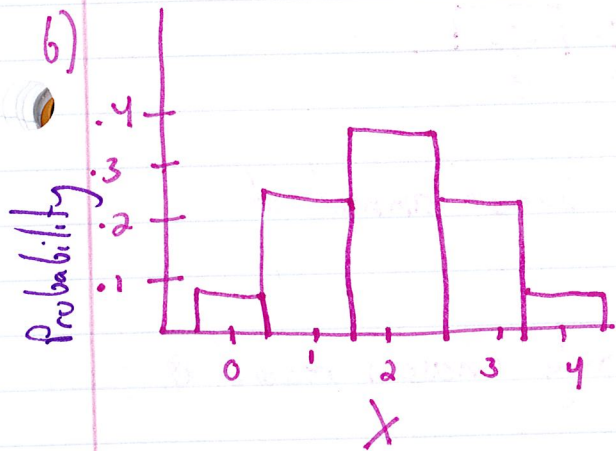


HW 6.1 Part A pg 353-354 problems 1, 5, 7, 9, 13

- ①
- |        |        |         |      |
|--------|--------|---------|------|
| HHHH   | THHH ✓ | H THT ✓ | TTHT |
| HHHT ✓ | HTT ✓  | T HHT ✓ | HTTT |
| HTHT ✓ | TTHH ✓ | H TTA ✓ | HTTT |
| HTHH ✓ | THTH ✓ | TTTH    | TTTT |

a) Let  $X = \#$  of heads you get

# of Heads	0	1	<u>2</u>	<u>3</u>	4
Probability	$1/16 = .0625$	$4/16 = .25$	$6/16 = .375$	$4/16 = .25$	$1/16 = .0625$



The distribution is symmetric with the center at 2.

c)

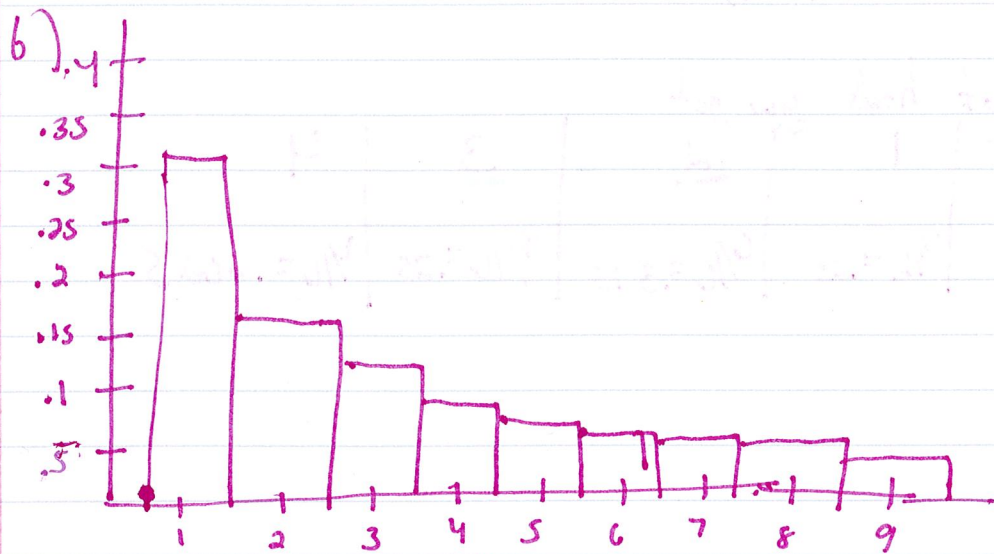
$$P(X \leq 3) = P(3) + P(2) + P(1) + P(0) \quad \bullet \quad \text{or} \quad P(X \leq 3) = 1 - P(4)$$

$$= .25 + .375 + .25 + .0625 = 1 - .0625$$

$$= .9375$$

There is a 93.75% chance that you will get 3 or fewer heads on 4 tosses of a fair coin.

- d) All probabilities are between 0 and 1 and they sum to 1  
①  $0 \leq P_i \leq 1$  ✓ and ②  $\sum P_i = 1$   
 $\therefore$  legit probability distributions



Skewed right, <sup>X</sup> "1" has the largest amount of probability

- c) The 1st digit in a randomly chosen record is 6 or higher.

d)  $P(X \leq 5) = .079 + .047 + .125 + .176 + .301 = .728$

HW 6.1 Part A pg 353-354 prob 1, 5, 7, 9, 13

- ⑦  
A = 1st digit is 7 or greater  
B = 1st digit is odd

a) Outcomes {7, 8, 9} make up event A  
 $P(A) = .058 + .051 + .046 = .155$

b) Outcomes {1, 3, 5, 7, 9} make up event B  
 $P(B) = .301 + .125 + .079 + .058 + .046 = .609$

c) A or B Outcomes {1, 3, 5, 7, 8, 9}  
 $P(A \text{ or } B) = .301 + .125 + .079 + .058 + .056 + .046 = .666$

$P(A \text{ or } B) \neq P(A) + P(B)$  b/c they are not mutually exclusive events

⑨ Let  $X$  = the amount you gain on a single play of the game

$X$ = Amount gain single play	\$0	\$3
Prob:	.75	.25

b)  $E(X) = \mu_X = \$0(.75) + \$3(.25) = \$.75$

In the long run, for every \$1 the player bets, he only gets \$.75 back.

⑪  $E(X) = \mu_X = 0(.1) + 1(.2) + 2(.3) + 3(.3) + 4(.1) = 2.1$   
On average, undergraduates make