Tutorial 06

1

$n = 225$

According to central limit theorem,

$$\bar{X} \sim N\left(100, \frac{20^2}{225}\right)$$

$$P(\bar{X} < 97.5) = P\left(Z < \frac{97.5 - 100}{\frac{20}{\sqrt{225}}}\right)$$

$$= P(Z < -1.875)$$
$$= P(Z < -1.88)$$
$$= 1 - P(Z > -1.88)$$
$$= 1 - 0.96995$$
$$= 0.03005$$

2

$n = 64$

According to central limit theorem

$$\bar{X} \sim N\left(32, \frac{5^2}{64}\right)$$

mean of the sampling distribution $= 32$

S.d of the " " $= \frac{5}{\sqrt{64}} = \frac{5}{8}$

$$= 0.625$$

$$P(\bar{X} > 33.5) = P\left(Z > \frac{33.5 - 32}{0.625}\right)$$
$$= P(Z > 2.4)$$
$$= 0.00820$$

3 mean = 75
S.d = 12

a) mean of the distribution = 75

Standard deviation of the dis^n = $\frac{12}{\sqrt{121}} = \frac{12}{11}$

= 1.091

b) mean of the distribution = 75

standard deviation of the dist^n = $\frac{12}{\sqrt{400}}$

= $\frac{12}{20}$

= 0.6

4 mean = 5.75
Standard deviation = 1.02

a) mean of the distribution = 5.75

standard deviation of the dist^n = $\frac{1.02}{\sqrt{81}} = \frac{1.02}{9}$

= 0.1133

b) mean of the distribution = 5.75

S.d of the deviation = $\frac{1.02}{\sqrt{25}}$ = 0.204