



Practice Run

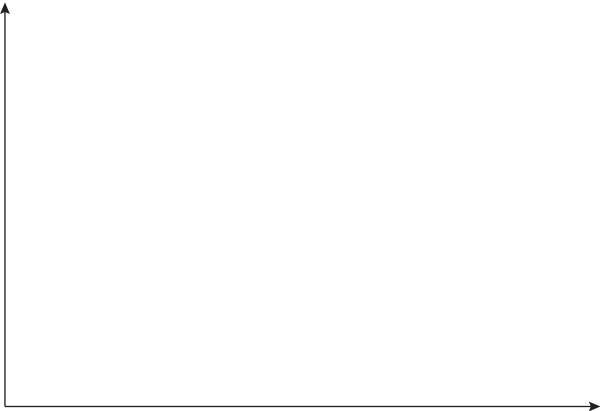
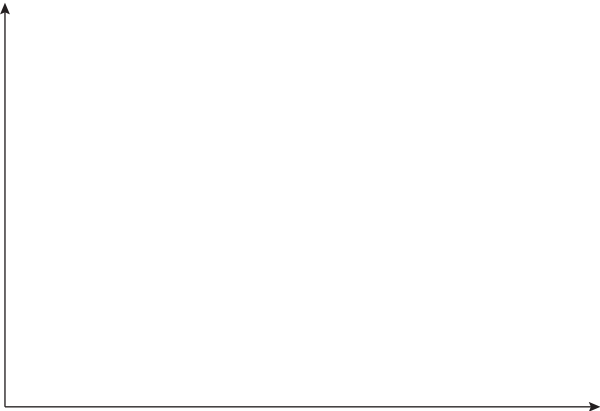
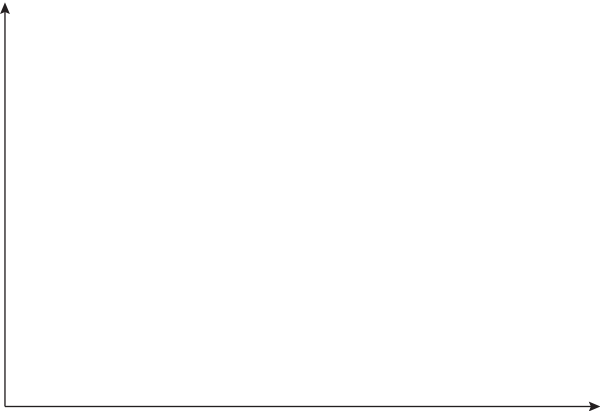
The daily depth of the Milk River is shown for three months in 2012.

Milk River Depth (m)			
Day	March	June	August
1	0.556	0.908	0.837
2	0.563	0.902	0.833
3	0.567	0.900	0.841
4	0.580	0.895	0.854
5	0.595	0.912	0.830
6	0.636	0.947	0.827
7	0.627	0.991	0.824
8	0.844	0.980	0.830
9	0.739	0.979	0.824
10	0.790	0.937	0.823
11	0.702	0.978	0.828
12	0.767	1.012	0.819
13	0.903	1.008	0.842
14	0.831	0.952	0.845
15	0.666	0.915	0.846
16	0.717	0.892	0.853
17	0.657	0.889	0.830
18	0.563	0.885	0.812
19	0.610	0.884	0.837
20	0.610	0.905	0.834
21	0.559	0.924	0.824
22	0.560	0.920	0.828
23	0.492	0.914	0.833
24	0.461	0.903	0.830
25	0.558	0.928	0.827
26	0.505	0.923	0.828
27	0.473	0.980	0.821
28	0.451	0.959	0.812
29	0.436	0.928	0.820
30	0.597	0.934	0.817
31	0.697		0.814
Source: http://www.wateroffice.ec.gc.ca/			



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1. Draw a histogram for each month using the same classes.



2. a. Determine the range, mean, and standard deviation for each month.

	March	June	August
Range			
Mean			
Standard Deviation			

- b. Describe how the means and standard deviations are related to the histograms you drew in 1.
- c. Suggest a relationship between the range and the standard deviation of a set of data.



Compare your answers.

The daily depth of the Milk River is shown for three months in 2012.

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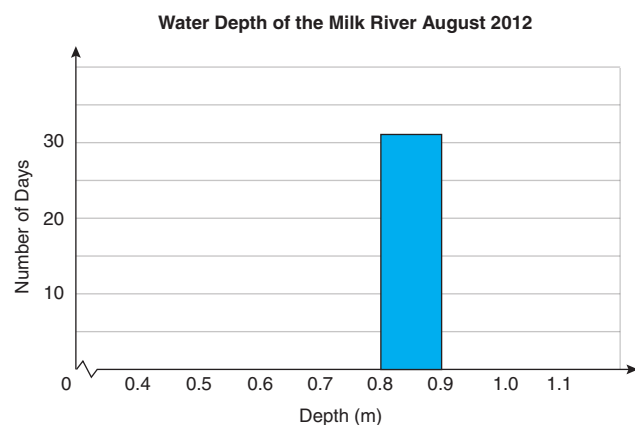
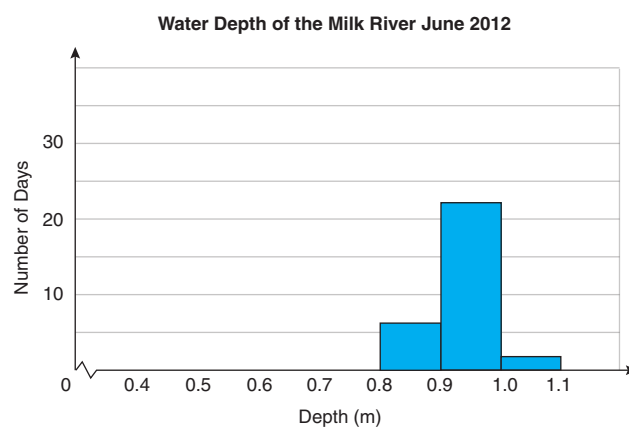
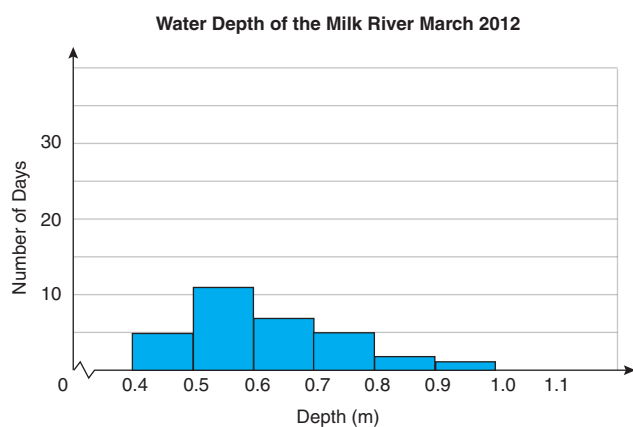
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1. Draw a histogram for each month using the same classes.

Begin by drawing a frequency table for each month.

Depth	Frequency		
	March	June	August
0.4 – 0.5	5	0	0
0.5 – 0.6	11	0	0
0.6 – 0.7	7	0	0
0.7 – 0.8	5	0	0
0.8 – 0.9	2	6	31
0.9 – 1.0	1	22	0
1.0 – 1.1	0	2	0

Use the frequency table to draw the histograms.



2. a. Determine the range, mean and standard deviation for each month.

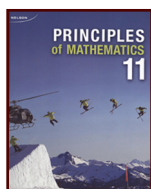
	March	June	August
Range	0.467	0.128	0.042
Mean	0.623	0.933	0.830
Standard Deviation	0.118	0.037	0.011

- b. Describe how the means and standard deviations are related to the histograms you drew in Question 1.

The mean is near the centre of the data represented in each histogram. March has the largest standard deviation. The histogram for March is the most spread out. August has the smallest standard deviation. The histogram for August is the least spread out.

- c. Suggest a relationship between the range and the standard deviation of a set of data.

For this data, the month with the largest standard deviation also had the largest range and the month with the smallest standard deviation also had the smallest range. This makes sense because both a large range and a large standard deviation correspond to data that is “spread out”. Having a large variation of river depths seems more reasonable during spring thawing than at the end of summer.



For further information about standard deviation see p. 254 of *Principles of Mathematics 11*.

Interpreting data directly from a list can be very difficult. Organizing numerical data into a frequency distribution can help you see trends in data that may not have otherwise been obvious. The mean, median, mode, range, and standard deviation are all values that can be used to describe a set of data and the nature in which that data is distributed. In the next lesson, you will look at a very common type of distribution: normal distributions.