

**CCGPS PreCalculus
Summer Review Packet**

Instead of being a review of random material that you have previously learned, this assignment provides a very specific review of basic mathematical and algebraic skills that are required for success in CCGPS PreCalculus. You are expected to be completely fluent with these skills so we can apply them in a trigonometric environment. This assignment has been provided for your practice to ensure an easier transition into the study of trigonometry (the major component of a PreCalculus course). Please complete this review, showing all algebraic work where appropriate to give you a better preparation and opportunity for success next year!

Solving Linear Equations

Solve for the given variable.

1. $18 + 2n = 4n - 9$

2. $\frac{1}{2}y = \frac{1}{3}y + 2$

3. $\frac{3}{5}d + 5 = \frac{1}{3}d - 3$

4. $\frac{2x - 4}{-7} = 3x + 5$

5. $3(2x - 1) = 9(x + 3) - 2(x - 1)$

6. $-8\left(\frac{1}{4}n - 3\right) = n + 2$

Solving Linear Systems of Equations

Solve each system for x and y .

7.
$$\begin{aligned} 3x - 2y &= 4 \\ 2x + 2y &= 6 \end{aligned}$$

8.
$$\begin{aligned} 4x + 3y &= -5 \\ -2x + 2y &= 6 \end{aligned}$$

9.
$$\begin{aligned} 5x + 6y &= 3 \\ -3x - 2y &= -5 \end{aligned}$$

10.
$$\begin{aligned} 4x - 3y &= 6 \\ -3x + 2y &= -5 \end{aligned}$$

Simplifying Radicals

Simplify each radical. (No decimal answers!)

11. $\sqrt{12}$

12. $\sqrt{54}$

13. $-\sqrt{200}$

Simplify and rationalize each expression. (No radicals in the denominator!)

14. $\sqrt{\frac{4}{9}}$

15. $\sqrt{\frac{3}{4}}$

16. $\sqrt{\frac{20}{45}}$

Order of Operations

Evaluate, without using a calculator. Check your answer using a calculator.

17. $(3 \cdot 5) + 4$

18. $12 \div 3 + 2 \cdot 8$

19. $\left[(9 - 7)^2 + 5 \right] + 26$

20. $\frac{8 \cdot 2 + 5}{12 + 2^2 - 9}$

21. $d - e^2$ when $d = 16$ and $e = 3$

22. $\frac{7}{8}y - \frac{1}{4}$ when $y = \frac{1}{2}$

Simplifying Fractions

Simplify, without using a calculator. Check your answer using a calculator.

(Believe it or not, we will start the course with a heavy load of fraction operations – It helps to practice now!)

23. $\frac{2}{5} \cdot \frac{10}{3}$

24. $\frac{4}{5} \div 2$

25. $4 \div \frac{1}{2}$

26. $\frac{3}{5} \cdot 15$

27. $\frac{2}{5} + \frac{3}{4}$

28. $\frac{3}{8} + \frac{1}{6}$

29. $\frac{2}{5} - \frac{3}{4}$

30. $\frac{2}{9} - \frac{1}{3}$

Using Properties of Exponents

$$31. (4x^3y^5)(-2xy^3)$$

$$32. (-5x^4)^2$$

$$33. (3x^4)(4x^5)(-2x^2)$$

$$34. \left(\frac{1}{3}x^8y^4\right)^3$$

$$35. -2(-2x)^3(-3)^2$$

$$36. \frac{6p^3}{p^{-2}}$$

$$37. \frac{3x^{12}y^5}{18x^4y^2}$$

$$38. (3xy^{-2})^{-3}$$

$$39. \left(\frac{1}{4}x^2y^3z^2\right)\left(\frac{2}{3}xy^4z^5\right)$$

$$40. (-3x^5y^{-2})(2x^2y^7)$$

$$41. (2x^3y^0z^3)^4(xy)^0$$

$$42. \frac{-10x^{-2}y^{-8}}{15x^8y^2}$$

Factoring Polynomials

Factor each polynomial completely.

(you cannot even imagine the expressions we'll be factoring in trig ... practice these "easy" ones now!)

43. $y^2 - 5y$

44. $4a^2 + 2a$

45. $7y^3 + 14y^2$

46. $6x^2y^3 + 21xy^2$

47. $x^2 - 16$

48. $9x^2 - 25y^2$

49. $4a^2 - 49$

50. $100y^2 - 81$

51. $6x^2 - 6y^2$

52. $x^2 - 144$

53. $x^3 + 6x^2 + 2x + 12$

54. $m^3 - m^2 - 3m + 3$

55. $w^2 - 14w + 45$

56. $x^2 + 2x - 24$

57. $r^2 + 12r + 20$

58. $y^2 - 15y + 54$

59. $g^2 - 5g + 6$

60. $k^2 - k - 20$