Worksheet #1 – Solving & Graphing Equations and Inequalities

College Placement Exam Prep

Correct Number of Answers on Placement Exam Pre-Test for Questions 7 – 20: \_\_\_\_\_\_\_\_

Directions: Complete the appropriate section of the worksheet. Show all work!

* If you answered 0 – 5 questions correct, complete the problems in Section A of the worksheet.
* If you answered 6 – 10 questions correct, complete the problems in Section B of the worksheet.
* If you answered 11 – 14 questions correct, complete the problems in Section C of the worksheet.

**Section A**

*Simplify each expression completely.*

1. $21c+5d\left(1-c\right)-cd$ 2. $16j-4\left(7k-3j\right)+25k$

*Solve each equation.*

3. $6=-3(x+2)$ 4. $-3\left(1+6r\right)=14-4$ 5. $12\left(2k+11\right)=10(2k+12)$

*Solve each inequality and graph the solution on a number line.*

6. $4-d<3+2d$ 7. $-2\left(8-k\right)>-12$



*Identify the slope, x-intercept, and y-intercept for each line.*

8. $y=-4x+8$ 9. $3x+2y=-6$

Slope = \_\_\_\_\_\_ x-int = \_\_\_\_\_\_ y – int = \_\_\_\_\_\_ Slope = \_\_\_\_\_\_ x-int = \_\_\_\_\_\_ y – int = \_\_\_\_\_\_

*Solve the system of equations by graphing, substitution, or elimination.*

10. $\left\{\begin{array}{c}5x+y=19\\-2x-y=-7\end{array}\right.$ 11. $\left\{\begin{array}{c}2x+3y=4\\4x-2y=-8\end{array}\right.$ 12. $\left\{\begin{array}{c}–x+3y=12\\6x-y=-21\end{array}\right.$

*Solve the system of inequalities by graphing.*

13. $\left\{\begin{array}{c}y<2x+1\\y\geq x\end{array}\right.$ 14. $\left\{\begin{array}{c}y<x-4\\y>-3x+2\end{array}\right.$



**Section B**

*Simplify each expression completely.*

1. $c\left(4c+d\right)-c^{2}+cd$ 2. $4a^{2}+5ab-4a^{2}-2ab-7$

*Solve each equation.*

3. $6\left(6v+6\right)-5=1+6v$ 4. $75=6(-n-3)$ 5. $-10+3\left(8+8x\right)=-6(x-4)$

*Solve and graph on a number line.*

6. $-5x+7\geq -3$ 7. $4-(-7-k)>2(k+3)$



*Identify the slope, x-intercept, and y-intercept for each line.*

8. $5x+y=-5$ 9. $36x+2y=6$

Slope = \_\_\_\_\_\_ x-int = \_\_\_\_\_\_ y – int = \_\_\_\_\_\_ Slope = \_\_\_\_\_\_ x-int = \_\_\_\_\_\_ y – int = \_\_\_\_\_\_

*Solve the system of equations by graphing, substitution, or elimination.*

10. $\left\{\begin{array}{c}x+y=13\\2x-3y=1\end{array}\right.$ 11. $\left\{\begin{array}{c}9x+2y=5\\3x-y=-10\end{array}\right.$ 12. $\left\{\begin{array}{c}2x+y=1\\x=5+y\end{array}\right.$

*Solve the system of inequalities by graphing.*

13. $\left\{\begin{array}{c}y<3x-5\\y\leq \frac{1}{2}x+4\end{array}\right.$ 14. $\left\{\begin{array}{c}y<x+5\\y>4x-2\end{array}\right.$



**Section C**

*Write an expression for the scenario. Simplify completely.*

1. The width of a rectangle is $3g^{2}$ and the length of a rectangle is $h^{2}-2h+5$. Write a simplified expression representing the area of the rectangle.

2. What value(s) of $q$ will make the equation $2\left(x-q\right)=2x-1$ a contradiction?

*Solve and graph on a number line.*

3. $-18d+5(8+3d)\leq 7(3d-8)$



4. Draw a graph of a line with x-intercept (5, 0) and y-intercept (0, 8). Write the equation of the line in slope-intercept form.



 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Solve the system of equations by graphing, substitution, or elimination.*

5. $\left\{\begin{array}{c}3x-4y=5\\x=y+\frac{1}{2}\end{array}\right.$ 6. $\left\{\begin{array}{c}3x+4y=35\\4x-2y=21\end{array}\right.$ 7. $\left\{\begin{array}{c}2x-8y=24\\x-21=16y\end{array}\right.$

*Solve the system of inequalities by graphing.*

8. $\left\{\begin{array}{c}\begin{array}{c}y<-3x+4\\y>-8\end{array}\\y<x+5\\x>-6\end{array}\right.$

9. The Drama Club is selling tickets to a Senior Showcase. Prices are $8 for adults and $4 for student tickets. The club needs to raise $1000 to pay for stage sets and lighting. The auditorium has a seating capacity of 240 seats. Write a system of inequalities that can be used to determine how many tickets have to be sold for the club to meet its goal.