P12 - 2.5 - Odds Marbles Probability Notes

You have 3 blue marbles and 2 red marbles in a bucket, a total of 5 marbles.

let b = Bluelet r = Red











Favourable Outcomes: Unfavourable Outcomes

part : part

Choose a Marble. What are the odds?

Odds in favour of Blue:

Odds in favour of Red:

$$p(b) = \left(\frac{3}{5}\right)$$

$$Probability = \frac{Part}{Total}$$

$$3:2 \leftarrow 5-3=2$$

$$3Red: \underline{2Blue}$$

$$2: 3 \leftarrow 5 - 2 = 3$$

$$p(r) = 1 - \frac{3}{5} = \frac{2}{5}$$

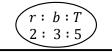
Unfavourable Outcomes=Total Outcomes-Favourable Outcomes

Blue to total?

Red to total? 2 Red : 5 Total Red to Blue to total? r:b:T

3 Blue : 5 Total
$$(3.5)$$

2:5 Part to Total



A box has 9 Blue marbles in the same ratio as above. How many Red marbles and Total marbles are in the box?

 \times 3 $\stackrel{3 \ Blue: 2 \ Red}{9 \ Blue: ? \ Red}$ $\stackrel{}{\triangleright}$ \times 3 $\stackrel{}{9}$ \div 3 = $\stackrel{}{\bigcirc}$ Bigger divided by smaller

 $2 \times 3 = 6$

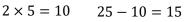
9 Blue + 6 Red = 15 Marbles

6 Red Marbles

There are 15 marbles in the larger box.

A box has 25 marbles in the same ratio as above. How many Red marbles are in the box?

 $\times 5$ \bigcirc 2 Red: 5 Total \bigcirc $\times 5$? Red: 25 Total \bigcirc $\times 5$



10 Red Marbles 15 Blue Marbles

Pick a Card.

What are the odds of choosing an Ace?

4 Aces: 48 Other Cards 52 - 4 = 48

let
$$a = ace$$
 $p(a) = \frac{4}{52} = \frac{1}{13}$

What are the odds of choosing a Heart?

13 Hearts: 39 Other Cards 52 - 13 = 39

let
$$h = heart$$
 $p(h) = \frac{13}{52} = \frac{1}{13}$

Roll a Dice

What are the odds of rolling a 6?



$$p(6) = \left(\frac{1}{6}\right)$$

What are the odds of Not rolling a 6?

$$5:1 p(1-5) = 1 - \frac{1}{6} = \frac{5}{6}$$