

Possible outcomes	Probability	Possible sample Mean, $\bar{x}$
1, 3	$\frac{1}{10}$	2
1, 5	$\frac{1}{10}$	3
1, 7	$\frac{1}{10}$	4
1, 9	$\frac{1}{10}$	5
3, 5	$\frac{1}{10}$	4
3, 7	$\frac{1}{10}$	5
3, 9	$\frac{1}{10}$	6
5, 7	$\frac{1}{10}$	6
5, 9	$\frac{1}{10}$	7
7, 9	$\frac{1}{10}$	8
	<u>1.0</u>	

Possible sample Mean, $\bar{x}$	Probability
2	$\frac{1}{10} = 0.1$
3	$\frac{1}{10} = 0.1$
4	$\frac{2}{10} = 0.2$
5	$\frac{2}{10} = 0.2$
6	$\frac{2}{10} = 0.2$
7	$\frac{1}{10} = 0.1$
8	$\frac{1}{10} = 0.1$
	<u>1.0</u>

2 (a) Mean (Expected value)

$$\text{STATCRUNCH} = 5$$

(b) It is a normal distribution.

$$(c) \text{ Mean} = \frac{1+3+5+7+9}{5} = \frac{25}{5} = 5$$

(d) STATCRUNCH

$$\sigma = 3.1623$$

$$(e) \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{3.1623}{\sqrt{5}} = 1.1952$$

$$3. (a) Z = \frac{X - \mu}{\sigma} = \frac{24 - 22.7}{1.0} \\ Z = 1.3$$

$$(b) P(X < 24) = 0.9032$$

$$(c) P(X > 24) = 1 - P(X < 24) \\ = 1 - 0.9032 \\ = 0.0968$$

(d) In statcrunch, I went to Stat > Calculators > Normal > standard
Mean: 22.7
Std. Dev.: 1

$$P(X \leq 24) = 0.9032$$

$$P(X \geq 24) = 0.0968$$

4 (a)

$$26 \text{ in: } Z = \frac{26 - 23.5}{1.1} = 2.27$$

$$24 \text{ in: } Z = \frac{24 - 23.5}{1.1} = 0.45$$

$$(b) P(X < 26) = 0.9884$$

$$P(X < 24) = 0.6736$$

$$(c) P(24 < X < 26) = 0.9884 - 0.6736 \\ = 0.3148$$

(d) STATCRUNCH: Stat > Calculators > Normal > Between
(d) Mean: 23.5 Std. Dev.: 1.1

$$P(24 \leq X \leq 26) = 0.3132$$

5 (a)

$$P < 0.975: Z = 1.96$$

$$P < 0.025: Z = -1.96$$

$$(b) 0.975: X = Z(\sigma) + \mu = 1.96 \times 2.8 + 68.6 = 74.088 \text{ in} \\ 0.025: X = -1.96 \times 2.8 + 68.6 = 63.112 \text{ in}$$

So they are excluding men less than 63.112 in height and excluding men ~~74.088~~ greater than 74.088 in height

c) STATCRUNCH: Stat > Calculators > Normal > Between
Mean: 68.6 Std. Dev.: 2.8

$$P(\text{---} \leq x \leq \text{---}) = 0.95$$

$$0.975 : x = 74.0879 \text{ in}$$

$$0.025 : x = 63.1121 \text{ in}$$