Write the equation for the lines shown in the graphs below.
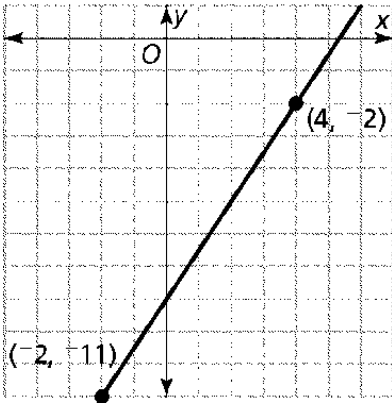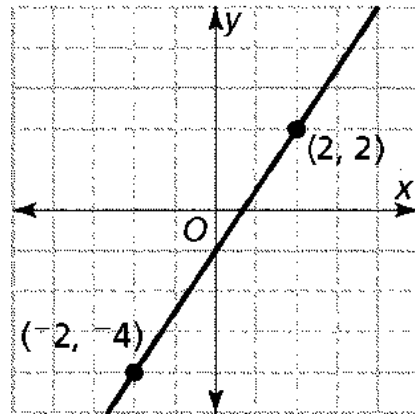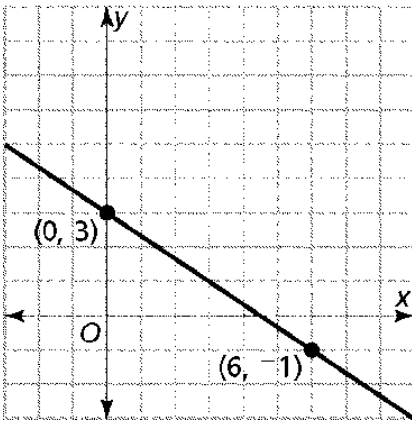
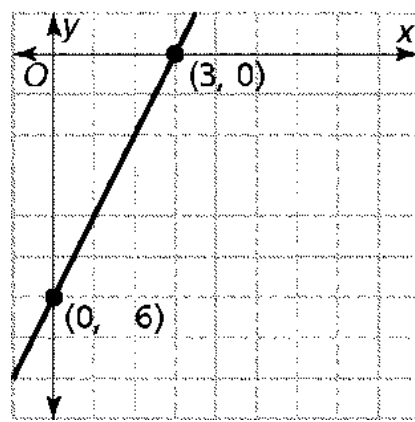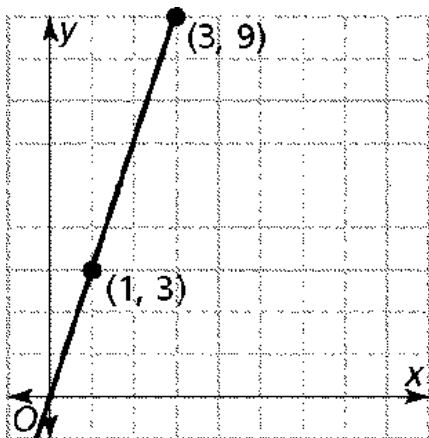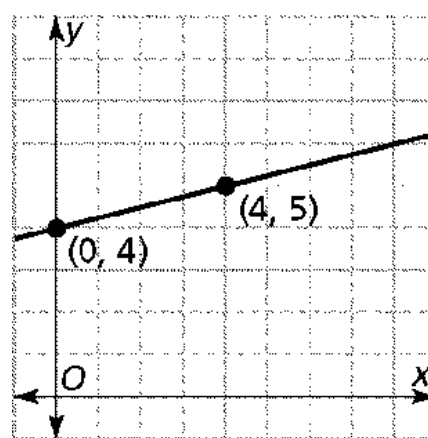**A**

B

C

D

E

F

Determine whether the relationship between x and y is linear or not. If it is linear, write the equation. If it is not linear, explain how you know.

G

x	2	4	6	8
y	21	16	12	7

H

x	1	2	4	6
y	15	19	27	35

I

x	1	2	3	4
y	16	24	32	40

J

x	5	-5	-13	-21
y	-2	3	7	11

K

x	3	6	9	15
y	2	3	4	6

L

x	1	2	3	4
y	2	4	8	16

M

x	2	3	4	5
y	15	17	19	21

N

x	2	4	6	8
y	17	29	41	53

O

x	-4	-2	2	4
y	6	10	18	22

P

x	3	6	9	15
y	8	7	6	5

Q

x	7	25	30	37
y	-2	-2	-2	-2

R

x	1	3	5	7
y	10	7	4	1

Write the equation of the line given the following conditions:

|	
S passes through the points (2, 7) and (6, 15)	**T** with slope −2 that passes through the point (3, −9)
U passes through the points (2, −9) and (−2, 3)	**V** with slope $\frac{3}{2}$ that passes through the point (−2, 0)
W passes through the points (4, 1) and (-2, 4)	**X** with slope $\frac{2}{3}$ that passes through the point (6, 2)
Y passes through the points (2, 1) and (6, 9)	**Z** with slope -4 that passes through the point (−7, 5)
a with slope $= \frac{1}{2}$ that passes through the point (-10, 7)	**b** passes through the points (2, -11) and (-5, 10)
c passes through the points (8, 2) and (-2, 7)	**d** passes through the points (-2, 2) and (3, -2)

Using Mathematical Models

The number of seeding trees that can be planted in one day depends on the number of students in the work group. Data from several different work groups is shown in the next graph.

a. Write an equation for your graph model relating trees planted to number of workers.

b. Use your linear model to estimate how many trees will be planted by a work crew of 14.

c. Use your linear model to estimate how many workers will be required to plant 270 trees.

d. What is the slope of your linear model? What does that slope tell about the relationship between the variables?
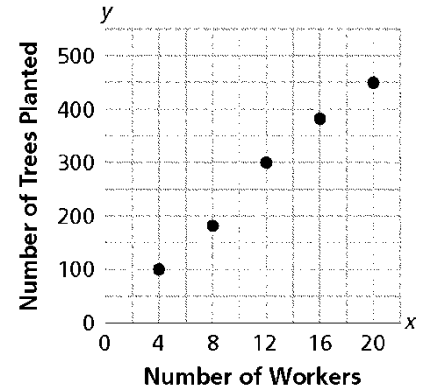
At Metropolis Middle School the student government earns money by recycling cans and bottles after school events. Some sample (*attendance, containers*) data are shown in the graph below, along with a line modeling the pattern in the dat**a.**

a. Use the points (200, 100) and (50, 25) to find an equation in the form $y = mx + b$ for the modeling line**.**

b. Use your model to find about how many containers will be recycled if 125 people attend a chorus concert?

c. What attendance at a basketball game will produce about 125 containers to be recycled?

d. Explain what the values of *m* and *b* in your equation tell about the relationship between number of containers to be recycled and attendance at the school event.
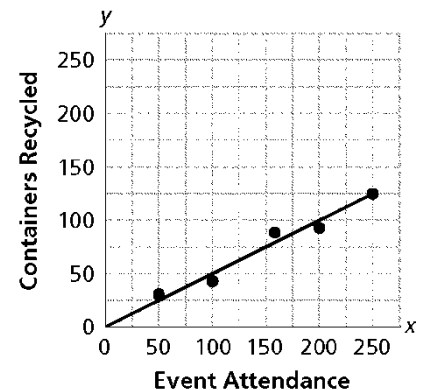
Susan measured the heights of 1, 2, 3, and 4 stacked cups. Here are her data:

Number of cups	1	2	3	4
Height of the stack of cups	7 cm	8 cm	9 cm	10 cm

a. Write an equation to describe the pattern

b.   What does the coefficient of *x* mean in this context? Does it have a unit of measure?

c. What does the constant term mean in this context? Does it have a unit of measure?