Section 5.2 Frequency and Probability Distributions

Math 141

Main ideas

Distribution: possible outcomes.

Frequency distribution: *how many times* each outcome **did** occur.

Relative frequency distribution: what *fraction* of the time each outcome **did** occur.

Probability distribution ("expected relative frequency distribution"): what *fraction* of the time each outcome **should** occur.

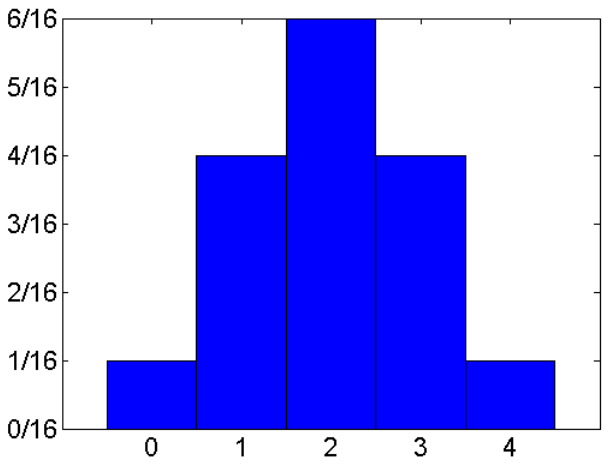
In histograms, area = probability.

Random variables.

Problems

1. Probability distribution.
   Flip 4 coins. Total number of possible outcomes =

Outcome (number of heads)	Number of ways it can occur	Probability
0		=
1		=
2		=
3		=
4		=
Total		



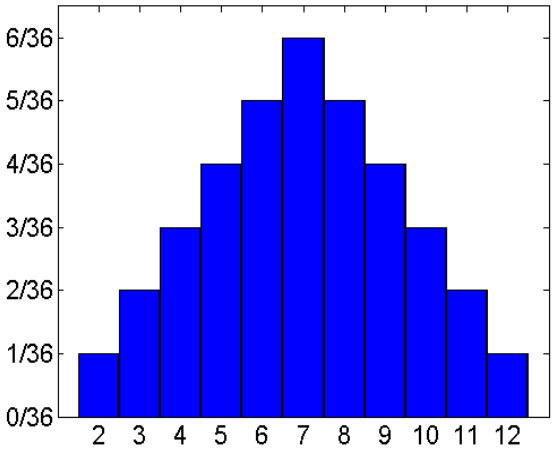
2. Frequency distribution, relative frequency distribution, probability distribution.
   Flip 4 coins. Record the number of heads for each flip.

Outcome (number of heads)	Frequency	Relative frequency	Expected relative frequency (probability)
0		=	.0625
1		=	.2500
2		=	.3750
3		=	.2500
4		=	.0625
Total			1.0000

3. Frequency distribution, relatively frequency distribution, probability distribution.
Roll two dice. Record the sum of each roll.

From a previous semester of this class.

Sum	# of outcomes	Fraction of all outcomes	Expected fraction
2	15	15/926 = .0162	= .0278
3	73	73/926 = .0788	= .0556
4	69	69/926 = .0745	= .0833
5	94	94/926 = .1015	= .1111
6	130	130/926 = .1404	= .1389
7	150	150/926 = .1620	= .1667
8	125	125/926 = .1350	= .1389
9	110	110/926 = .1188	= .1111
10	80	80/926 = .0864	= .0833
11	55	55/926 = .0594	= .0556
12	25	25/926 = .0270	= .0278
Total	926	1.0000	1.0000



4. Random variable X is the thing we are interested in for an experiment.

Experiment: flip four coins.
Let X = the number of heads.

k	Pr(X = k)
0	
1	
2	
3	
4	

Experiment: roll two dice.
Let X = the sum of dice.

k	Pr(X = k)
⋮	⋮

5. Suppose there is some experiment with the following outcomes of -1, 0, 1 or 2.

k	Pr(X = k)
-1	.2
0	.3
1	.4
2	.1

k	$Pr(X^2 = k)$

k	$Pr(X^2 + 2 = k)$