

6D #2a

$$\mu = \frac{a-1 + a + a+2 + a+3}{4} = \frac{4a+4}{4}$$

$\mu = a+1$

$$\sigma^2 = \frac{\overbrace{(a-1)^2}^{a^2-2a+1} + a^2 + \overbrace{(a+2)^2}^{a^2+4a+4} + \overbrace{(a+3)^2}^{a^2+6a+9}}{4} - (a+1)^2$$

$$= \frac{\cancel{4a^2} + \cancel{8a} + 14 - (\cancel{4a^2} + \cancel{8a} + 4)}{4}$$

$$\frac{10}{4} = \frac{5}{2}$$

6C #1. ~~30, 75, 125, 55, 60, 75, 65, 65, 45,~~
~~120, 70, 110~~

30, 45, 55, Q_1	60, 65, 65, median	70, 75, 75, 110, 120, 125
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a) range = $125 - 30 = 95$

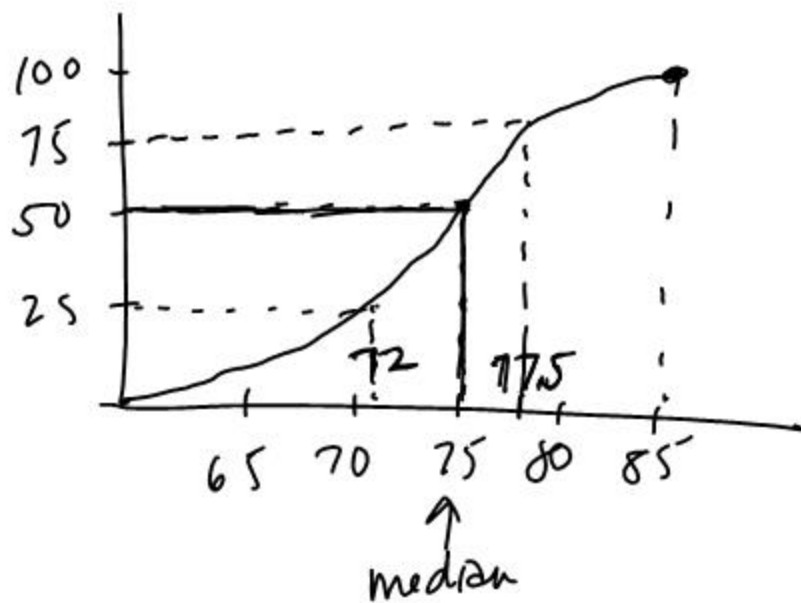
b) median = $\frac{65+70}{2} = 67.5$

c) $Q_1 = \frac{55+60}{2} = 57.5$

d) $\frac{75+110}{2} = 92.5$

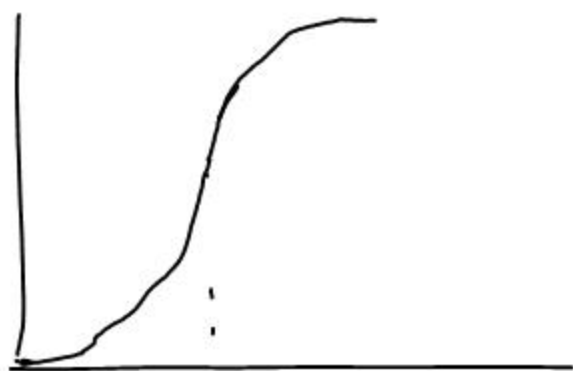
e) $92.5 - 57.5 = 35$

6C #2



$$Q3 - Q1 \approx 77.5 - 72 = 5.5 \text{ cm}$$

6A #5b



6D #2b

Suppose $a = 5$

$$\{4, 5, 7, 8\} \quad \mu = 6$$
$$\sigma^2 = 5/2$$

$$\{1, 2, 4, 5\} \quad \mu = 3$$

$$\sigma^2 = 5/2$$

multiply by 5

$$\{20, 25, 35, 40\}$$

If every data value is multiplied by A ,

• the mean is AM

• the standard deviation is $|A|\sigma$

• the variance is $A^2\sigma^2$

Ex Roll 2 dice. Compute

$$(a) P(\text{both are even}) = \frac{9}{36} = \frac{1}{4}$$

$$(b) P(\text{larger value is odd}) = \frac{12}{36} = \frac{1}{3}$$

Construct a sample space (all possible outcomes)

		die 1					
		1	2	3	4	5	6
die 2	1	1,1	1,2	1,3	1,4	1,5	1,6
	2	2,1	2,2	2,3	2,4	2,5	2,6
	3	3,1	3,2	3,3	3,4	3,5	3,6
	4	4,1	4,2	4,3	4,4	4,5	4,6
	5	5,1	5,2	5,3	5,4	5,5	5,6
	6	6,1	6,2	6,3	6,4	6,5	6,6

$$P(A) = \frac{\text{number of ways } A \text{ can occur}}{\text{number possible outcomes}}$$

↑
probability of event A

[Ex] Toss 4 coins. Find $P(\text{exactly 1 tail})$.

Sample Space

HHHH	HHHT	HH TT	H TTT	T TTT
	HH TH	H T HT	T H TT	
	HT HH	T H HT	TT HT	
	TH HH	HT TH	TT TH	
		T H TH		
		TT HH		

$= \frac{4}{16} = \frac{1}{4}$

[Ex] $A = \text{getting 1 tail}$

$B = \text{getting fewer than 3 tails.}$

Find $P(A')$

↑
complement of A (all events not in A)

$$P(A') = 1 - P(A) = 1 - \frac{1}{4} = \frac{3}{4}$$

[Ex] $A = \text{drawing a red card}$

$B = \text{drawing a queen}$

Find $P(A \cap B) = \frac{2}{52}$

↑
intersection (and)

Find $P(A \cup B) = \frac{28}{52}$

↑
union (or)

HW $\boxed{6D}$ # 5

$\boxed{6E}$ # 1-5

Know how a deck of cards works p. 303