

# MEASURES OF VARIATION - PART 2

Interquartile Range (IQR) =  $Q_3 - Q_1$  (Middle 50% of data)



Median =  $\frac{33}{2} = 16.5 \approx 17^{\text{th}}$

= 162

Quartiles:  $\frac{16}{2} = 8^{\text{th}} \text{ \& } 9^{\text{th}}$

$Q_1 = \frac{144 + 148}{2} = 146$

$Q_3 = 172$

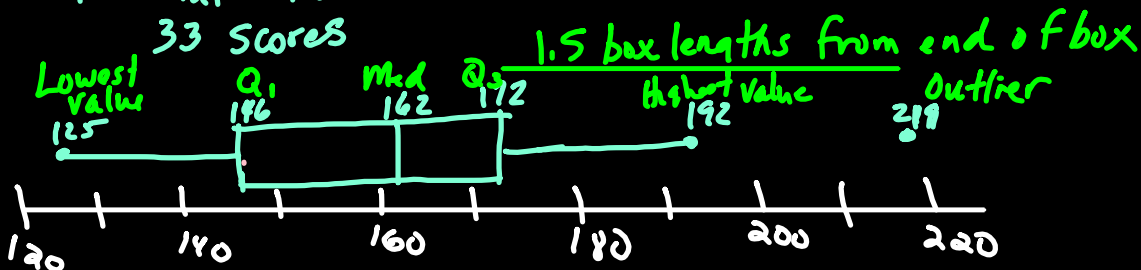
$IQR = 172 - 146 = 26$  ↑ length of box

Nancy's Bowling Scores

12	5
13	7 8 8
14	0 2 2 4   8 9
15	1 3 3 4 7 8
16	2 5 6 6 7
17	0 1 2 2   2 9
18	5 6 6
19	0 2
20	
21	9

$12/5 = 12.5$

33 scores



## Outliers

1)  $IQR \times 1.5 = \#$   
 $26 \times 1.5 = 39$

2) lower boundary:  $Q_1 - \#$   
 $146 - 39 = 107$  ← No scores below 107

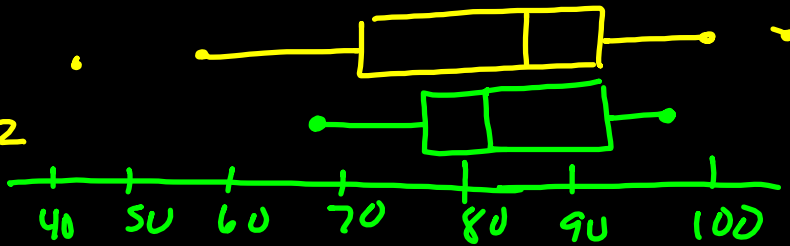
3) upper boundary:  $Q_3 + \#$   
 $172 + 39 = 211$  ← No score above 211

Outlier: 219

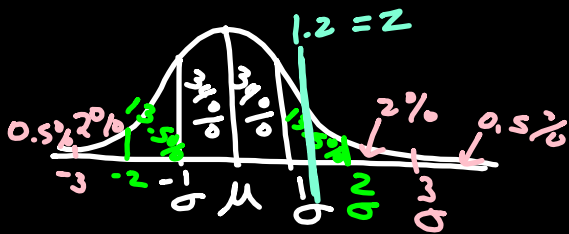
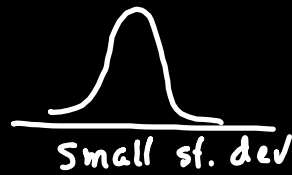


Class 1

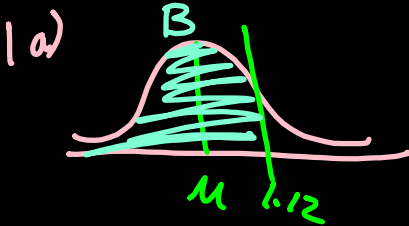
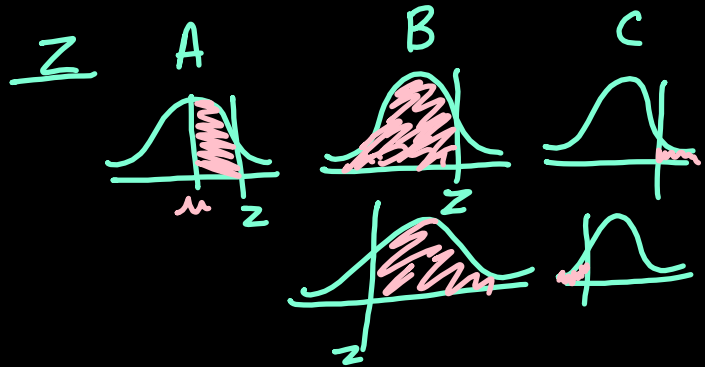
Class 2



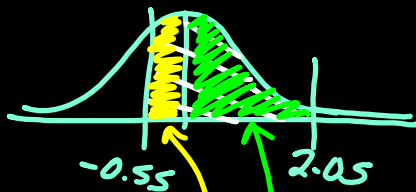
# NORMAL DISTRIBUTION



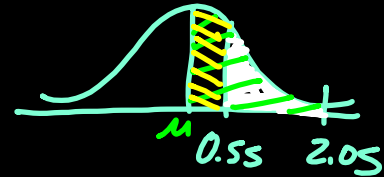
**IQ Test**  
 $\mu = 100$   
 $\sigma = 15$



between  $z = -0.55$  +  $z = 2.05$



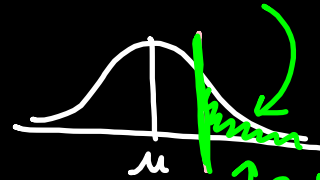
$$\begin{array}{r} 0.2088 \text{ same as } 20.88\% \\ 0.4798 \text{ same as } 47.98\% \\ \hline 0.6886 \end{array}$$



$$\begin{array}{r} 2.05 \quad 0.4798 \\ .55 \quad -0.2088 \\ \hline 0.2710 \end{array}$$

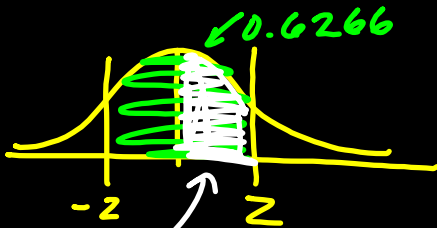
2/ The percentage above  $z$  is 0.2912

The percentage between  $-z$  +  $z$  is 0.6266.



Look in Col. C for 0.2912

$$z = 0.55$$



Look in Col. A

$$\text{Col. A } \frac{0.6266}{2} = 0.3133$$

$$z = -0.89 + 0.89$$