A small pilot study is being conducted to determine the association between maternal age and birth weight.

First, from all the single births in 2009 at Hospital X with mothers aged ≦ 20 years, we randomly selected 15 records. We also selected randomly 17 records from all the single births with mothers aged > 20 years. Then we classified each newborn as weighting ≦ 2500 grams or > 2500 grams.

The data is summarized in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Birth weight | |  |
| Mother’s age | ≦ 2500 grams | > 2500 grams | Total |
| ≦ 20 years | 5 | 10 | 15 |
| > 20 years | 4 | 13 | 17 |
| Total | 9 | 23 | 32 |

a) State the relevant null and alternative hypotheses.

b) Using a type I error level of 0.05, perform the appropriate statistical test.

c) Explain your results in 2-3 sentences.

d) If we extended the study and randomly selected 230 records from all the single births in 2009 at Hospital X (the data is shown below), would the maternal age be related to the birth-weight of the infant? Conduct test of hypothesis. Interpret the results.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Birth weight | |  |
| Mother’s age | ≦ 2500 grams | > 2500 grams | Total |
| ≦ 20 years | 40 | 60 | 100 |
| > 20 years | 34 | 96 | 130 |
| Total | 74 | 156 | 230 |