Names: _____

Sage & Scribe: Systems of Equations

The sage is the only one who may talk. The scribe is the only one who may write. Switch roles after each problem.

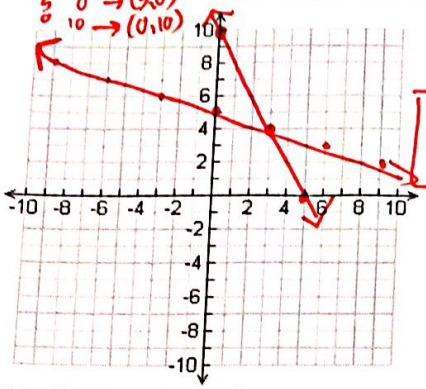
For 1-2, solve by graphing.

1) $\begin{cases} y = -\frac{1}{3}x + 5 \\ 2x + y = 10 \end{cases}$

down 1, right 3

Sage: _____
Scribe: _____

5 → (5,0)
10 → (0,10)



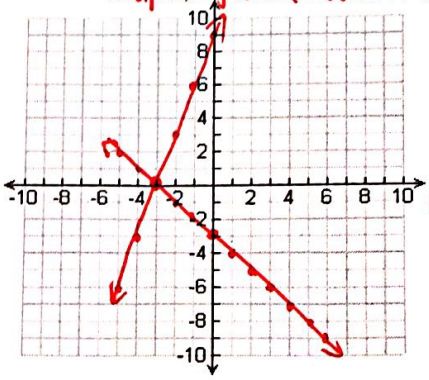
(3,4)

2) $\begin{cases} y = -x - 3 \\ y = 3x + 9 \end{cases}$

down 1, right 1

Sage: _____
Scribe: _____

up 3, right 1 (or down 3, left 1)



(-3,0)

For 3-4, solve by substitution.

3) $\begin{cases} y = -4x \\ 4x - 2y = 120 \end{cases}$

Sage: _____
Scribe: _____

$4x - 2(-4x) = 120$

$4x + 8x = 120$

$12x = 120$

$x = 10$

$y = -4(10)$

(10, -40)

4) $\begin{cases} 3x + 6y = 15 \\ x = 8 - y \end{cases}$

Sage: _____
Scribe: _____

$3(8-y) + 6y = 15$

$24 - 3y + 6y = 15$

$3y = -9$

$y = -3$

$x = 8 - (-3)$

$x = 11$

(11, -3)

5) Fluffy and Sparky each had some bones. Fluffy had five times as many bones as Sparky. Together, they had 90 bones. Write and solve a system of equations to find how many bones they each had.

Sage: _____
Scribe: _____

$F = 5S$

$F + S = 90$

$5S + S = 90$

$6S = 90$

$S = 15$

Fluffy: 75 bones
Sparky: 15 bones

6) Jack and Jill ran up the hill. Jack's time was 12 seconds faster than Jill's. If you add their times together, you get 1 minute and 38 seconds. Write and solve a system of equations to find each of their times.

Sage: _____
Scribe: _____

$Ja + Ji = 98$

$Ja + 12 = Ji$

$Ja + Ja + 12 = 98$

$2Ja = 86$

$Ja = 43$

Jack: 43 seconds
Jill: 55 seconds