AP Statistics

2019-02-15 6.1 Assignment

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Pg. 353-356 1,5,7,9,14,18,19,23,25,27-30

Question 1

Part A

0: TTTT = 1/16

1: TTTH TTHT THTT HTTT = 1/4

2: TTHH THTH THHT HTTH HTHT HHTT = 3/8

3: THHH HTHH HHTH HHHT = 1/4

4: HHHH = 1/16

Part B

A normal distribution centered around 2

Part C

15/16; that 15 out of 16 trials, on average, should result in 3 or less heads

Question 5

Part A

Probabilities are between 0 and 1 for each and $\sum p = 1$

Part B

Sloping downwards distribution, with X=0 being the most common

Part C

The chance that the first digit will be 6, 7, 8, or 9. $P(X \geq 6) = 0.222$

Part D

The chance that the first digit will be 1, 2, 3, 4, or 5.

$P(X \leq 5) = 0.778$

Question 7

Part A

7, 8, 9

P(A) = 0.155

Part B

1, 3, 5, 7, 9

P(B) = 0.609

Part C

1, 3, 5, 7, 8, 9

P(A ∪ B) = 0.660

This is not equal as the events are not independent

Question 9

Part A

X = 0$; P = 0.75

X = 3$; P = 0.25

Part B

X[expected] = 0$•0.75 + 3$•0.25 = 0.75$

This means that the player can expect a 75¢ return on a 1$ bet

Question 14

Part A

Age 23, profit = -99,250$

Age 24, profit = -99,000$

Age 25, profit = -98,750$

Age 26 or more, profit = 1,250$

Part B

$\sum P = 1 = 0.00183 + 0.00186 + 0.00189 + 0.00191 + 0.00193 + P(\geq 26)$

$P(\geq 26) = 0.99058$

Part C

$\mu[y] = 0.00183 \bullet -99{,}750\$ + 0.00186 \bullet -99{,}500\$ + 0.00189 \bullet -99{,}250\$ + 0.00191 \bullet -99{,}000\$ + 0.00193 \bullet -98{,}750\$ + 0.99058 \bullet 1{,}250\$ = 303.35\$$

This shows that, statistically, the company will make 303.35$ per plan purchased.

Question 18

Part A

Because, in the long run and with a very large number of plans sold, the company will make 303.35$ per plan.

Part B

stddev = 0 (???)

Question 19

Part A

Y has a smaller stddev, X has a larger one. The means are in different locations.

Part B

X=6, Y=4

This makes sense, as rented apartments are for small parties (typically not a whole family) and are temporary, so rooms such as offices, etc., are not needed

Question 23

0.0808 from the z-score table. This shows that 8.08% of students will have a score of 9 or higher.

Question 25

Part A

0.9652

Part B

z = 8.42; unable to calculate from z-table but less than 0.00000029

Question 27: **B**

Question 28: **C**

Question 29: **C**

Question 30: **A**