AP BIO   Graphing Data & Analysis   Practice Packet

1. Using the following data, answer the questions below and then construct a line graph (with ALL required components).

Depth in Meters	Number of Bubbles/Min Plant A	Number of Bubbles/Min Plant B
2	29	21
5	36	27
10	45	40
16	32	50
25	20	34
30	10	20

a. What is the dependent variable and why?

b. What is the independent variable and why?

c. What title would you give the graph?

d. What are the mean, median, and mode of all three columns of data?

Variable	Mean	Median	Mode
Depth			
Bubbles Plant A			
Bubbles Plant B			
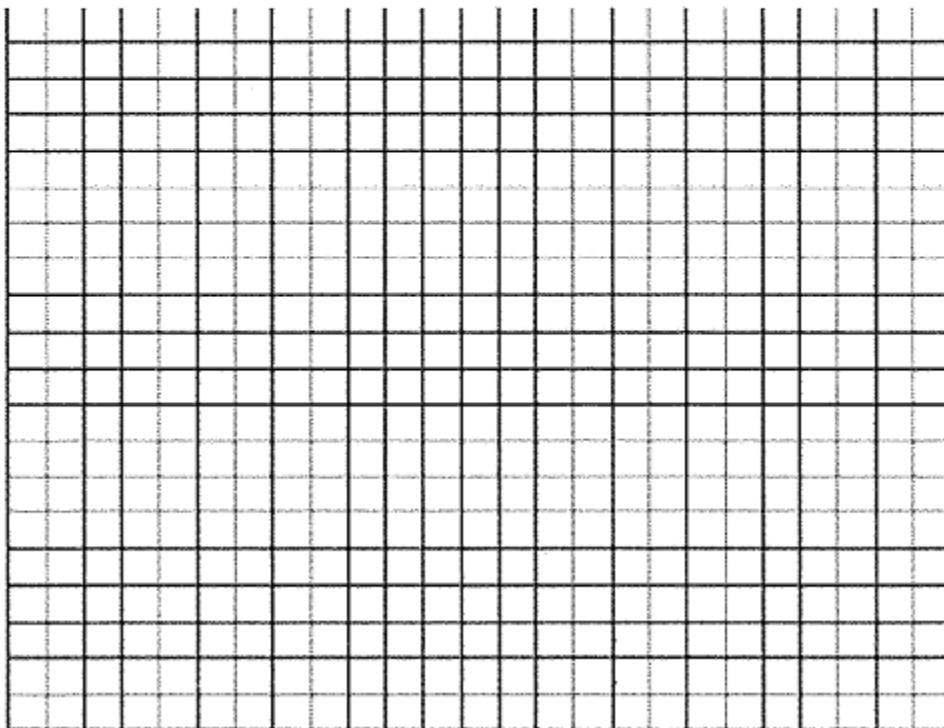
2. Diabetes is a disease affecting the insulin producing cells of the pancreas. If there is inadequate insulin being produced, the amount of glucose in the blood will remain high. A blood glucose level above 140 for an extended period of time is not considered normal. This disease, if not brought under control, can lead to severe complications and even death. Answer the following questions concerning the data and then graph it, including ALL of the required components.
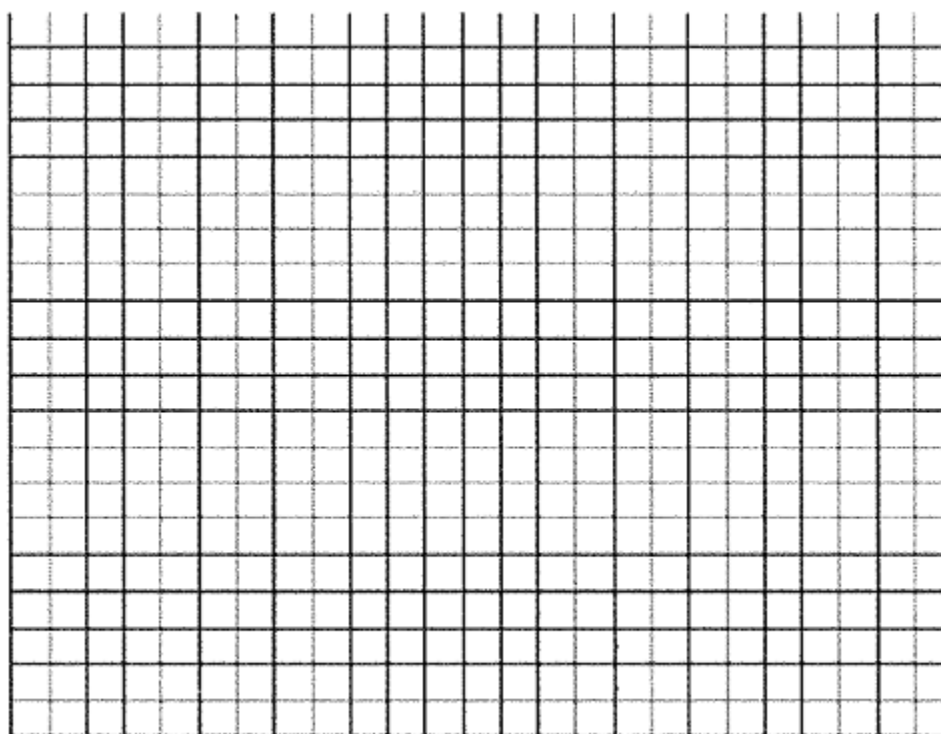
Time After Eating (hours)	Glucose (ml/L of blood) Person A	Glucose (ml/L of blood) Person B
0.5	170	180
1.0	155	195
1.5	140	230
2.0	135	245
2.5	140	235
3.0	135	225
4.0	130	200

a. Which is the dependent variable?

b. Which is the dependent variable?

c. Which individual (if any) has diabetes?

d. If the time period were extended to 6 hours, what would the expected blood glucose level be for person B?
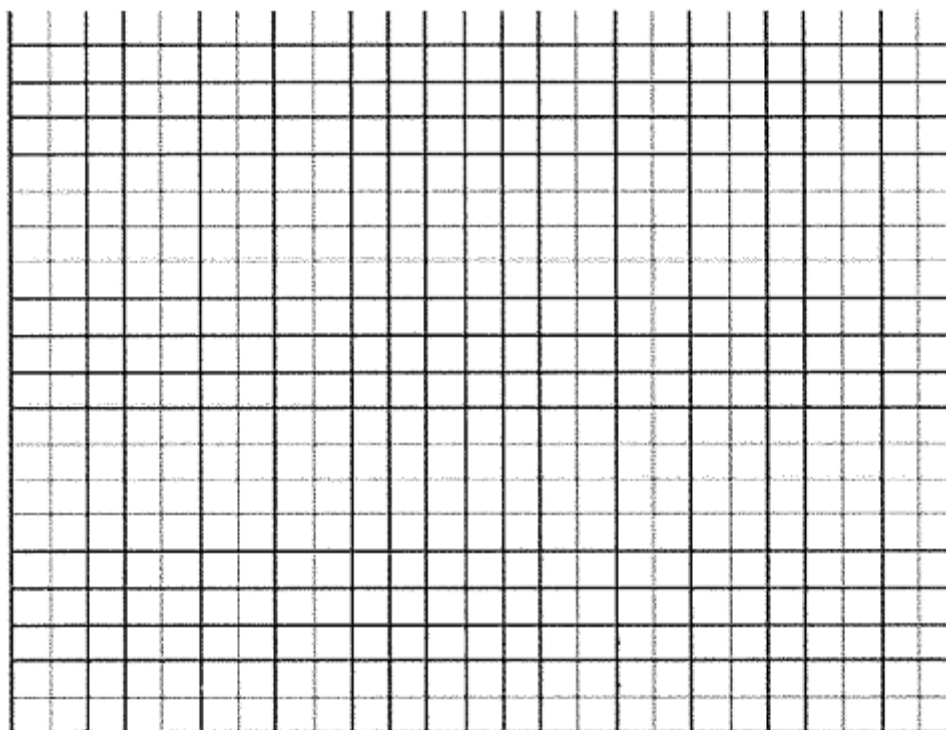
3. Temperatures were obtained in November in a fairly arid area of Nevada. At two different sites, temperature readings were taken at a number of heights above and below the soil surface. One site was shaded by a juniper plant and the other was not. Plot the data and construct a line graph, including ALL of the required components.

Condition	Height in cm from Soil Surface	Temp. in °C – Beneath Forest Cover	Temp. in °C – Unshaded Field
Air	150	18	20
Air	90	18	21
Air	60	18	20
Air	30	18	21
Soil Surface	0	16	33
Hummus	-6	12	19
Mineral	-15	9	15
Mineral	-30	7	12

4. A researcher interested in the disappearance of fallen leaves in a deciduous forest carried out a field experiment that lasted nearly a year. She collected all the leaves from 100 plots scattered throughout the forest. She measured the amount of leaves present in November, May, and August. The percentages reflect the number of leaves found, using the November values as 100%.

Collection Date:	Ash	Beech	Elm	Hazel	Oak	Willow
November	4271 g	3220 g	2481 g	1723 g	5317 g	3430 g
	100%	100%	100%	100%	100%	100%
May	2431 g	3190 g	1739 g	501 g	4401 g	1201 g
	57%	91%	%	%	%	%
August	1376 g	2285 g	35 g	62 g	1759 g	4 g
	32%	71%	%	%	%	%

Complete the data by filling in the missing percents. Construct a line graph for the ash and elm leaves.
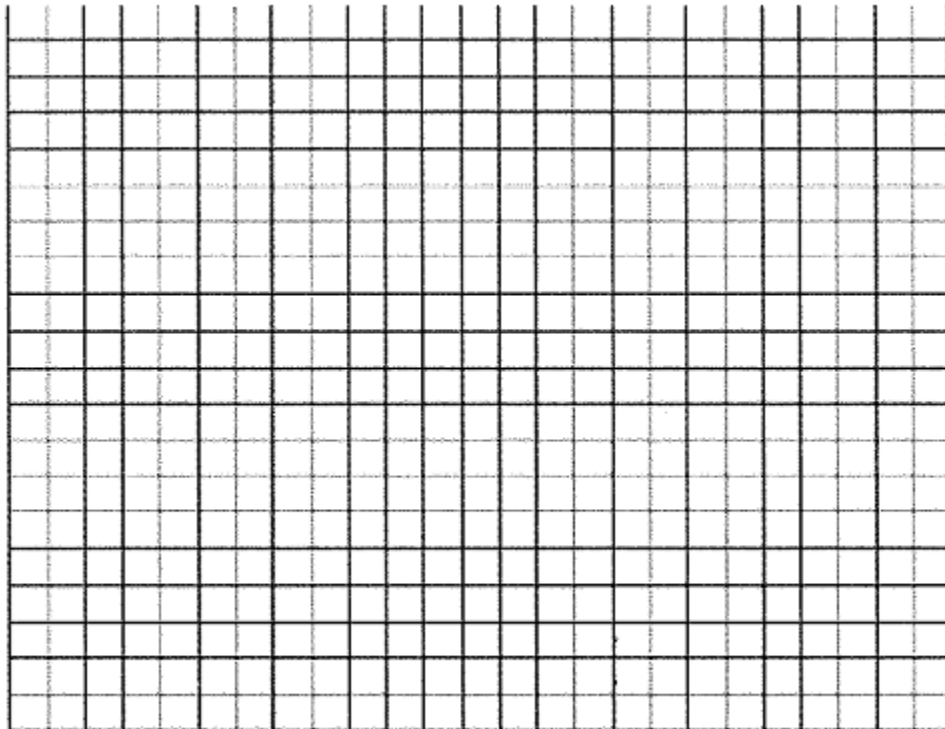
a. Identify the independent variable _____

b. Identify the dependent variable _____

5.

Table 2.6
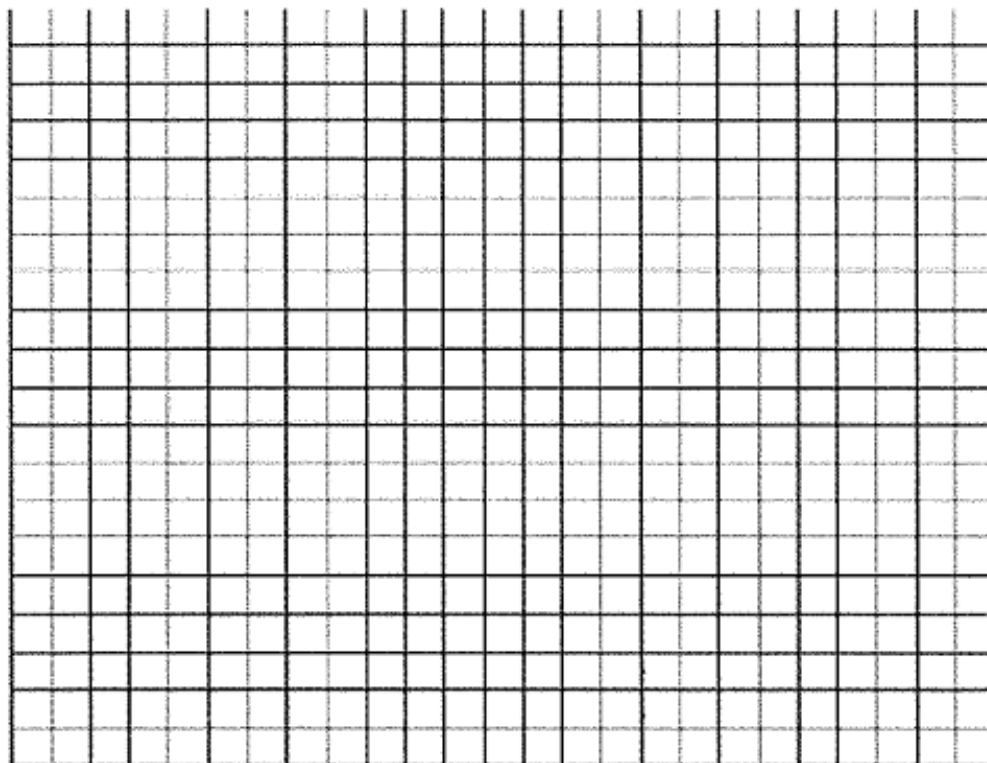Average Monthly High Temperature and Precipitation for Four Cities
(T = temperature in °C; P = precipitation in cm)

|		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fairbanks, Alaska	T	-19	-12	-5	6	15	22	22	19	12	2	-11	-17
	P	2.3	1.3	1.8	0.8	1.5	3.3	4.8	5.3	3.3	2.0	1.8	1.5
San Francisco, California	T	13	15	16	17	17	19	18	18	21	20	17	14
	P	11.9	9.7	7.9	3.8	1.8	0.3	0	0	0.8	2.5	6.4	11.2
San Salvador, El Salvador	T	32	33	34	34	33	31	32	32	31	31	31	32
	P	0.8	0.5	1.0	4.3	19.6	32.8	29.2	29.7	30.7	24.1	4.1	1.0
Indianapolis, Indiana	T	2	4	9	16	22	28	30	29	25	18	10	4
	P	7.6	6.9	10.2	9.1	9.9	10.2	9.9	8.4	8.1	7.1	8.4	7.6

Source: Pearce, E. A., and G. Smith. Adapted from *The* Times *Books World Weather* Guide. New York: Times Books, 1990.

a. You are comparing monthly temperatures in Fairbanks with temperatures in San Salvador.
    What type of graph is the most suitable?
    Construct a graph (with ALL the required components).

b. You are comparing the average temperatures for all four cities for September, October, November, and December. What type of graph is most suitable?
Construct a graph (with ALL the required components).
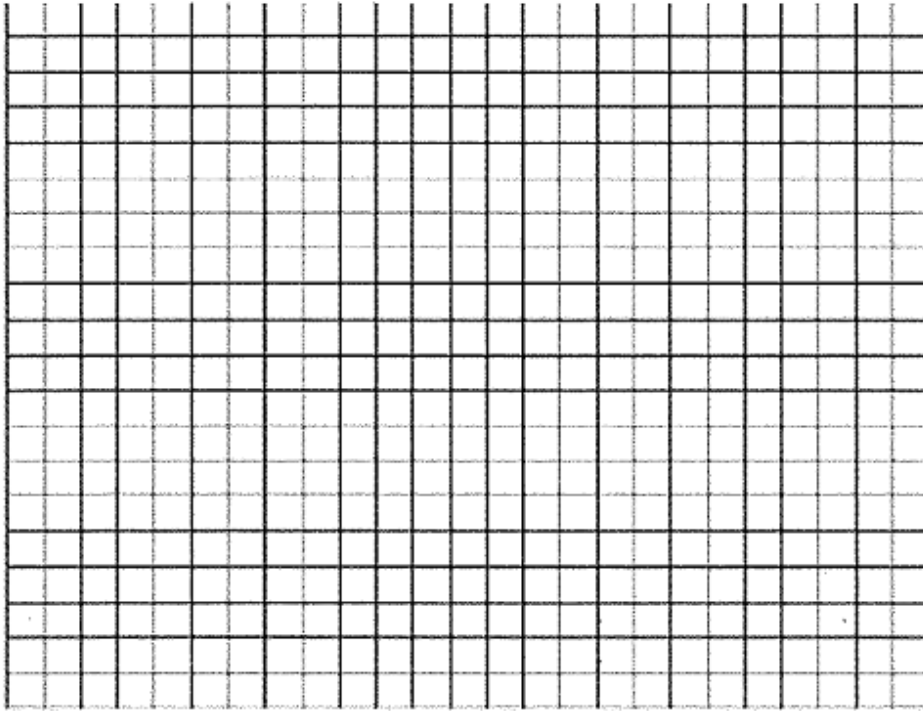
c. To compare the temperature and precipitation data for San Francisco, what type of graph is most suitable?
Construct a graph (with ALL the required components).
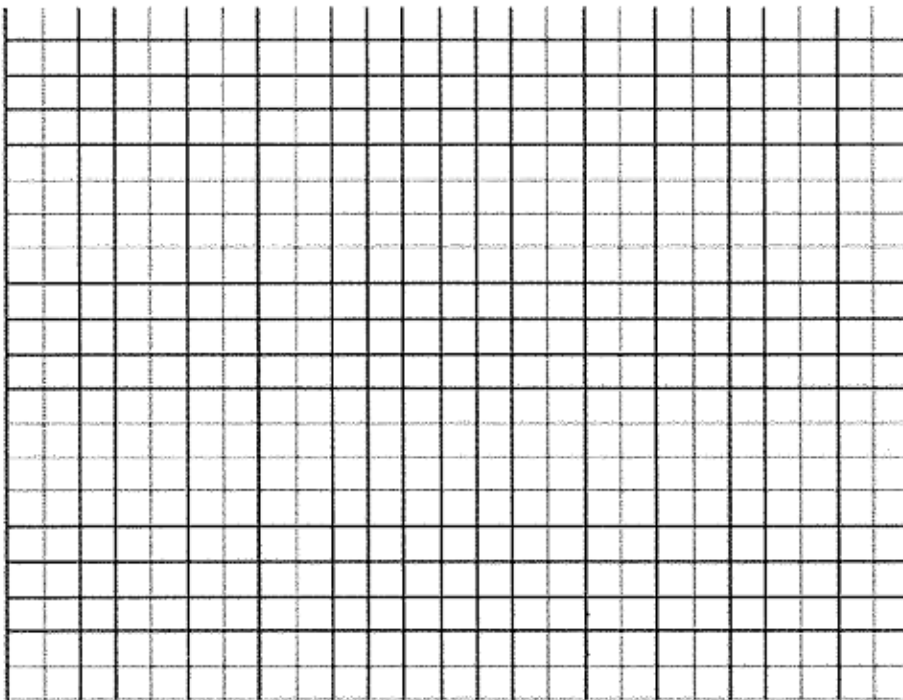
6. The following questions and practice are specific to box and whisker plots. Look at the Information packet for guidelines.

    a.   Construct a box and whisker plot for the following data:

Data Group	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
A	82	94	95	102	110
B	55	60	67	70	74
C	80	81	82	83	84
D	49	60	72	80	95
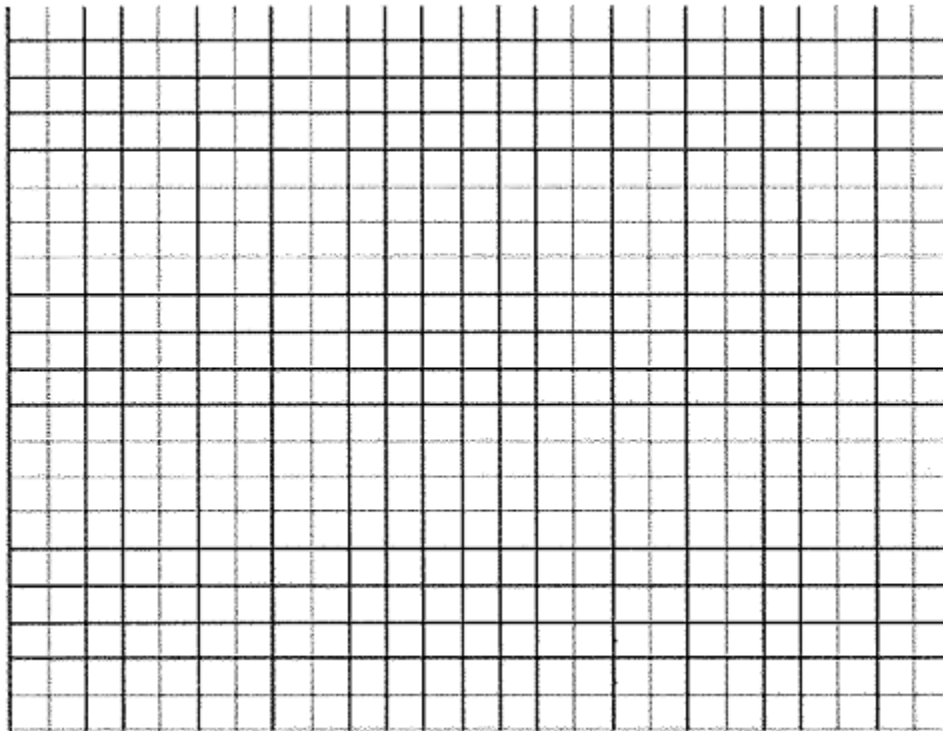
    b.   Given the following data set, fill in the blanks below: 5, 7, 1, 8, 9, 11, 22, 11, 15

Minimum _____   maximum _____

Lower quartile _____   Upper quartile _____

Median _____