}\right)$
-

Answers

- | | | | |
|-------|-------|-------|-------|
| 1. A | 21. D | 41. D | 61. A |
| 2. D | 22. C | 42. A | 62. D |
| 3. D | 23. A | 43. D | 63. B |
| 4. B | 24. D | 44. C | |
| 5. D | 25. E | 45. B | |
| 6. E | 26. A | 46. B | |
| 7. B | 27. E | 47. C | |
| 8. B | 28. D | 48. E | |
| 9. C | 29. A | 49. D | |
| 10. E | 30. B | 50. D | |
| 11. C | 31. A | 51. D | |
| 12. D | 32. C | 52. E | |
| 13. A | 33. A | 53. E | |
| 14. C | 34. D | 54. A | |
| 15. C | 35. A | 55. A | |
| 16. B | 36. E | 56. B | |
| 17. E | 37. C | 57. D | |
| 18. E | 38. A | 58. A | |
| 19. E | 39. D | 59. B | |
| 20. D | 40. B | 60. A | |