CP Algebra 2 with and without Trigonometry Summer Packet



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 with an opportunity to 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: Please print this packet. You **must show all work** in this packet in the space provided. 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.

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)**

Section 1: Numbers and Algebra

Evaluate (find the value of).

1. $\frac{30-4}{3 \cdot 2^3}$

2. $-3^2 \div 3 + 2^2 \cdot 7 - 20 \div 5$

3. $2\,(5^2 + 36 \div 6 - 4)$

Simplify.

4. $\sqrt{108x^2}$

5. $\sqrt{75x^{12}y^{20}z^5} \cdot \sqrt{2}$

6. $\frac{5}{\sqrt{10}}$

7. $\frac{9}{\sqrt{3}+1}$ (Hint: use conjugate)

Simplify using rules of exponents.

8. $(3y^2)(2x^3y)(-7x^2y^4)$

9. $(5x^2y)^3$

10. $\frac{a^2b^9}{a^6b^3}$

11. $(2c^3)(5c)^4$

12. $\frac{4a^2b+3ab^3}{ab^3}$

Evaluate each expression for the given values of the variables.

13. $3|2a+1|+2|3-a|$; $a=-4$

14. $\frac{3(2x+3)-2(x-6)}{x+4}$; $x=3$

Expand and simplify the expression.

15. $(2x + 1)(x^2 - 4x + 7)$

16. $2p^2 - (3p^2 - 2q^2) + (p + 2q)(q - 5p)$

17. $(3x + 5y)^2$

18. $3(a + 5b) - \frac{7}{3}(2b - a)$

Section 2: Equations and Inequalities

Solve the equations for the variables.

1. $4t + 13 = 57$

2. $5 - 2y = 15$

3. $\frac{5}{6}t - \frac{3}{4}t + \frac{2}{3} = \frac{5}{8}$

4. $\frac{x}{4} + 3 = -2$

5. $3 + 2(5 + 3x) = 4 - (7 - 2x)$

Solve the inequalities.

6. $5 - 2x < 3 + 4(6 + \frac{3}{2}x)$

7. $3x - 1 \leq 5$ or $2x - 4 \geq x$

Section 3: Quadratic Functions

Factor completely.

1. $x^2 - 144$

2. $16x + 12$

3. $3x^2 + 31x + 36$

4. $12x^2 + 8xy$

5. $-9x^3 - 12x$

6. $x^2 - 5x + 6$

7. $64x^3y - 32x^2y^3 + 8x^2y^2$

8. $16x^2y^5 + 24xy^2$

Solve algebraically.

9. $x^2 + 6x + 3 = 0$

10. $x^2 = 1 - 5x$

11. $(x - 5)^2 + 4x = 52$

12. $\frac{x(x-3)}{2} = 5$

Solve by factoring.

13. $(x - 5)(x + 3) = 9$

14. $4x^2 - 20x + 25 = 0$

Section 4: Lines

Give the equation of a line satisfying the given conditions.

1. through points (-1, 3) and (5, -6)

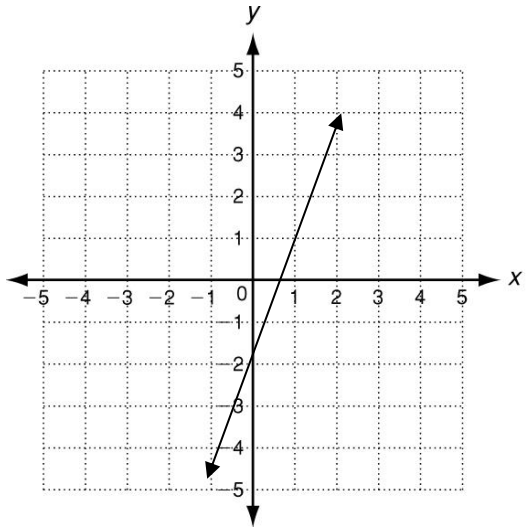
2. through the points (9, 4) and (9, 3)

3. parallel to $2x + 3y = 7$ and through (3, 8)

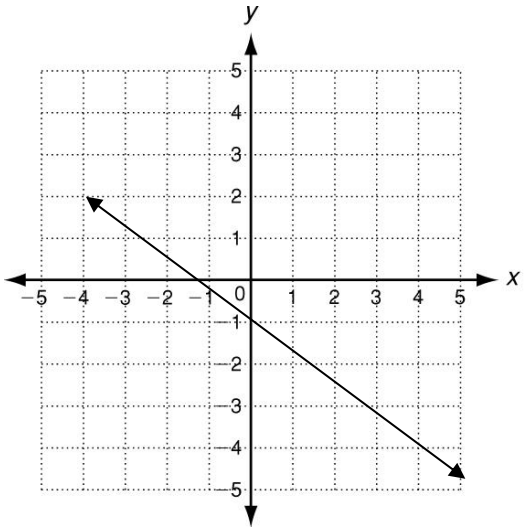
4. perpendicular to $y = -4x + 1$ and through (0, 2)

Give the equation of the lines shown.

5.

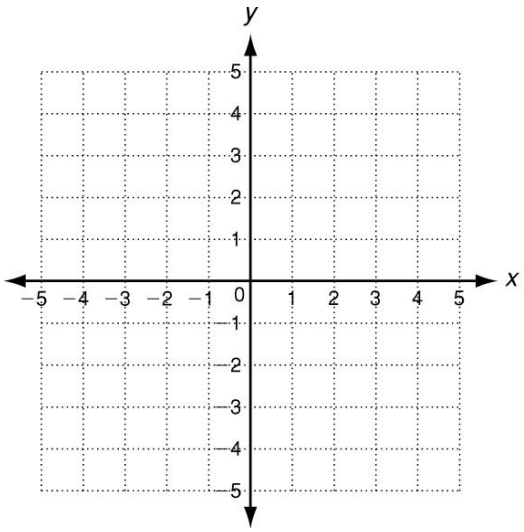


6.

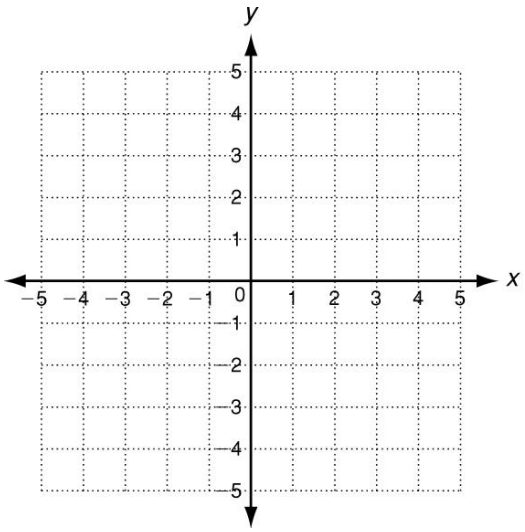


Draw a graph of the line with the given equations.

7. $y = -2x + 5$



8. $y = -\frac{1}{2}x + 2$



Sections 5: Word Problems

Set up an equation and show all your work.

1. The sides of a triangle are in the ratio 4 : 5 : 6. What is the length of each side if the perimeter is 45cm?

2. Find three consecutive integers whose sum is 126.

3. If the yearly salary for Michelle after a 5% increase is $32,850 what was her salary before the increase?

Section 6: Miscellaneous

1. Simplify: $(13n^2 + 11n - 2n^4) + (-13n^2 - 3n - 6n^4)$

2. Simplify: $(3v^5 + 8v^3 - 10v^2) - (-12v^5 + 4v^3 + 14v^2)$

3. Solve the proportion $\frac{4}{3} = \frac{8}{x}$

4. Solve the proportion $\frac{6}{b-1} = \frac{9}{7}$

5. Solve the proportion $\frac{5}{r-9} = \frac{8}{r+5}$

6. Simplify y − (4 − x − y ÷ 2); use x = 3, and y = 2

7. Simplify y ÷ 5 + 1 + x ÷ 6; use x = 6, and y = 5

8. Write the polynomial in standard form:
   $-2n^5 + 4n - 7n^3 + n^4 - 7n^3 + 6n^2 + 3n^5 - n^4$

9. Write the polynomial in standard form:
   $-5 - 3b^4 - 6b^2 - b + b^3 + 3 + 8b^3 - 6b$

10. Find the greatest common factor of $6p^2$ and $9p^3$.

11. Find the greatest common factor of $15m^4n^6$ and $30m^8n^7$.

Answers

Section 1

1. $\frac{13}{12}$	2. 21
3. 54	4. $6x\sqrt{3}$
5. $5x^6y^{10}z^2\sqrt{6z}$	6. $\frac{\sqrt{10}}{2}$
7. $\frac{9\sqrt{3}-9}{2}$	8. $-42\ x^5y^7$
9. $125\ x^6\ y^3$	10. $\frac{b^6}{a^4}$
11. $1250c^7$	12. $\frac{4a+3b^2}{b^2}$
13. 35	14. $\frac{33}{7}$
15. $2x^3 - 7x^2 + 10x + 7$	16. $-6p^2 + 4q^2 - 9pq$
17. $9x^2 + 30xy + 25y^2$	18. $\frac{16}{3}a + \frac{31}{3}b$

Section 2

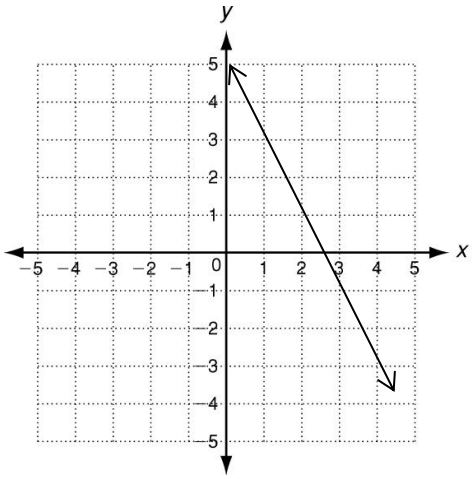
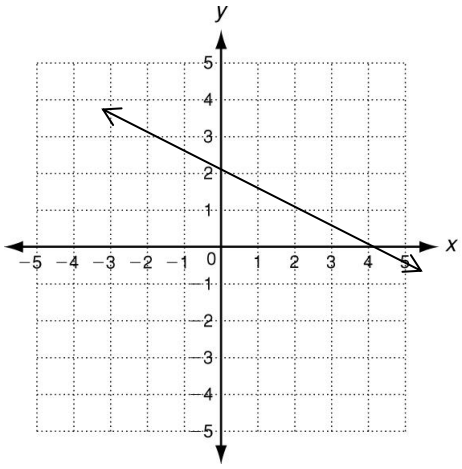
1. $t = 11$	2. $y = -5$
3. $t = -\frac{1}{2}$	4. $x = -20$
5. $x = -4$	6. $x > -\frac{11}{4}$
7. $x \leq 2$ or $x \geq 4$	

Section 3

1. $(x - 12)(x + 12)$	2. $4(4x + 3)$
3. $(3x + 4)(x + 9)$	4. $4x(3x + 2y)$
5. $-3x(3x^2 + 4)$	6. $(x - 3)(x - 2)$
7. $8x^2y(8x - 4y^2 + y)$	8. $8xy^2(2xy^3 + 3)$
9. $x = -3 \pm \sqrt{6}$	10. $x = \frac{-5 \pm \sqrt{29}}{2}$

11. $x = -3, 9$	12. $x = -2, 5$
13. $x = -4, 6$	14. $x = \frac{5}{2}$

Section 4

1. $y = -\frac{3}{2}x + \frac{3}{2}$	2. $x = 9$
3. $y = -\frac{2}{3}x + 10$	4. $y = \frac{1}{4}x + 2$
5. $y = 3x - 2$	6. $y = -\frac{3}{4}x - 1$
7. 	8. 

Section 5

1. Lengths of each side of the triangle are 12cm, 15cm and 18cm.
2. The three consecutive integers are 41, 42 and 43.
3. Michelle was earning $31,285.71 before her salary increase.

Section 6

1. $-8n^4 + 8n$
2. $15v^5 + 4v^3 - 24v^2$
3. $X = 6$
4. $B = 17/3$
5. $R = 97/3$
6. 2
7. 3
8. $n^5 - 14n^3 + 6n^2 + 4n$
9. $-3b^4 + 9b^3 - 6b^2 - 7b - 2$
10. $3p^2$
11. $15m^4n^6$