

```
In[*]:= Reps = 1 000 000;
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In[*]:= For[i = 1;  
  over10 = 0, i ≤ Reps, i++, X = Random[GeometricDistribution[1 / 2]];  
  time = 0;  
  Xmax = X;  
  While[time ≤ 10, timeup = Random[ExponentialDistribution[1]];  
    timedown = Random[ExponentialDistribution[2]];  
    If[X ≥ 1, If[timeup < timedown, X = X + 1;  
      time = time + timeup;  
      If[time ≤ 10 && Xmax < X, Xmax = X], X = X - 1;  
      time = time + timedown], time = time + timeup;  
    X = 1];  
  If[Xmax ≥ 10, over10 = over10 + 1];  
N[over10 / Reps]
```

```
Out[*]=  
0.006171
```

```
In[*]:= 2 * Sqrt[0.006171 * (1 - 0.006171) / 1 000 000]
```

```
Out[*]=  
0.000156626
```