Final Review
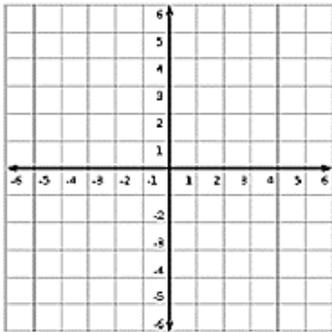# Mixed Review #2

1. Solve the following systems of equations by graphing. Please use a ruler.
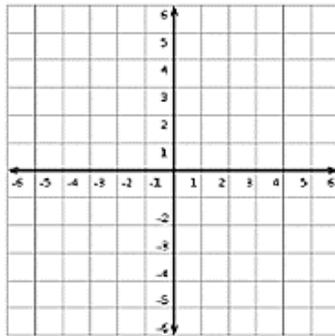
$y = -3x + 2$
$y = 2x - 3$
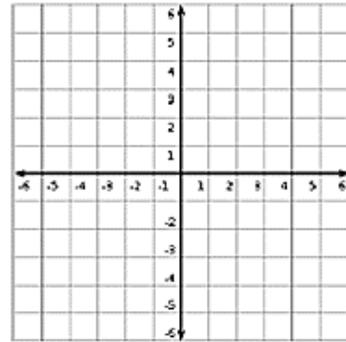
$y = -\dfrac{3}{2}x + 1$
$y = \dfrac{1}{2}x - 3$

$4x - 6y = 12$
$2x + 2y = 6$

2. Express the following numbers in **scientific notation.**

0.000125	2,000,000,000	796,000	0.00179	90	0.0000763

3. **Scientific notation** problems that involve computations. Record answers in **scientific notation.**

a.
In 2013 the Los Angeles Dodgers opening day payroll was about $\$2.16 \times 10^8$ and the Houston Astros opening day payroll was about $\$2.4 \times 10^7$. How much higher was the Dodgers' payroll?

b.
A TV show had 3.5×10^6 viewers for their first episode and 8.5×10^6 viewers for their second episode. How many viewers did they have overall?

c.
The population of Crowded Town is 4×10^6 and the population of Empty Village is 8×10^3. How many times the population of Empty Village is Crowded Town?

d.
A corporation earned a profit of $\$2.5 \times 10^4$ for 1×10^3 days in a row. What was the corporation's total profit during this time period?

4. Employee A and employee B work in a department store where they have a base salary plus an hourly wage. Employee A has a salary that is modeled by the linear equation $y = 5x + 40$ where x represents the number of hours worked and y represents the total salary. Employee B's salary is shown in the table below.

# of hours x	Total Salary y
1	30
2	40
3	50
4	60
5	70

a. Write a linear equation for Employee B's salary.

b. Compare the rates of change (slope) for each employee's salary.

c. After working 20 hours which employee will have a greater salary?

5. For each problem, define your variables, write a system of equations, and solve. Make sure to interpret your results (ex: there were 7 student tickets sold and 12 adult tickets sold, etc.). Solve using **substitution** or **elimination.** Show appropriate work.

a.
A used book store also started selling used CDs and videos. In the first week, the store sold a combination of 40 CDs and videos. They charged $4 per CD and $6 per video and the total sales were $180. Determine the total number of CDs and videos sold.

b.
At a sale on winter clothing, Cody bought two pairs of gloves and four hats for $43.00. Tori bought two pairs of gloves and two hats for $30.00. Find the prices of the hats and gloves.

6.

Find a third number so that the three numbers form a right triangle: 9 , 41   13 , 85

7.

Moesha, a college student, needs to walk from her dorm room in Wilson Hall to her math class in Wells Hall. Normally, she walks 500 meters east and 600 meters north along the sidewalks, but today she is running late. She decides to take the shortcut through the Tundra.

a. How many meters long is Moesha's shortcut?

b. How much shorter is the shortcut than Moesha's usual route?