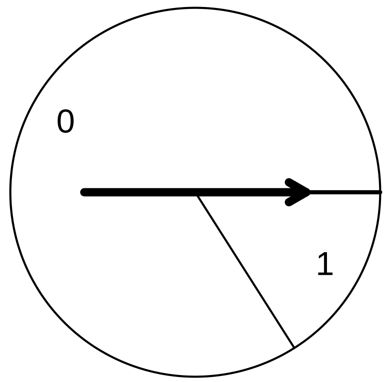
1. **Problem:**
Determine the probabilities when adding up 5 Bernoulli trials if each trial has chance 0.84. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

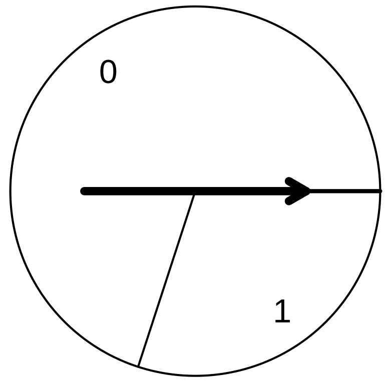
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 6 probabilities, letting x vary from 0 to 5. For each probability, $n = 5$ and $p = 0.84$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_5C_0)(0.84)^0(1-0.84)^{5-0}$	0.000105
1	$({}_5C_1)(0.84)^1(1-0.84)^{5-1}$	0.00275
2	$({}_5C_2)(0.84)^2(1-0.84)^{5-2}$	0.0289
3	$({}_5C_3)(0.84)^3(1-0.84)^{5-3}$	0.152
4	$({}_5C_4)(0.84)^4(1-0.84)^{5-4}$	0.398
5	$({}_5C_5)(0.84)^5(1-0.84)^{5-5}$	0.418

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.000105	-4.2	17.6	0.00185
1	0.00275	-3.2	10.2	0.0281
2	0.0289	-2.2	4.84	0.14
3	0.152	-1.2	1.44	0.219
4	0.398	-0.199	0.0396	0.0158
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 4.199$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.673$
		$\mu = 4.199$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.82$

2. **Problem:**
   Determine the probabilities when adding up 4 Bernoulli trials if each trial has chance 0.7. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

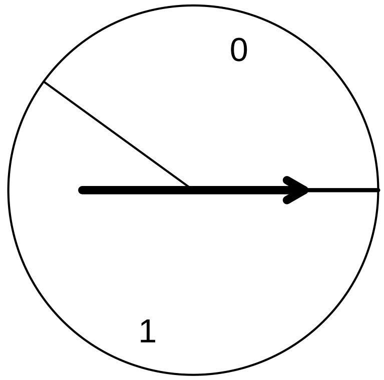
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 5 probabilities, letting x vary from 0 to 4. For each probability, $n = 4$ and $p = 0.7$. A table is useful.

x	${}_nC_xp^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_4C_0)(0.7)^0(1-0.7)^{4-0}$	0.0081
1	$({}_4C_1)(0.7)^1(1-0.7)^{4-1}$	0.0756
2	$({}_4C_2)(0.7)^2(1-0.7)^{4-2}$	0.265
3	$({}_4C_3)(0.7)^3(1-0.7)^{4-3}$	0.412
4	$({}_4C_4)(0.7)^4(1-0.7)^{4-4}$	0.24

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.0081	-2.8	7.85	0.0636
1	0.0756	-1.8	3.25	0.245
2	0.265	-0.802	0.643	0.17
3	0.412	0.198	0.0392	0.0162
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 2.802$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.839$
		$\mu = 2.802$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.92$

3. **Problem:**
   Determine the probabilities when adding up 2 Bernoulli trials if each trial has chance 0.4. Each trial could be thought of as a spin of the spinner below.



   Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

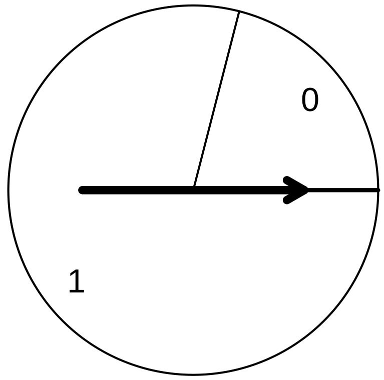
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 3 probabilities, letting x vary from 0 to 2. For each probability, $n = 2$ and $p = 0.4$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_2C_0)(0.4)^0(1-0.4)^{2-0}$	0.36
1	$({}_2C_1)(0.4)^1(1-0.4)^{2-1}$	0.48
2	$({}_2C_2)(0.4)^2(1-0.4)^{2-2}$	0.16

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.36	-0.8	0.64	0.23
1	0.48	0.2	0.04	0.0192
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 0.8$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.479$
		$\mu = 0.8$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.69$

4. **Problem:**
   Determine the probabilities when adding up 4 Bernoulli trials if each trial has chance 0.21. Each trial could be thought of as a spin of the spinner below.



   Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

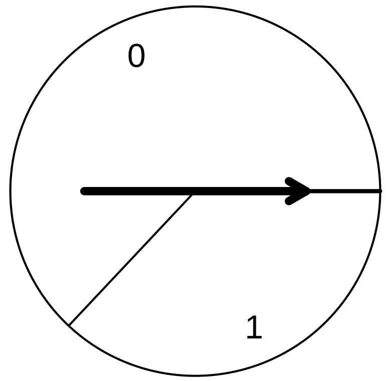
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 5 probabilities, letting x vary from 0 to 4. For each probability, $n = 4$ and $p = 0.21$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_4C_0)(0.21)^0(1-0.21)^{4-0}$	0.39
1	$({}_4C_1)(0.21)^1(1-0.21)^{4-1}$	0.414
2	$({}_4C_2)(0.21)^2(1-0.21)^{4-2}$	0.165
3	$({}_4C_3)(0.21)^3(1-0.21)^{4-3}$	0.0293
4	$({}_4C_4)(0.21)^4(1-0.21)^{4-4}$	0.00194

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.39	-0.84	0.705	0.275
1	0.414	0.16	0.0257	0.0106
2	0.165	1.16	1.35	0.222
3	0.0293	2.16	4.67	0.137
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 0.8397$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.664$
		$\mu = 0.8397$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.81$

5. **Problem:**
Determine the probabilities when adding up 5 Bernoulli trials if each trial has chance 0.63. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

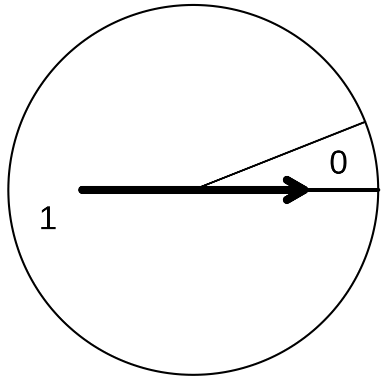
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 6 probabilities, letting x vary from 0 to 5. For each probability, $n = 5$ and $p = 0.63$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_5C_0)(0.63)^0(1-0.63)^{5-0}$	0.00693
1	$({}_5C_1)(0.63)^1(1-0.63)^{5-1}$	0.059
2	$({}_5C_2)(0.63)^2(1-0.63)^{5-2}$	0.201
3	$({}_5C_3)(0.63)^3(1-0.63)^{5-3}$	0.342
4	$({}_5C_4)(0.63)^4(1-0.63)^{5-4}$	0.291
5	$({}_5C_5)(0.63)^5(1-0.63)^{5-5}$	0.0992

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.00693	-3.15	9.9	0.0686
1	0.059	-2.15	4.61	0.272
2	0.201	-1.15	1.32	0.264
3	0.342	-0.147	0.0216	0.00739
4	0.291	0.853	0.728	0.212
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 3.147$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 1.16$
		$\mu = 3.147$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 1.1$

6. **Problem:**
Determine the probabilities when adding up 5 Bernoulli trials if each trial has chance 0.06. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

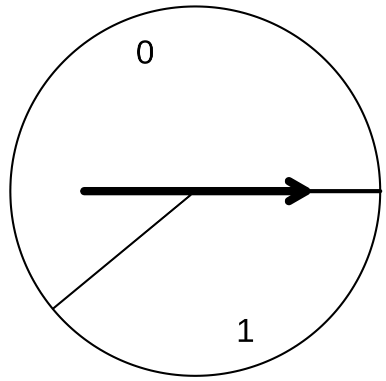
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 6 probabilities, letting x vary from 0 to 5. For each probability, $n = 5$ and $p = 0.06$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_5C_0)(0.06)^0(1-0.06)^{5-0}$	0.734
1	$({}_5C_1)(0.06)^1(1-0.06)^{5-1}$	0.234
2	$({}_5C_2)(0.06)^2(1-0.06)^{5-2}$	0.0299
3	$({}_5C_3)(0.06)^3(1-0.06)^{5-3}$	0.00191
4	$({}_5C_4)(0.06)^4(1-0.06)^{5-4}$	6.09e-05
5	$({}_5C_5)(0.06)^5(1-0.06)^{5-5}$	7.78e-07

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.734	-0.3	0.0899	0.066
1	0.234	0.7	0.49	0.115
2	0.0299	1.7	2.89	0.0864
3	0.00191	2.7	7.29	0.0139
4	6.09e-05	3.7	13.7	0.000834
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 0.2998$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.282$
		$\mu = 0.2998$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.53$

7. **Problem:**
Determine the probabilities when adding up 6 Bernoulli trials if each trial has chance 0.61. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x - \mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

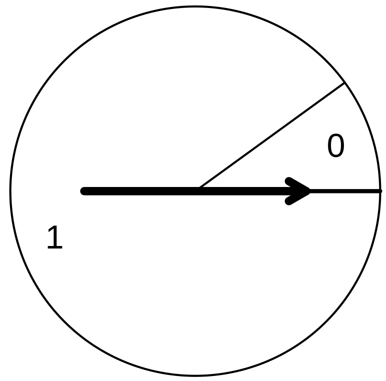
$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 7 probabilities, letting x vary from 0 to 6. For each probability, $n = 6$ and $p = 0.61$. A table is useful.

x	${}_nC_xp^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_6C_0)(0.61)^0(1-0.61)^{6-0}$	0.00352
1	$({}_6C_1)(0.61)^1(1-0.61)^{6-1}$	0.033
2	$({}_6C_2)(0.61)^2(1-0.61)^{6-2}$	0.129
3	$({}_6C_3)(0.61)^3(1-0.61)^{6-3}$	0.269
4	$({}_6C_4)(0.61)^4(1-0.61)^{6-4}$	0.316
5	$({}_6C_5)(0.61)^5(1-0.61)^{6-5}$	0.198
6	$({}_6C_6)(0.61)^6(1-0.61)^{6-6}$	0.0515

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.00352	-3.66	13.4	0.0472
1	0.033	-2.66	7.08	0.234
2	0.129	-1.66	2.76	0.356
3	0.269	-0.661	0.437	0.118
4	0.316	0.339	0.115	0.0363
5	0.198	1.34	1.79	0.355
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 3.661$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 1.43$
		$\mu = 3.661$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 1.2$

8. **Problem:**
Determine the probabilities when adding up 3 Bernoulli trials if each trial has chance 0.1. Each trial could be thought of as a spin of the spinner below.



Then, use $\mu = \sum x \cdot \Pr(x)$ to find the mean and $\sigma = \sqrt{\sum (x-\mu)^2 \cdot \Pr(x)}$ to determine the standard deviation.

Solution: We can use the Binomial formula.

$$\Pr(x) = {}_nC_x(p)^x(1-p)^{n-x}$$

We want 4 probabilities, letting x vary from 0 to 3. For each probability, $n = 3$ and $p = 0.1$. A table is useful.

x	${}_nC_x p^x(1-p)^{n-x}$	$\Pr(x)$
0	$({}_3C_0)(0.1)^0(1-0.1)^{3-0}$	0.729
1	$({}_3C_1)(0.1)^1(1-0.1)^{3-1}$	0.243
2	$({}_3C_2)(0.1)^2(1-0.1)^{3-2}$	0.027
3	$({}_3C_3)(0.1)^3(1-0.1)^{3-3}$	0.001

x	$Pr(x)$	$x \cdot Pr(x)$	$(x-\mu)^2$	$(x-\mu)^2 \cdot Pr(x)$
0	0.729	-0.3	0.09	0.0656
1	0.243	0.7	0.49	0.119
2	0.027	1.7	2.89	0.078
=========	=========	=========	=========	=========
		$\sum x \cdot Pr(x) = 0.3$		$\sum(x_i-\mu)^2 \cdot Pr(x) = 0.27$
		$\mu = 0.3$		$\sigma = \sqrt{\sum(x_i-\mu)^2 \cdot Pr(x)} = 0.52$