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Quiz 2

Back to Week 2

✔ **7/8** points earned (87%)

Quiz passed!

✔ 1 / 1 points

1.

What is the variance of the distribution of the average an IID draw of n observations from a population with mean μ and variance σ^2.

○ σ/n

○ $2\sigma/\sqrt{n}$

○ σ^2

◉ $\frac{\sigma^2}{n}$

▲

Correct Response
$\mathrm{Var}(\bar{X}) = \sigma^2/n$

✔ 1 / 1 points

2.

Suppose that diastolic blood pressures (DBPs) for men aged 35-44 are normally distributed with a mean of 80 (mm Hg) and a standard deviation of 10. About what is the probability that a random 35-44 year old has a DBP less than 70?

◉ 16%

▲

Correct Response

```
1   pnorm(70, mean = 80, sd = 10)
```

```
1   ## [1] 0.1587
```

○ 32%

○ 8%

○ 22%

✓ 1 / 1
   points

3.

Brain volume for adult women is normally distributed with a mean of about 1,100 cc for women with a standard deviation of 75 cc. What brain volume represents the 95th percentile?

○ approximately 977

○ approximately 1247

◉ approximately 1223

Correct Response

```
1   qnorm(0.95, mean = 1100, sd = 75)
```

```
1   ## [1] 1223
```

○ approximately 1175

✓ 1 / 1
   points

4.

Refer to the previous question. Brain volume for adult women is about 1,100 cc for women with a standard deviation of 75 cc. Consider the sample mean of 100 random adult women from this population. What is the 95th percentile of the distribution of that sample mean?

○   approximately 1088 cc

○   approximately 1115 cc

○   approximately 1110 cc

◉   approximately 1112 cc

Correct Response

```
1   qnorm(0.95, mean = 1100, sd = 75/sqrt(100))
```

```
1   [1] 1112
```

✔   1 / 1
         points

5.

You flip a fair coin 5 times, about what's the probability of getting 4 or 5 heads?

◉   19%

Correct Response

$$\binom{5}{4}2^{-5} + \binom{5}{5}2^{-5} \approx 19\%$$

```
1   pbinom(3, size = 5, prob = 0.5, lower.tail = FALSE)
```

```
1   ## [1] 0.1875
```

○   3%

○

6%

◯   12%

❌   0 / 1
      points

6.

The respiratory disturbance index (RDI), a measure of sleep disturbance, for a specific population has a mean of 15 (sleep events per hour) and a standard deviation of 10. They are not normally distributed. Give your best estimate of the probability that a sample mean RDI of 100 people is between 14 and 16 events per hour?

◯   68%

◯   95%

◯   47.5%

◉   34%

Incorrect Response

✔️   1 / 1
      points

7.

Consider a standard uniform density. The mean for this density is .5 and the variance is 1 / 12. You sample 1,000 observations from this distribution and take the sample mean, what value would you expect it to be near?

◯   0.25

◯   0.10

◯   0.75

◉   0.5

Correct Response

Via the LLN it should be near .5.

✔   1 / 1
points

8.

The number of people showing up at a bus stop is assumed to be

Poisson with a mean of 5 people per hour. You watch the bus

stop for 3 hours. About what's the probability of viewing 10 or fewer people?

○   0.06

◉   0.12

Correct Response

```
1   ppois(10, lambda = 15)
```

```
1   ## [1] 0.1185
```

○   0.03

○   0.08

👍   👎   🏳