

(4) (A) $\bar{x}$: sample average by one student, $n=4$, $SD(\bar{x}) = \frac{0.2}{\sqrt{4}} = 0.1$

$$P(4.9 < \bar{x} < 5.1) = P\left(\frac{4.9-5}{0.1} < z < \frac{5.1-5}{0.1}\right)$$

Multiply the probability by 100 = check normal table to find probability.

(b) mean of answers from class that has 100 students
 so sample size = 100 here

therefore, SE of the mean = $\frac{SD(\bar{x})}{\sqrt{100}} = \frac{0.1}{\sqrt{100}} = 0.01$ ← from (a)



look for 99%

	0	1	2	3	4	5
2.3	.989	.990	.990	.990	.990	.991

z can be
 either 2.31
 or 2.32
 2.33
 2.34

all give 99%
 pick one
 or them

So the 98% confidence interval
 is

from $5.1 - 2.33 \times 0.01$
 to $5.1 + 2.33 \times 0.01$

(c) set $\frac{\sigma}{\sqrt{4}} = 0.15$ so $\sigma = 0.15 \times 2 = 0.3$