

7.3 cont: Center & Spread

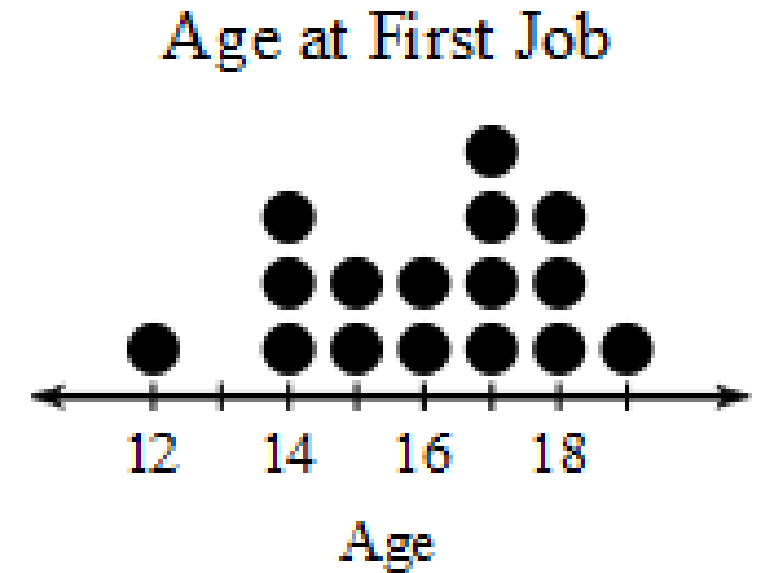
SWBAT calculate standard deviation.

Assignments:

HW54

Sample Standard Deviation

- ▶ Standard Deviation is a way of telling how far apart the data is - if it's big, they're really far apart
1. Find the number of data points and subtract 1.
 2. Find the mean. (Round to 2 decimals.)
 3. Subtract the mean from each of the data points.
 4. Square each of the numbers from Step 3. (Round to 4 decimals.)
 5. Add together all the numbers from Step 4.
 6. Divide your answer from Step 5 by the answer from Step 1.
 7. Take the square root. (Round to 2 decimals.)

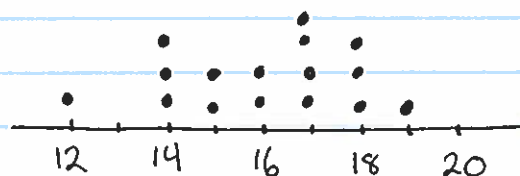


$$s = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n - 1}}$$

In-Class Example: Standard Deviation (Sample)

Data

Age at First Job



Work step ① $n = 16$
 $n - 1 = 15$

② $\bar{x} = \frac{12 + 3(14) + 2(15) + 2(16) + 4(17) + 3(18) + 19}{16}$

$\bar{x} = 16.06$

x_i	③ $(x_i - \bar{x})$	④ $(x_i - \bar{x})^2$	
12	$12 - 16.06 = -4.06$	$(-4.06)^2 = 16.4836$	⑤ $\sum (x_i - \bar{x})^2$ = 54.9376
14	$14 - 16.06 = -2.06$	$(-2.06)^2 = 4.2436$	
14	↓ = -2.06	↓ = 4.2436	⑥ $\frac{\sum (x_i - \bar{x})^2}{n - 1}$ $\frac{54.9376}{15}$ 3.6625
14	↓ = -2.06	↓ = 4.2436	
15	$15 - 16.06 = -1.06$	$(-1.06)^2 = 1.1236$	⑦ $\sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$ $\sqrt{3.6625}$ 1.91
15	↓ = -1.06	↓ = 1.1236	
16	$16 - 16.06 = -0.06$	$(-0.06)^2 = 0.0036$	
16	↓ = -0.06	↓ = 0.0036	
17	$17 - 16.06 = 0.94$	$(0.94)^2 = 0.8836$	
17	↓ = 0.94	↓ = 0.8836	
17	↓ = 0.94	↓ = 0.8836	
17	↓ = 0.94	↓ = 0.8836	
18	$18 - 16.06 = 1.94$	$(1.94)^2 = 3.7636$	
18	↓ = 1.94	↓ = 3.7636	
18	↓ = 1.94	↓ = 3.7636	
18	↓ = 1.94	↓ = 3.7636	
19	$19 - 16.06 = 2.94$	$(2.94)^2 = 8.6436$	