7.2 Relative Frequency

Ex Bag of 10 Skittles

S_1 S_2 S_3 . . . . S_{10}

3 Red
5 Green
2 Purple

If I pick a Skittle at random (so that each of the 10 Skittles is equally likely to get picked), what color is most likely to come up?

$5\left(\frac{1}{10}\right) = \frac{1}{2}$ prob of getting green skittle

↑ # Green Skittles

↖ Total # Skittles

Ex Roll fair 6-sided die

Prob. of rolling $\geq 5 = \frac{2}{6}$ ← $|\{5,6\}|$ ← 6 possible rolls

$= \frac{1}{3}$

Weighted die 6-sided die

↳ Equally likely to roll 2, 3, 4, 5, 6

↳ 3x as likely to roll 1 vs. 2..

a) What is Prob of rolling 1?

$3x + x + x + x + x + x = 1$

↑ Pr 1 | Pr 2 | Pr[3]

$8x = 1$

$x = \frac{1}{8}$ (Prob rolling 2)

Prob rolling 1 is: $\frac{3}{8}$

Prob rolling 2 or 3: $\frac{1}{8} + \frac{1}{8} = \frac{1}{4}$