a) Calculate the mean mark for Class 2

Class 2	91	88	50	44	42	88	79	92	83	77	43
	62	98	52	67	84	70	55	89	48		

mean =

b) Use the table below to organize a calculation for the standard deviation for Class 2.

x	x − mean	(x − mean)²
91		
88		
50		
44		
42		
88		
79		
92		
83		
77		
43		
62		
98		
52		
67		
84		
70		
55		
89		
48		

Independent Practice: Standard Deviation

Name: _____   Date: _____

p147 #11:

The manufacturing process allows for slight differences in the width of a piston in a cylinder. Slightly smaller or larger piston diameters mean the gaskets used to provide a tight seal will be slightly more or less compressed by the piston on the cylinder walls.

In a quality control test, 10 pistons were chosen at random and measured. The table shows the results.

a) Using the table to organize your calculations, determine the variance and standard deviation of the diameters (Knowledge & Understanding). Round to the nearest hundredth of a cm.

Piston	Diameter, x (cm)	$(x - \text{mean})$	$(x - \text{mean})^2$
1	12.85		
2	12.77		
3	12.91		
4	12.87		
5	12.81		
6	12.90		
7	12.78		
8	12.80		
9	12.92		
10	12.99		
		Sum of all $(x - \text{mean})^2$	

Mean =

$$variance = \frac{sum of\ all(x-mean)^2}{n}$$

$$sd = \sqrt{variance}$$

b) An item is *defective* if its diameter is more than two standard deviations from the mean. How many of the tested pistons are defective? Show your work (Thinking & Problem Solving).

c) What percent of pistons sampled are defective? That is, out of a batch of 100 pistons, how many would be defective? Show your work (Application).

p147 #13:

Joanna's mathematics test scores have a mean of 81% and a standard deviation of 5%. Adam's mathematics test scores have a mean of 84% with a standard deviation of 10%. Whose test scores are more consistent, and what do these measures of central tendency and spread tell you about each student? (Knowledge & Understanding, Communication).