Practice -- Measures of central tendency and variance

A university film society decided to have a marathon of tearjerker movies. They wanted to see how much crying took place, so they measured each person's teardrops in millilitres. Here are the ml's each person cried:

4 2.5 1 0.2 1 3 7 5 2 3.5

a) What is the mean, median, and mode?
b) Is this measurement continuous or discrete?
c) What is the scale of measurement?
d) What is the range?
e) What is the interquartile range?
f) What is the variance?
g) What is the standard deviation?

Solution

a) Mean = 2.92, Median = (2.5+3)/2 = 2.75, Mode = 1
b) Discrete
c) Ratio
d) 7 – 0.2 = 6.8

e) Q2 value (median) = 2.75
Q1 value = 1
Q3 value = 4

IQR = Q3 – Q1
IQR = 4 – 1
IQR = 3

f) $$s^2 = \frac{\sum x^2 - (\sum x)^2 / N}{N-1}$$ (Variance formula)

$\Sigma x^2 = 123.54$
$(\Sigma x)^2 = 852.64$
$N = 10$

$$s^2 = \frac{123.54 - 852.64/10}{10 - 1}$$

$s^2 = 4.253$

g) $s = \sqrt{s^2}$

$\sqrt{4.253} = 2.062$

$s = 2.062$