

SOLUCIÓN
PRIMER EXAMEN PARCIAL

12/10/2016

①

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

②

| | | | | | | | | | | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 12 | 15 | 16 | 18 | 20 | 24 | 25 | 30 |
| $\frac{1}{36}$ | $\frac{2}{36}$ | $\frac{2}{36}$ | $\frac{3}{36}$ | $\frac{2}{36}$ | $\frac{4}{36}$ | $\frac{2}{36}$ | $\frac{1}{36}$ | $\frac{2}{36}$ | $\frac{4}{36}$ | $\frac{2}{36}$ | $\frac{1}{36}$ | $\frac{2}{36}$ | $\frac{2}{36}$ | $\frac{2}{36}$ | $\frac{1}{36}$ | $\frac{2}{36}$ |

| x | f(x) |
|----|--------|
| 1 | 0.0278 |
| 2 | 0.0556 |
| 3 | 0.0556 |
| 4 | 0.0833 |
| 5 | 0.0556 |
| 6 | 0.1111 |
| 8 | 0.0556 |
| 9 | 0.0278 |
| 10 | 0.0556 |
| 12 | 0.1111 |
| 15 | 0.0556 |
| 16 | 0.0278 |
| 18 | 0.0556 |
| 20 | 0.0556 |
| 24 | 0.0556 |
| 25 | 0.0278 |
| 30 | 0.0556 |
| 36 | 0.0278 |
| | 1.0000 |

$$E(x) = \sum_{i=1}^{18} x_i f_i = 12.2576$$

$$V(x) = \sum_{i=1}^{18} (x_i - E(x))^2 f_i = 60.0185$$

$$\sigma = \sqrt{V(x)} = 8.9453$$

n=18

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a)

| | B | A | V | T |
|----|--------|--------|--------|--------|
| I | 0,0769 | 0,2308 | 0,1538 | 0,4615 |
| E | 0,1538 | 0,3077 | 0,0769 | 0,5385 |
| TT | 0,2308 | 0,5385 | 0,2308 | 1 |

b)

$$P(E/B) = \frac{0,1538}{0,2308} = 0,6666$$

$$P(B/E) = \frac{0,1538}{0,5385} = 0,2856$$

$$P(I/B) = \frac{0,0769}{0,2308} = 0,3333$$

$$P(B/I) = \frac{0,0769}{0,4615} = 0,1666$$

$$P(E/A) = \frac{0,3077}{0,5385} = 0,5714$$

$$P(A/E) = \frac{0,3077}{0,5385} = 0,5714$$

$$P(I/A) = \frac{0,2308}{0,5385} = 0,4286$$

$$P(A/I) = \frac{0,2308}{0,4615} = 0,5000$$

$$P(E/V) = \frac{0,0769}{0,2308} = 0,3333$$

$$P(V/E) = \frac{0,0769}{0,5385} = 0,1428$$

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15 esferas 10 Blancas 5 Rojas

$$p = \frac{10}{15} = 0,66 \quad q = 0,33$$

$$n = 20$$

$$k = 12$$

$$P(X \geq 12) = 1 - \frac{P(X=11)}{A}$$

$$= 1 - 0,2376 = 0,7624$$

$$E(X) = 25(0,666) = 16,65$$

$$V(X) = 25(0,666)(0,333) = 5,54$$

$$\sigma = \sqrt{V(X)} = 2,354$$