

1. Determine whether each of the following points is a solution to the given system. Justify your answer.

(a)  $(3, 4)$

$$\begin{aligned} x + y &= 7 \\ y &= 2x - 2 \end{aligned}$$

(b)  $(-10, -1)$

$$\begin{aligned} y &= \frac{1}{2}x + 4 \\ y &= 4x + 30 \end{aligned}$$

(c)  $(2, 14)$

$$\begin{aligned} y &= -3x + 20 \\ y &= 2x + 10 \end{aligned}$$

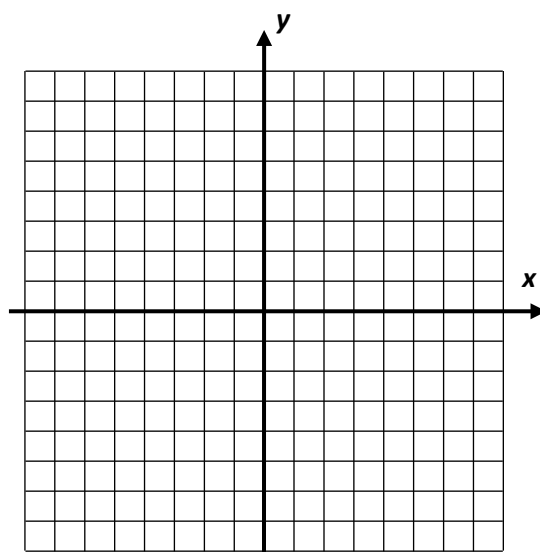
(d)  $\left(2, \frac{3}{2}\right)$

$$\begin{aligned} y &= \frac{8-x}{4} \\ y &= \frac{5}{4}x - 1 \end{aligned}$$

2. Solve the following system of equations graphically. After graphing, be sure to label each line with its equation and state your final solution as a coordinate pair.

$$y = \frac{1}{3}x + 1$$

$$x + y = 5$$



3. Which of the following points solves the system shown below?

$$y = 5x - 9$$

$$y = -2x + 12$$

- (1)  $(1, -4)$       (2)  $(3, 6)$       (3)  $(2, 8)$       (4)  $(-3, 18)$

4. The two lines  $y = 6x + 15$  and  $y = mx - 4$  intersect at  $x = -2$ .

- (a) What is the  $y$ -coordinate of their intersection point?  
 (b) What is the value of  $m$ ?

R1. Evin is building a tower out of paper cups. In each row (counting from the floor up), there are two less cups than the row below it. The first row has 26 cups in it.

- (a) State the number of cups in the second, third, and fourth rows.  
 (b) Give a recursive definition for this arithmetic sequence.  
 (c) How many cups will be in the 11<sup>th</sup> row? Show the calculation that leads to your answer.

R2. The population of deer in a park is growing over the years. The table below gives the population found in a survey by local wildlife officials.

Year	2000	2003	2006	2009
Deer Population	168	216	264	312

(a) Find the average rate that the deer population is changing over each time interval below:

From 2000 to 2003

From 2003 to 2006

From 2006 to 2009

(b) Why does this calculation indicate a linear relationship?

(c) If  $t$  stands for the number of years since 2000, write an equation for the deer population,  $p$ , as a function of  $t$ .

(d) What does your model predict the deer population to be in the year 2014?

(e) How many years will it take for the deer population to reach 500? Round to the nearest year.

1. (a) Yes  
 (b) No  
 (c) No  
 (d) Yes

2. (2, 3)

3. (2)

4. (a)  $y = 3$

(b)  $m = -\frac{7}{2}$

R1. (a) 24, 22, 20

(b)  $a_1 = 26$

$a_n = a_{n-1} - 2$

(c)  $a_n = 26 - 2(n - 1)$ , 4

R2. (a) 16, 16, 16

(b) Constant rate of change

(c)  $p = 16t + 168$

(d) 392

(e) 21 years