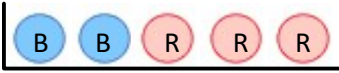
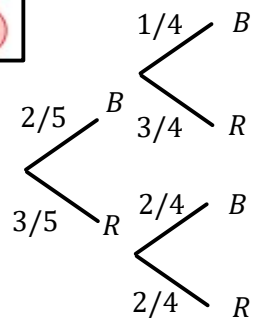


P12 - 2.6 - 2 Black/3 Red Marbles Notes

Choose 2, one at a time
Order matters

w/out rep *let B = Blue (2)*
let R = Red (3)

$$p(1B, 1R) = p(B, R) + p(R, B)$$

$$= \frac{2}{5} \times \frac{3}{4} + \frac{3}{5} \times \frac{2}{4} = \frac{12}{20} = \frac{3}{5}$$

BR
RB $2! = 2$

$${}_2C_1 \times {}_3C_1 \times 2! = 2 \times 3 \times 2! = 12 \quad {}_5P_2 = 20 \quad (12 + 8 = 20)$$

$$p(\text{both same}) = p(B, B) + p(R, R)$$

$$= \frac{2}{5} \times \frac{1}{4} + \frac{3}{5} \times \frac{2}{4} = \frac{8}{20} = \frac{2}{5}$$

BB
RR

Choose 2 at a time/one at a time
Order doesn't matter

w/out rep

$$p(1B, 1R) = \frac{6}{10} = \frac{3}{5}$$

BR=RB **Order matters=Order doesn't matter**

$${}_2C_1 \times {}_3C_1 = 2 \times 3 = 6 \quad {}_5C_2 = 10 \quad (4 + 6 = 10)$$

$$p(\text{both same}) = p(B, B) + p(R, R) = \frac{4}{10} = \frac{2}{5}$$

BB
RR

$${}_2C_2 + {}_3C_2 = 1 + 3 = 4$$

Choose 2, one at a time
Order matters

w/rep

$$p(R, B) = \frac{3}{5} \times \frac{2}{5} = \frac{6}{25}$$

RB

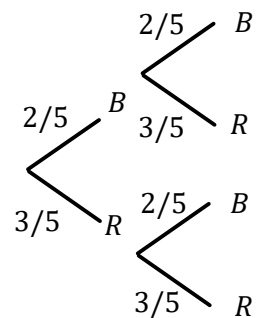
$$p(B, R) = \frac{2}{5} \times \frac{3}{5} = \frac{6}{25}$$

BR

$$p(\text{both same}) = p(B, B) + p(R, R)$$

$$= \frac{2}{5} \times \frac{2}{5} + \frac{3}{5} \times \frac{3}{5} = \frac{13}{25}$$

BB
RR $(6 + 6 + 13 = 25)$



Choose 2, one at a time
Order doesn't matter

w/rep

$$p(2B) = \frac{2}{5} \times \frac{2}{5} = \frac{4}{25}$$

BB

$$p(1B, 1R) = p(B, R) + p(R, B)$$

RB=BR

$$p(2R) = \frac{3}{5} \times \frac{3}{5} = \frac{9}{25}$$

RR

$$= \frac{2}{5} \times \frac{3}{5} + \frac{3}{5} \times \frac{2}{5} = \frac{12}{25}$$

$(4 + 9 + 12 = 25)$