

August 2018

Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided to determine your answer. Note that diagrams are not necessarily drawn to scale. A correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [6]

37. At the present time, Mrs. Bee's age is six years more than four times her son's age. Three years ago, she was seven times as old as her son was then.

If b represents Mrs. Bee's age now and s represents her son's age now, write a system of equations that could be used to model this scenario.

$$b = 4s + 6$$

$$b - 3 = 7(s - 3)$$

Use this system of equations to determine, algebraically, the ages of both Mrs. Bee and her son now.

$$b - 3 = 7(s - 3)$$

$$4s + 6 - 3 = 7s - 21$$

$$4s + 3 = 7s - 21$$

$$\begin{array}{r} -4s \\ \hline \end{array}$$

$$3 = 3s - 21$$

$$\begin{array}{r} +21 \\ \hline \end{array}$$

$$24 = 3s$$

$$\frac{24}{3} = \frac{3s}{3}$$

$$s = 8 \text{ yrs}$$

$$b = 4(8) + 6$$

$$b = 32 + 6$$

$$b = 38 \text{ yrs}$$

Determine how many years from now Mrs. Bee will be three times as old as her son will be then.

$$38 + x = 3(8 + x)$$

$$38 + x = 24 + 3x$$

$$\begin{array}{r} -x \\ \hline \end{array}$$

$$x = 7$$

$$38 = 24 + 2x$$

$$\begin{array}{r} -24 \\ \hline \end{array}$$

$$14 = 2x$$

January 2019

31. Santina is considering a vacation and has obtained high-temperature data from the last two weeks for Miami and Los Angeles.

Miami	76	75	83	73	60	66	76
	81	83	85	83	87	80	80

Los Angeles	74	63	65	67	65	65	65
	62	62	72	69	64	64	61

Which location has the least variability in temperatures? Explain how you arrived at your answer.

32. Solve the quadratic equation below for the exact values of x .

$$\begin{array}{r}
 4x^2 - 5 = 75 \\
 \quad \quad \quad +5 \quad +5 \\
 \hline
 4x^2 = 80 \\
 \frac{4}{4} \quad \quad \frac{80}{4} \\
 \sqrt{x^2} = \sqrt{20} \\
 x = \pm 2\sqrt{5}
 \end{array}$$

5/13 HW

ALGEBRA 1

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January 2019

34. The data given in the table below show some of the results of a study comparing the height of a certain breed of dog, based upon its mass.

Mass (kg)	4.5	5	4	3.5	5.5	5	5	4	4	6	3.5	5.5
Height (cm)	41	40	35	38	43	44	37	39	42	44	31	30

Write the linear regression equation for these data, where x is the mass and y is the height. Round all values to the *nearest tenth*.

$$y = 1.9x + 29.8$$

State the value of the correlation coefficient to the *nearest tenth*, and explain what it indicates.

$r = 0.3$. It is a weak positive correlation.