probability

Monday, November 28, 2022 12:14 PM

1) 15 possible outcomes

$P(\text{someone answers a question}) = \frac{8}{15}$

$1 - 8/15 = 0.46$

2)

$\binom{8}{5} p^5 (1-p)^3 = 0.000006435$

$p = \frac{4200}{10^5}$

$\frac{5}{\text{5 odd numbers}} \times \frac{4}{\text{4 odd numbers}} \times \frac{7}{\text{numbers that aren't in other spaces}} \times \frac{6}{} \times \frac{5}{\text{5 even numbers}}$

3) $P(\geq 2 \text{ dice showing} \geq 4) = \binom{3}{2} \times \left(\frac{3}{6}\right)^2 \times \left(\frac{3}{6}\right) + \binom{3}{3} \times \left(\frac{3}{6}\right)^3 \times \frac{3}{6} = 1/2$

ways to roll 2 die ≥ 4

probability that each die ≥ 4

$P(\text{all 3 show same value}) = \frac{6}{6^3} = 1/36$

$P(\text{all 3 dice are the same AND greater than 4}) = P(\text{all 3 are 4}) + P(\text{all 3 are 5}) + P(\text{all 3 are 6})$

$1/6^3 + 1/6^3 + 1/6^3 = 1/12$

$\frac{1}{72} = \frac{1}{36} \times \frac{1}{2}$ They are independent

4)