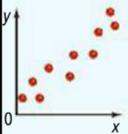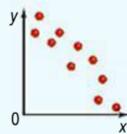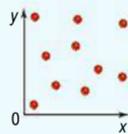## 4.6 Scatter Plots and Trend Lines

A **scatter plot** is a graph that relates two sets of data by displaying them as ordered pairs.

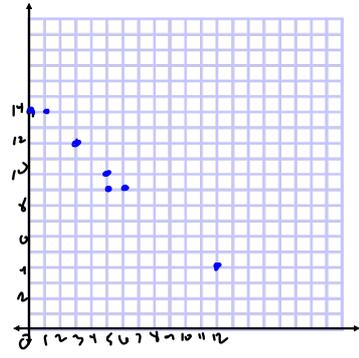positive relationship   negative relationship   no relationship

Oct 10-11:16 AM

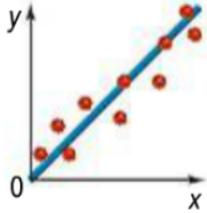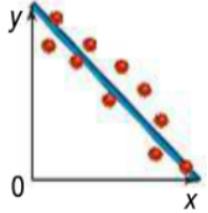**Ex.1** Make a scatter plot. Describe the type of correlation.

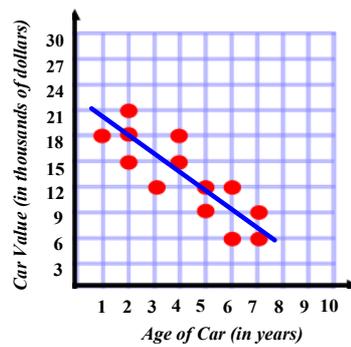| x	0	1	3	5	5	6	12
y	14	14	12	10	9	9	4

negative

Oct 4-4:00 PM

The **line of best fit** for a scatter plot is the line that fits the data closely.
There should be the same number of points below and above the line.

Oct 1-3:20 PM

Car Values

Car Value (in thousands of dollars)

Age of Car (in years)

Which equation most accurately represents the line of best fit?

Manipulate the line so that it best fits the data and determine the best equation.
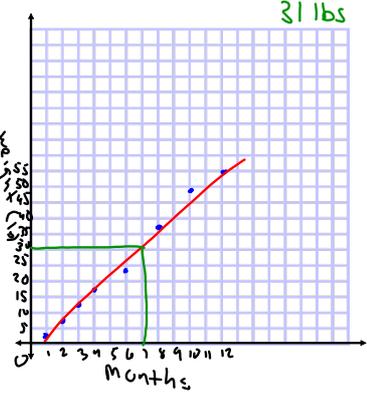
A. $y = \frac{1}{2}x + 9$

B. $y = -\frac{1}{2}x$

C. $y = x + 24$

D. $y = -x + 24$

Mar 10-10:14 AM

Ex.2 Make a scatter plot. Draw the line of best fit. Estimate the weight of a 7-month old panda?

31 lbs   positive

Weight of a Panda

Age (months)	Weight (lb)
1	2.5
2	7.6
3	12.5
4	17.1
6	24.3
8	37.9
10	49.2
12	54.9

Months

Oct 10-11:19 AM

Step 1: Press the STAT button. A list is going to appear.

```
EDIT CALC TESTS
1:Edit
2:SortA(
3:SortD(
4:ClrList
5:SetUpEditor
```

We want to push ENTER because we want 1:Edit...

Step 2: A table is going to appear.

```
L1   L2   L3   1
------------------



L1(1)=
```
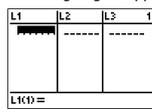
In the **L1** column type in your x values.
(Type the number then push **ENTER**, type the second number push **ENTER**)
In the **L2** column type in your y-values.

Step 3: Press the STAT button Then press ⟩ to go to the 2nd menu **CALC**

```
EDIT CALC TESTS
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
6:CubicReg
7↓QuartReg
```
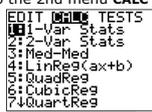
Press the number 4 because we want the option 4: LinReg(ax+b)

Step 4: Your calculator will then display on the main screen **LinReg(ax+b)** press ENTER

Step 5: A screen like this will appear

```
LinReg
y=ax+b
a=-.6571428571
b=6.057142857
```
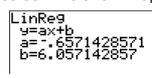
a is your slope (m) and **b** is your y-intercept. So, write your equation!

Oct 10-7:48 AM

Write the equation of the trend line.
Estimate the weight of a 7-month old panda?

Weight of a Panda

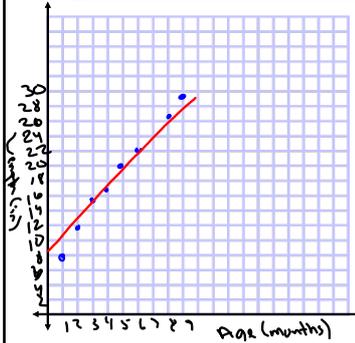| Age (months)	Weight (lb)
1	2.5
2	7.6
3	12.5
4	17.1
6	24.3
8	37.9
10	49.2
12	54.9

$y = 4.92x - 2.55$

$4.92(7) - 2.55$

31.9 lbs

Oct 10-11:19 AM

Ex.3 Make a scatter plot of the data below. Draw a trend line and write its equation. What is the approximate body length of a 7-month-old panda?

Body Length of a Panda

Age (month)	1	2	3	4	5	6	8	9
Body Length (in.)	8.0	11.75	15.5	16.7	20.1	22.2	26.5	29.0

$y = 2.53x + 6.72$

$2.53(7) + 6.72$

24.4 in

Oct 4-4:38 PM

Ex.4 Write an equation of the line of best fit.

Predict the cost of attending the 2016-2017 school year.

Average Tuition and Fees at Public 4-Year Colleges

Academic Year	Cost ($)
2000–2001	3508
2001–2002	3766
2002–2003	4098
2003–2004	4645
2004–2005	5126
2005–2006	5492
2006–2007	5836

Source: The College Board

$y = 409.43x - 815446.71$

$409.43(2016) - 815446.71$

$\$9964.17$

Oct 14-9:37 AM

Classwork: **p.267 #2,4,6,8,13,16**

   #6,13,16 on graph paper

#16c - Change to **Write the equation of the line of best fit.**

Oct 4-4:43 PM

Final Five

U.S. Computer and Video Game Unit Sales

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Unit Sales (millions)	152.4	184.5	196.3	210.3	225.8	240.9	249.5	229.5	241.6	267.9

Source: The NPD Group/Retail Tracking Service

On average, what is the increase of unit sales per year?

Hint: What is the slope of the trend line?

Oct 4-4:43 PM