Algebra 2 - Chapter 3 - Systems of Equations
Complete all work on a separate sheet of paper. All graphs need to be on graph paper.

Notes on Classifying Systems without Graphing:

1) Rewrite each equation in slope-intercept form.

2) Compare slopes and y-intercepts to determine if the lines are the same, parallel, or neither.

the lines are **the same**:	the lines are **parallel**:	the lines are **neither**:
Infinite solutions.	No solution.	One solution.
The system is **dependent**.	The system is **inconsistent**.	The system is **independent**.

Practice 3-1 – Without graphing, classify each system as consistent, inconsistent, or dependent.

1. $\begin{cases} x+y+3 \\ y=2x-3 \end{cases}$

2. $\begin{cases} 2x+y=3 \\ y=-2x-1 \end{cases}$

3. $\begin{cases} x+3y=9 \\ -2x-6y=-18 \end{cases}$

4. $\begin{cases} x+y=4 \\ y=2x+1 \end{cases}$

5. $\begin{cases} x+3y=9 \\ 9y+3x=27 \end{cases}$

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

7. $\begin{cases} 3x+2y=7 \\ 3x-15=-6y \end{cases}$

8. $\begin{cases} x+y=6 \\ 3x+3y=3 \end{cases}$

9. $\begin{cases} x+y=11 \\ y=x-5 \end{cases}$

10. $\begin{cases} x+2y=13 \\ 2y=7-x \end{cases}$

11. $\begin{cases} y=12-5x \\ x-4y=-6 \end{cases}$

12. $\begin{cases} 25x-10y=0 \\ 2y=5x \end{cases}$

Practice 3-1 – Solve each system by **_graphing_**.

17. $\begin{cases} 5x+y=11 \\ x-y=1 \end{cases}$

18. $\begin{cases} x+y=-1 \\ x-y=3 \end{cases}$

19. $\begin{cases} x-y=-1 \\ 2x+2y=10 \end{cases}$

21. $\begin{cases} y=-3x \\ x+y=2 \end{cases}$

22. $\begin{cases} y=\dfrac{2}{3}x-5 \\ y=-\dfrac{2}{3}x-3 \end{cases}$

24. $\begin{cases} 2x-4y=-4 \\ 3x-y=4 \end{cases}$

Practice 3-2 – Solve each system using **_substitution_**.

12. $\begin{cases} x=y-2 \\ 3x-y=6 \end{cases}$

14. $\begin{cases} 6x-3y=-33 \\ 2x+y=-1 \end{cases}$

16. $\begin{cases} 4x=8y \\ 2x+5y=27 \end{cases}$

18. $\begin{cases} 3x+2y=9 \\ x+y=3 \end{cases}$

Answers

Practice 3-1

1. Independent **2.** Inconsistent **3.** Dependent
4. Independent **5.** Dependent **6.** Independent
7. Independent **8.** Inconsistent **9.** Independent
10. Inconsistent **11.** Independent **12.** Dependent
13a. Income: $y = 2000x - 500$, where $x = 1$ represents May;
Expenses: $y = -2600x + 24000$, where $x = 1$ represents May
13b. October (the sixth month) **14.** $(6, 4)$ **15.** $(5, 2)$
16. $(12, 1)$ **17.** $(2, 1)$ **18.** $(1, -2)$ **19.** $(2, 3)$ **20.** $(-4, 0)$
21. $(-1, 3)$ **22.** $\left(\frac{3}{2}, -4\right)$ **23.** $(-8, -1)$ **24.** $(2, 2)$
25. $(5, 1)$
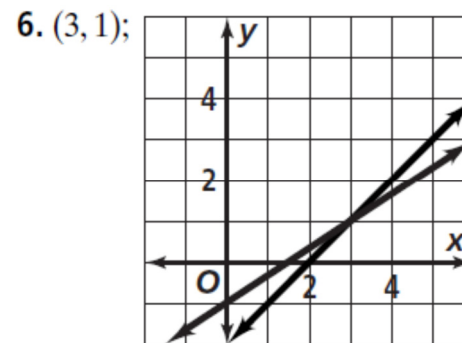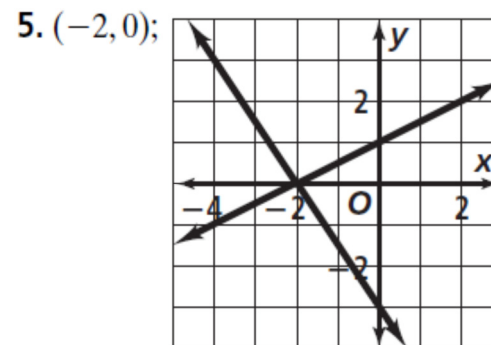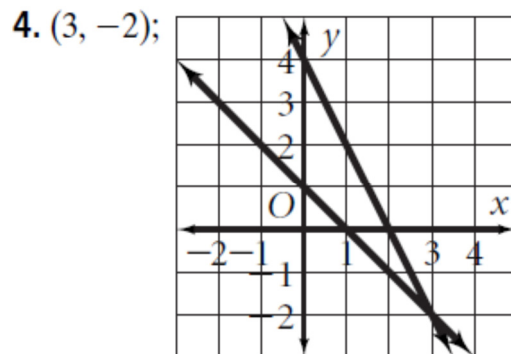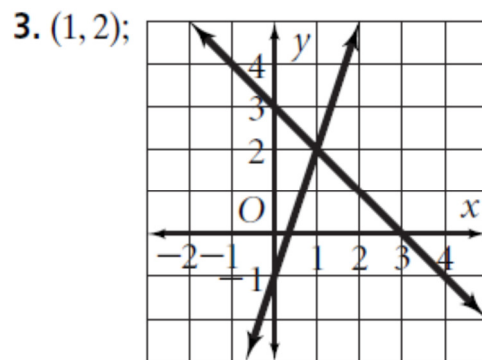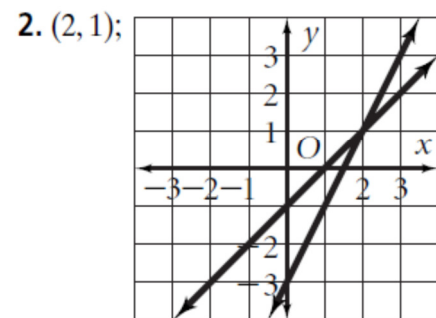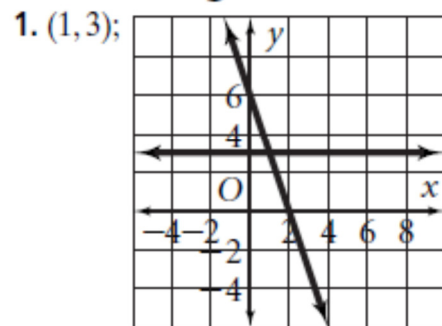
Practice 3-2

1. $(6, 4)$ **2.** $(4, 1)$ **3.** $(5, 2)$ **4.** $(1, 2)$ **5.** $(4, 3)$ **6.** $\left(5, -\frac{1}{5}\right)$
7. $(1, 1)$ **8.** $(2, -2)$ **9.** $(5, -2)$ **10.** $C = 525 + 150p$;
$I = 325p$; three performances **11.** $(2, 3)$ **12.** $(4, 6)$
13. $(0, 3)$ **14.** $(-3, 5)$ **15.** $(4, 1)$ **16.** $(6, 3)$ **17.** $(2, -2)$
18. $(3, 0)$ **19.** $(-4, -4)$ **20.** $8r + 1g = 4.60$,
$6r + 3g = 4.80$, where r represents number of oranges and
g represents number of grapefruits; oranges $= \$.50$,
grapefruits $= \$.60$ **21.** $(1, 4)$ **22.** $(-2, 3)$ **23.** $(0, 3)$
24. $(1, -2)$ **25.** $\left\{(x, y): y = -\frac{1}{5}x + \frac{1}{5}\right\}$ **26.** $(-4, 5)$
27. $(-3, 2)$ **28.** No solution **29.** $(2.25, 0)$

Reteaching 3-1

1. $(1, 3)$;

2. $(2, 1)$;

3. $(1, 2)$;

4. $(3, -2)$;

5. $(-2, 0)$;

6. $(3, 1)$;