5.   [Maximum mark: 15]

The table below shows the distribution of test grades for 50 IB students at Greendale School.

Test grade	1	2	3	4	5	6	7
Frequency	1	3	7	13	11	10	5

(a)   Calculate

    (i)   the mean test grade of the students;

    (ii)   the standard deviation.   [3]

(b)   Find the median test grade of the students.   [1]

(c)   Find the interquartile range.   [2]

A student is chosen at random from these 50 students.

(d)   Find the probability that this student scored a grade 5 or higher.   [2]

A second student is chosen at random from these 50 students.

(e)   Given that the first student chosen at random scored a grade 5 or higher, find the probability that both students scored a grade 6.   [3]

The number of minutes that the 50 students spent preparing for the test was normally distributed with a mean of 105 minutes and a standard deviation of 20 minutes.

(f)   (i)   Calculate the probability that a student chosen at random spent at least 90 minutes preparing for the test.

    (ii)   Calculate the expected number of students that spent at least 90 minutes preparing for the test.   [4]