

Frequency Distributions 20

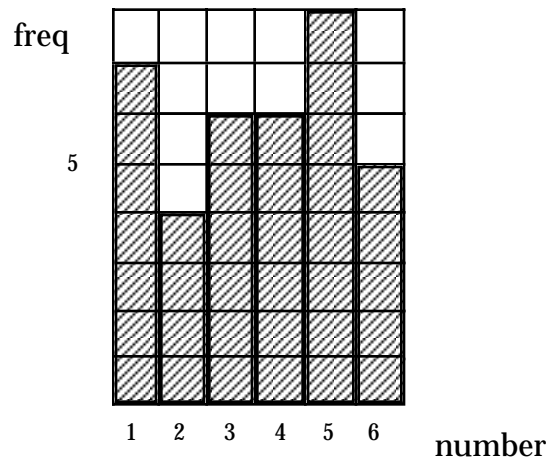
The mean and standard deviation are useful ways to represent data that has a tendency to cluster about some central value.

Another useful way to represent data is with a frequency distribution. This shows the data visually.

Example 1: Suppose that we roll a die 36 times. We get the following results. The frequency is the number of times that the outcome occurs.

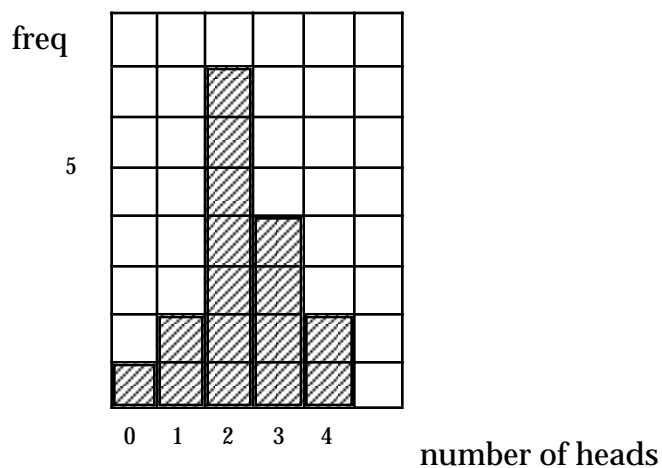
number	1	2	3	4	5	6
frequency	7	4	6	6	8	5

This information is shown graphically below.



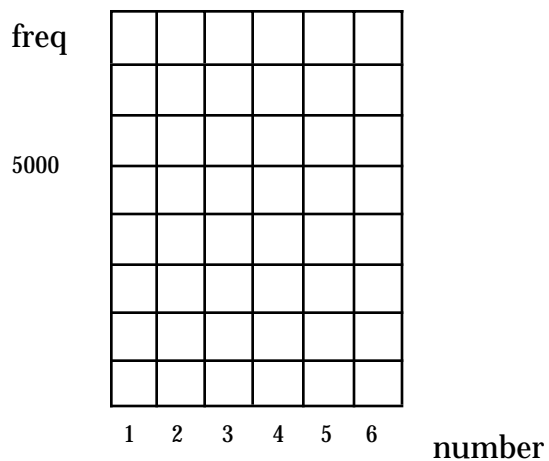
Example 2: Suppose that we toss four coins, a total of 16 times. The number of heads is recorded each time. There can be; 0, 1, 2, 3, or 4 heads. The frequencies for the number of heads in an experiment are given below.

number of heads	0	1	2	3	4
frequency	1	2	7	4	2



Problems:

1) In example 1, suppose that we roll the die 36,000 times. Sketch the frequency distribution which you would expect.



2) A teacher gives a quiz. It is out of ten marks. The results are shown below.

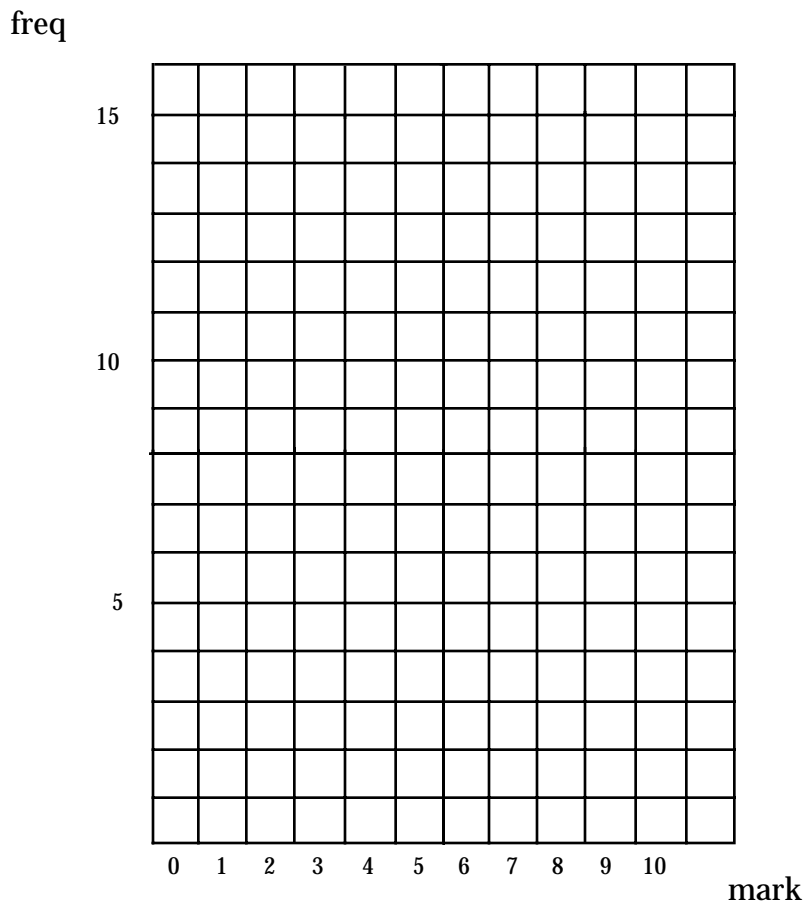
mark	0	1	2	3	4	5	6	7	8	9	10
freq	0	0	1	2	5	8	15	12	6	4	1

a) The number of students is _____ .

b) The mean (to one decimal) is _____ .

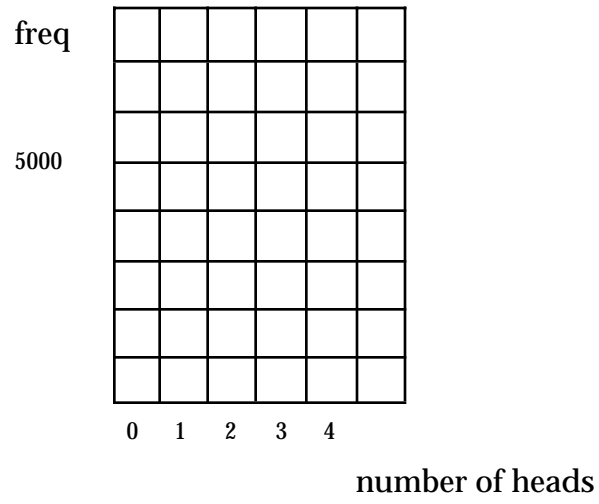
c) The standard deviation (to one decimal) is _____ .

d) Sketch the frequency distribution below.



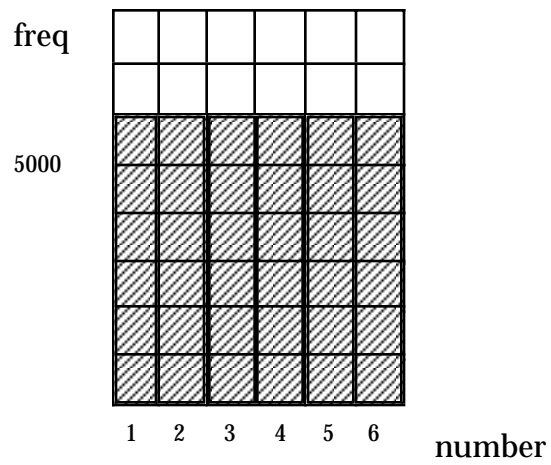
3)a) Find the probabilities of tossing; 0, 1, 2, 3, or 4 heads if four coins are tossed.

b) If four coins are tossed 16,000 times, sketch the frequency distribution which you would expect for the number of heads tossed.



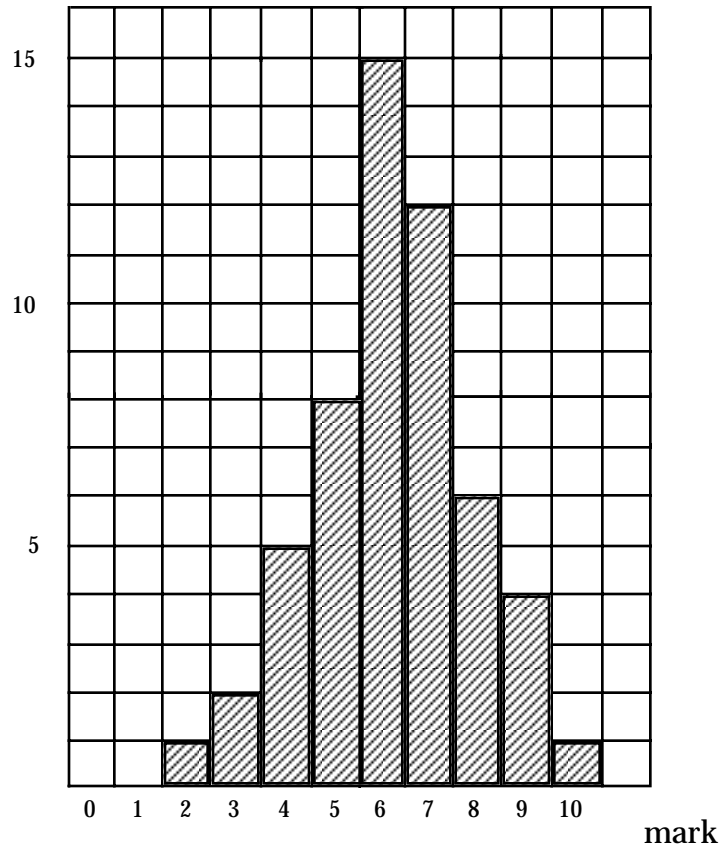
Answers:

1)



2)a) 54, b) 6.2, c) 1.7,

freq



3)a) $P(0 \text{ heads}) = 1/16$, $P(1 \text{ head}) = 4/16$, $P(2 \text{ heads}) = 6/16$, $P(3 \text{ heads}) = 4/16$, $P(4 \text{ heads}) = 1/16$.

b)

