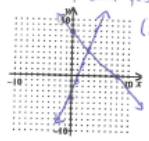
Chapter 7 Practice Test

1. Solve the system by graphing:

$x+y=8$

$3x-y=4$ $-y=-3x+4$ $y=3x+4$



(3,5)

A 2. The length of a rectangle is 8 cm more than four times the width. If the perimeter of the rectangle is 46 cm, what are the dimensions?

a. width = 3 cm, length = 20 cm
b. width = 3 cm, length = 40 cm
c. width = 6 cm, length = 32 cm
d. width = 6 cm, length = 40 cm

A 3. A chemistry teacher needs 2.5 liters of a sulfuric acid solution that is 20% sulfuric acid and 80% water. He has 2 liters of a 15% sulfuric acid solution left over from earlier laboratory exercises. He also has 4 liters of a 50% solution. Let x represent the number of liters of the 15% solution that can be mixed with y liters of the 50% solution to make 2.5 liters of the needed 20% solution. Write a system of equations that could be solved to find the amounts of the 15% and 50% solutions that could be mixed to get the required solution.

a. $x+y=2.5$, $0.15x+0.50y=0.20(2.5)$
b. $x+y=0.65$, $x+y=0.20(2.5)$
c. $x+y=2.5$, $0.15x+0.50y=0.20$
d. $x+y=0.20(2.5)$, $0.15x+0.50y=2.5$

4. At a high school basketball game, 400 tickets were sold. Adult tickets cost $5 and student tickets cost $2.50. If the total amount collected was $1375, how many student tickets were sold?

250 student tickets

$l=4w+8$ $l=4(3)+8$ $l=12+8$ $l=20$

$46=2l+2w$

$46=2(4w+8)+2w$

$46=8w+16+2w$

$30=10w$

$3=w$

$A+S=400$ $A=400-S$

$5A+2.50S=1375$

$5(400-S)+2.50S=1375$

$2000-5S+2.50S=1375$

$-2.5S=-625$

$S=250$

$A=150$

1

5. **Writing:** A mistake has been made in the solution. Explain the error and how to correct it.

$y=3x+4$

$3x-2y=13$

$3x-2(3x+4)=13$

$3x-6x+8=13$

$-3x+8=13$

$-3x=5$

$x=-\frac{5}{3}$

$y=3\left(-\frac{5}{3}\right)+4$

$y=-5+4$

$y=-1$

Solution: $x=-\frac{5}{3}$ and $y=-1$

They didn't distribute the negative 2. The second line should be $3x-6x-8=13$.

$-3x=21$

$x=-7$

$y=3(-7)+4$

$y=-17$

$(-7,-17)$

Solve by elimination:

A 6. $3x+6y=9$, $x-6y=11$

$+\ 3x+6y=9$, $x-6y=11$

$4x=20$ $x=5$

a. $(5,-1)$ b. $(0,\frac{3}{2})$ c. $(10,-\frac{1}{6})$ d. no solution

7. A boat travels with the current at a speed of 10 miles per hour with respect to land, then against the same current at a speed of 6 miles per hour with respect to land. Find (a) the speed of the current, and (b) the speed of the boat in still water.

a) 2mph b) 8mph

A 8. Which system of equations has no solution?

a. $7x+9y=5$, $-21x-27y=14$ $y=-\frac{7}{9}x+\frac{5}{9}$ $y=-\frac{7}{9}x+\frac{14}{27}$
b. $7x+9y=5$, $4x+7y=14$
c. $7x-9y=10$, $7x-36y=40$
d. $7x-9y=5$, $14x-19y=10$

$b+c=10$

$b-c=6$

9. Express each equation in slope-intercept form. Then determine, without solving the system, whether the system of equations has exactly one solution, no solution, or an infinite number of solutions.

$5y-4x=3$

$10y=8x+6$

$5y-4x=3$ $5y=4x+3$ $y=\frac{4}{5}x+\frac{3}{5}$

$10y=8x+6$ $y=\frac{8}{10}x+\frac{6}{10}$ $y=\frac{4}{5}x+\frac{3}{5}$

Infinitely Many Solutions

$b+c=10$

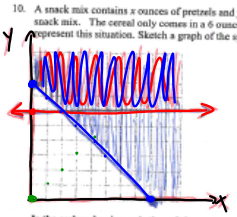
$b-c=6$

$2b=16$

$b=8$ $c=2$

2

10. A snack mix contains x ounces of pretzels and y ounces of cereal. You want to have at least 8 ounces of snack mix. The cereal only comes in a 6 ounce package. Write and solve a system of inequalities to represent this situation. Sketch a graph of the system.



$x+y\geq 8$ $y\geq -x+8$

$y\geq 6$

$y\geq 1x+0$

Is the ordered pair a solution of the system of linear equations?

11. $(4,1)$ $-x+y=-3$, $x+3y=6$

$-4+1=-3$ $4+3(1)=6$

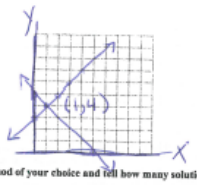
$-3=-3\checkmark$ $7\neq 6$ NO

Graph and check to solve the linear system.

12. $-x+y=3$, $x+y=5$ $y=x+3$

$2y=8$

$y=4$



(1,4)

Solve the system using the method of your choice and tell how many solutions the system has.

13. $x+y=1$, $-x+y=3$ $y=-x+1$ $y=-x+3$

$0\neq 2$ No Solution, // Lines

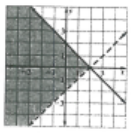
Write a system of linear inequalities that defines the shaded region.

14.

$y\leq x+2$

$y<-x+2$

15.



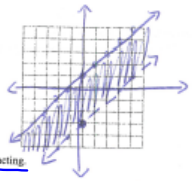
$y\leq -x+2$

$y>x-2$

Graph the system of linear inequalities.

16. $y>x-3$

$y\leq x+1$



17. Solve the system by adding or subtracting.

$9x-7y=-77$

$3(-3x-9y=3)$

$+\ 9x-7y=-77$, $-9x-27y=9$

$-34y=-68$

$y=2$

$9x-7(2)=-77$

$9x-14=-77$

$9x=63$

$x=-7$

$(-7,2)$