

## 61A Extra Lecture 2

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# Announcements

[cs61a.org/extra.html](http://cs61a.org/extra.html)

Dice

## Exact Chances for Rolling Dice

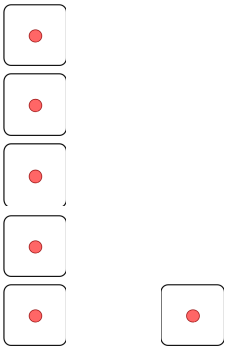
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```
roll_dice(2, six_sided)
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## Exact Chances for Rolling Dice

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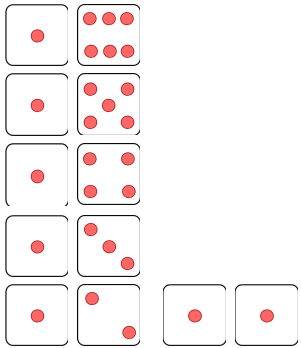
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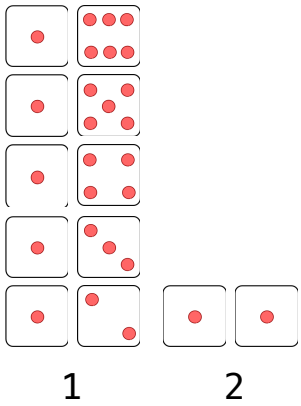
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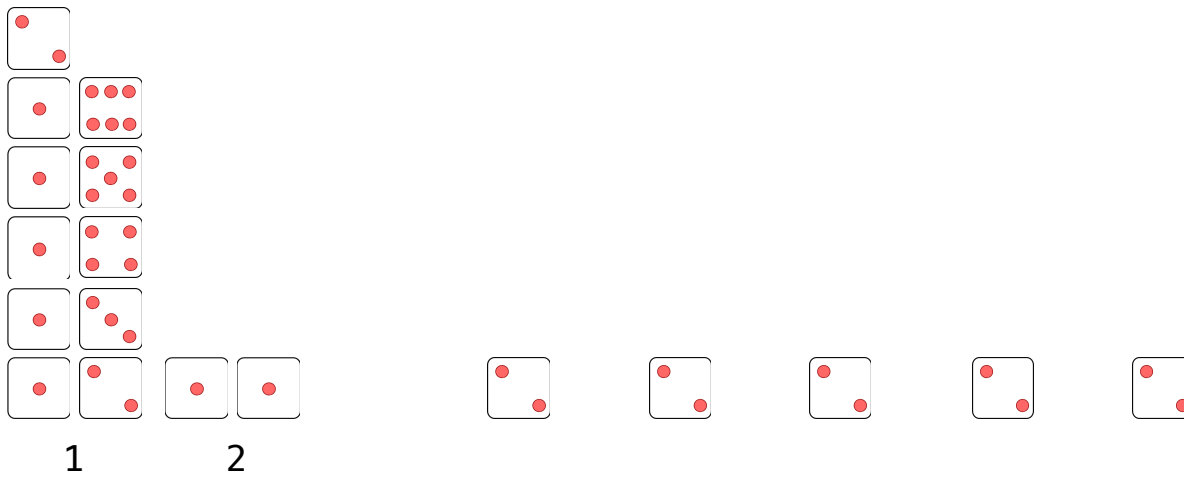
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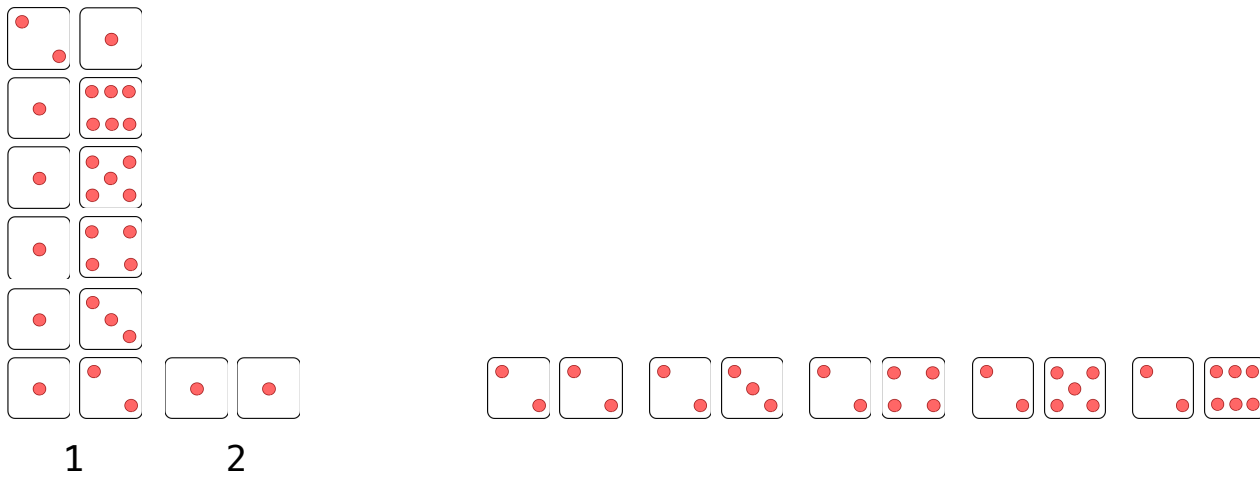




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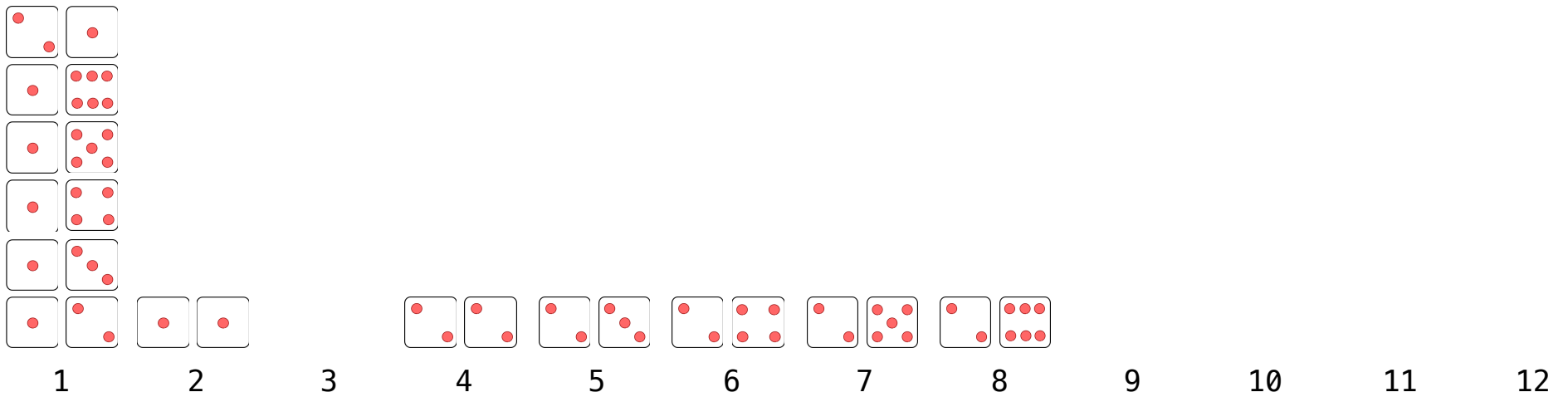
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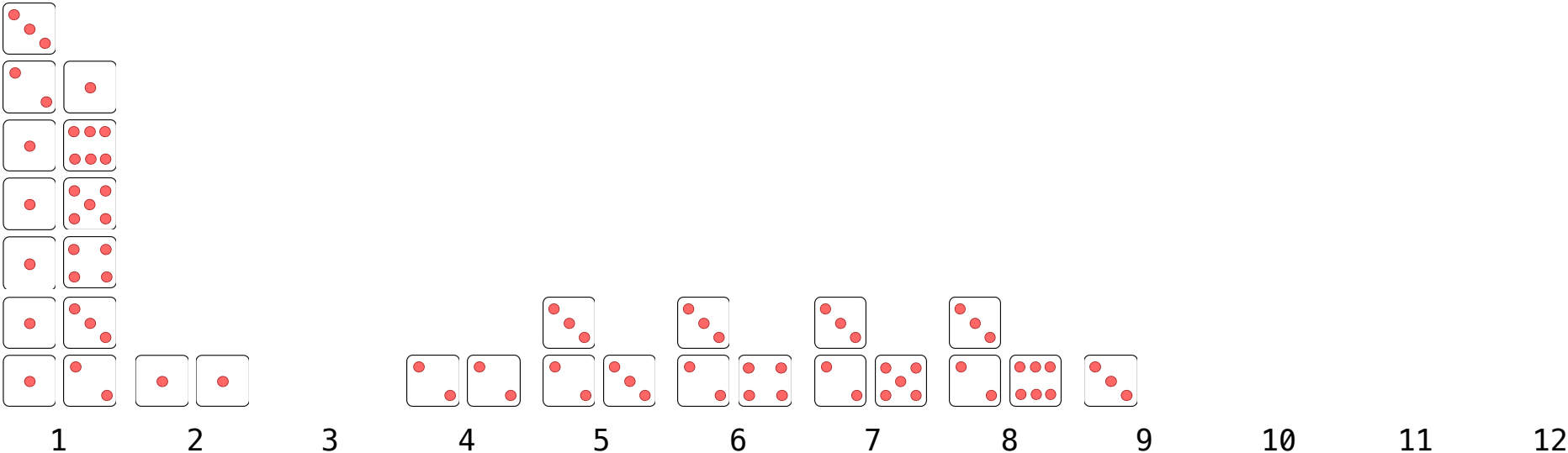
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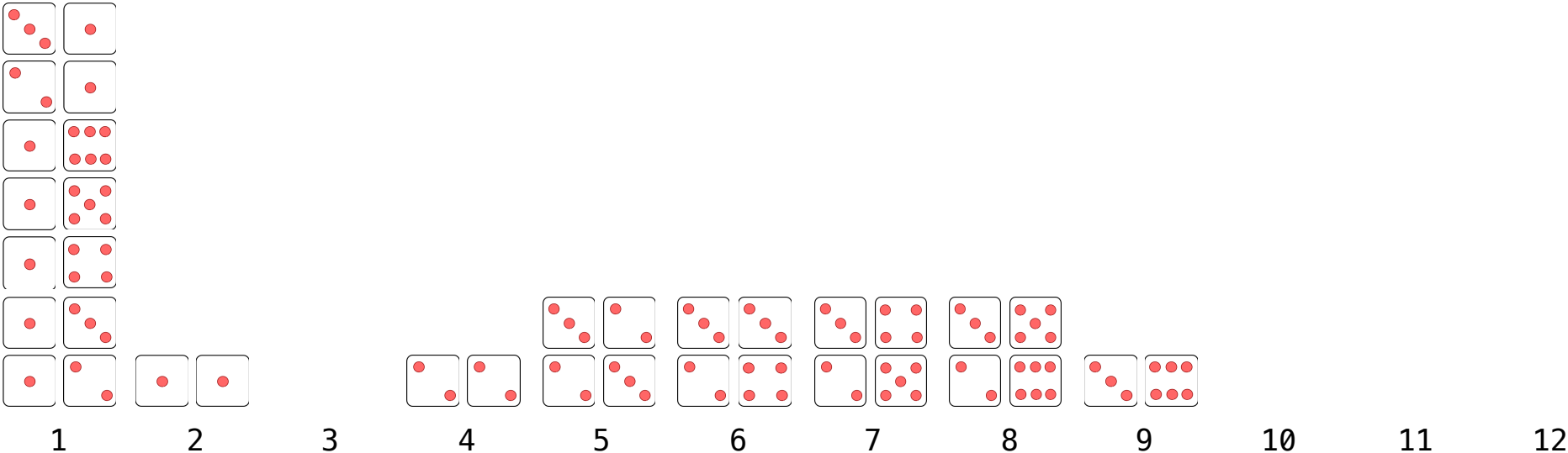
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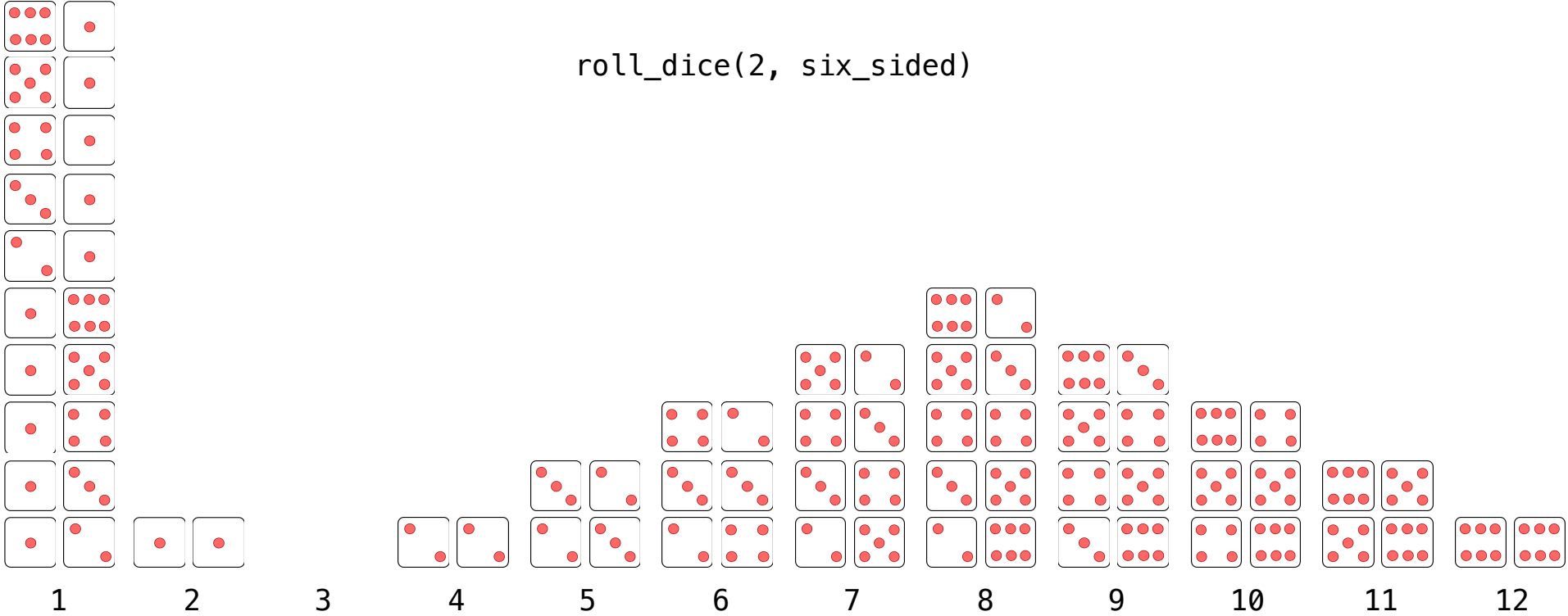
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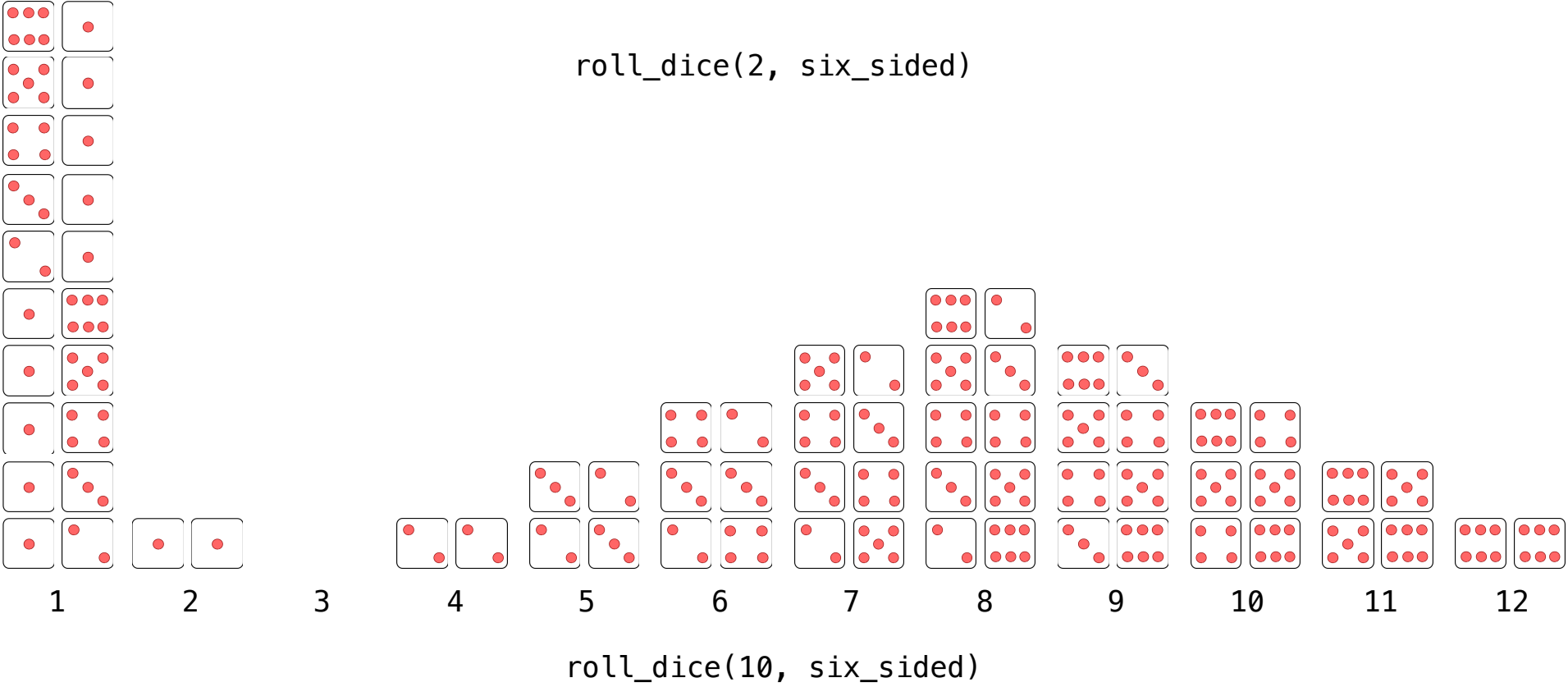
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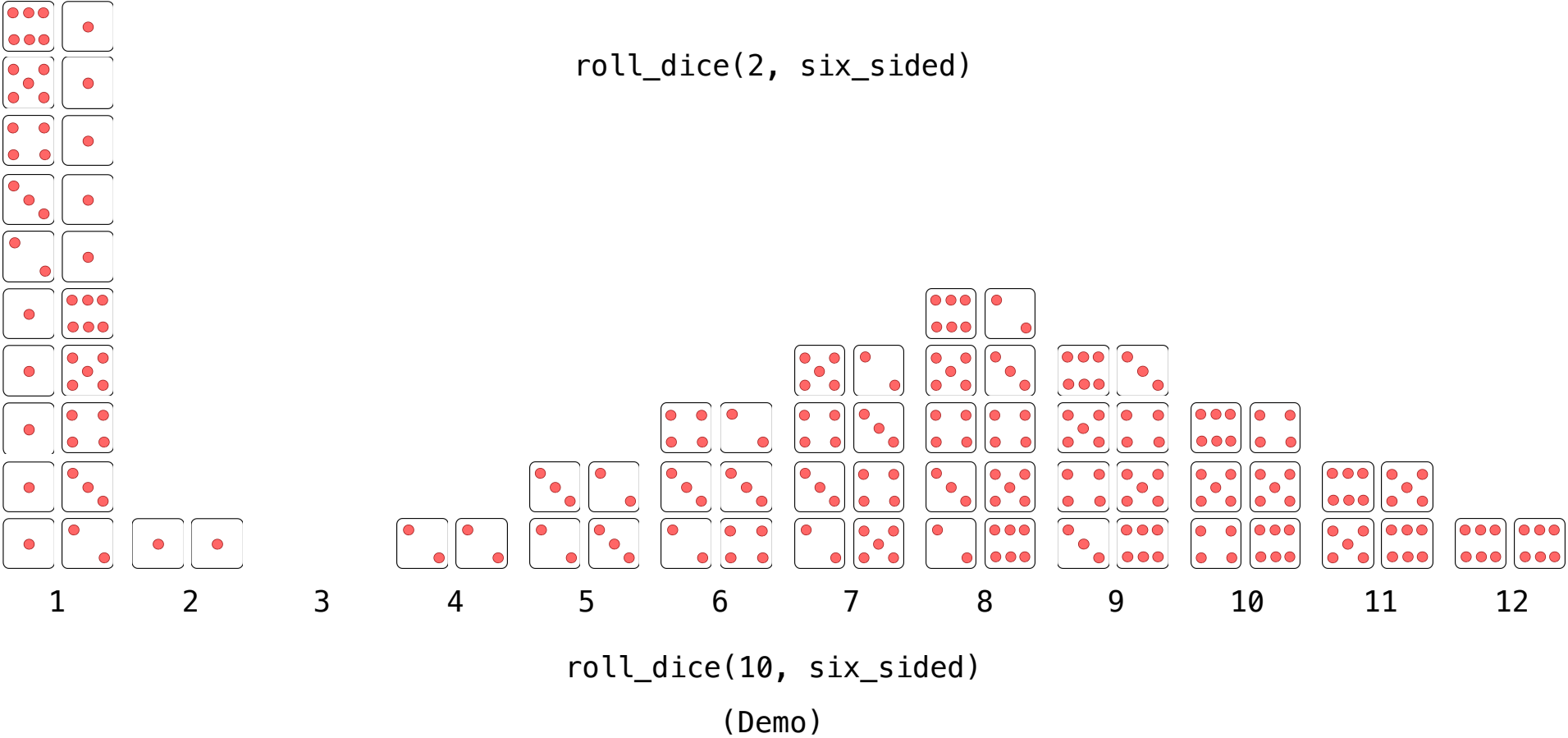
# Exact Chances for Rolling Dice



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## Hog: The End Game

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**You:** 99  
**Them:** 99

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**You:** 99  
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**You:** 99  
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**You:** 88  
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**You:** 80  
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(Demo)

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(Demo)

$S_n$  : Score from rolling  $n$  dice

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$$P(S_n \geq k) = \sum_{t=2}^6 P(t) \cdot P(S_{n-1} \geq k - t)$$



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(assuming no Pig Out!)

# Memoization

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(Demo)

Fill out [bit.ly/61ahere](https://bit.ly/61ahere)

## Twenty-One (Nim)

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(Demo)

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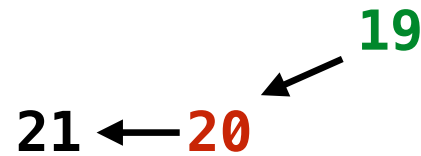
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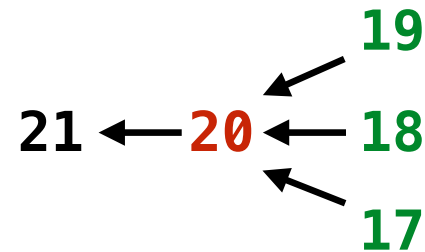
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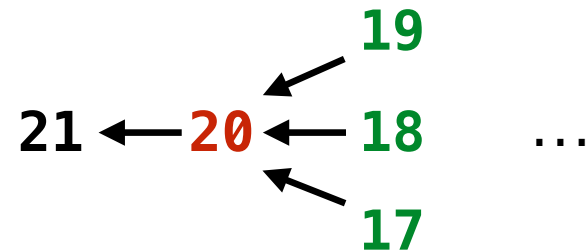
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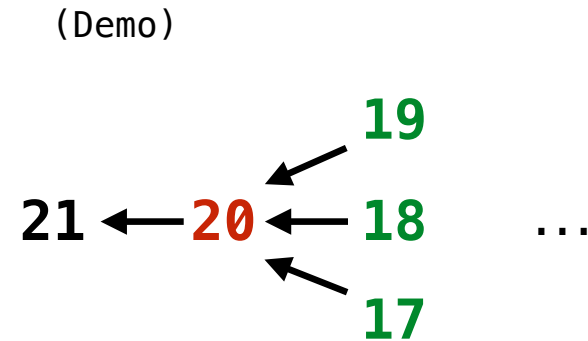
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## Hog Optimal Strategies

## Contest Challenges

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Larger state space than Nim &  
random transition function

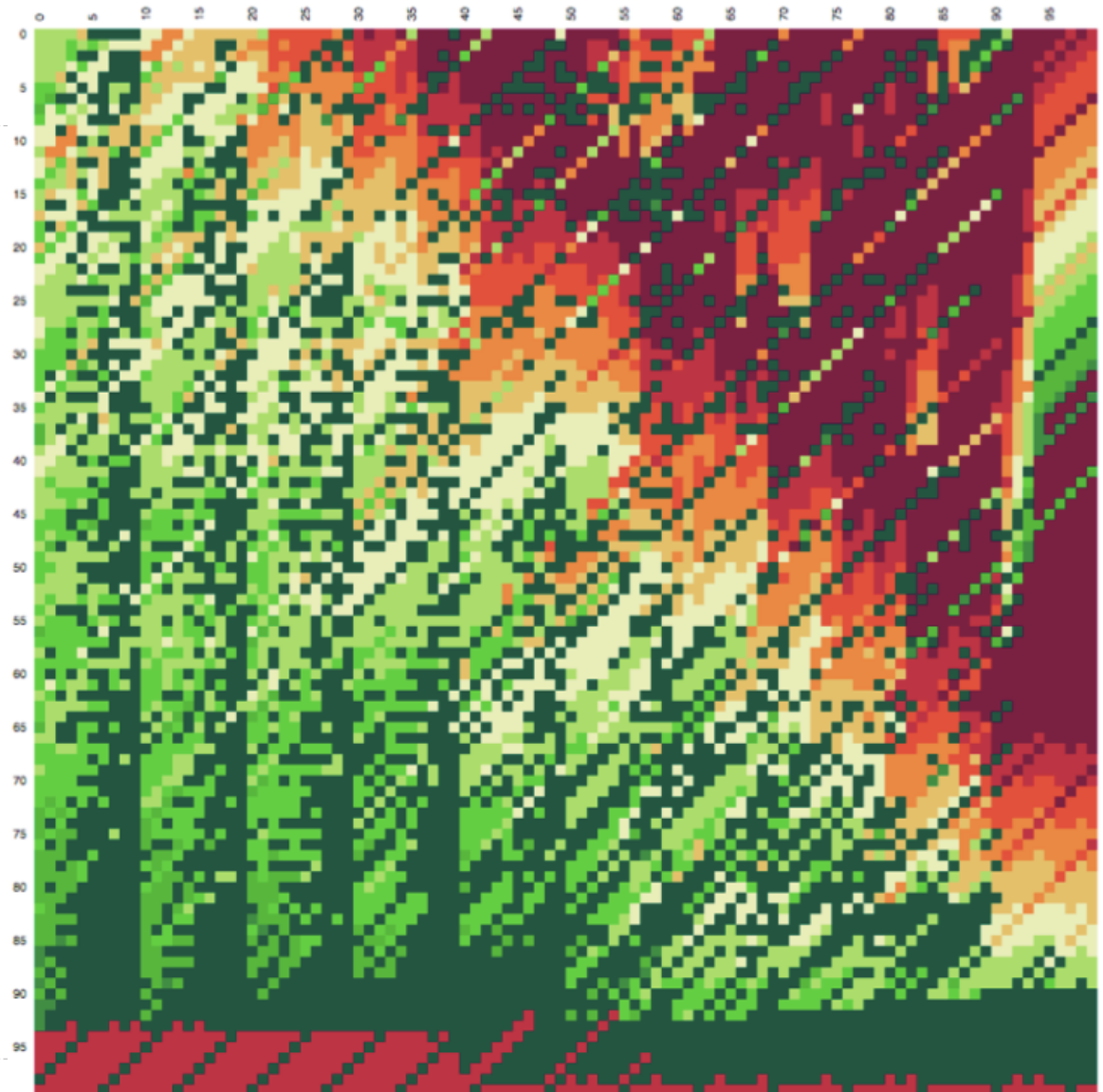


## Contest Challenges

Larger state space than Nim &  
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Spring 2015 Optimal Strategy

- Rules: <http://inst.eecs.berkeley.edu/~cs61a/sp15/proj/hog/>
- Designed for what opponent?



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Larger state space than Nim &  
random transition function

Spring 2015 Optimal Strategy

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- Designed for what opponent?

Partial information: your  
strategy is not a function  
of the dice being used

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