

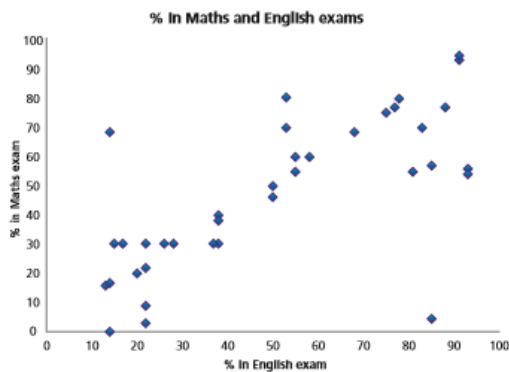
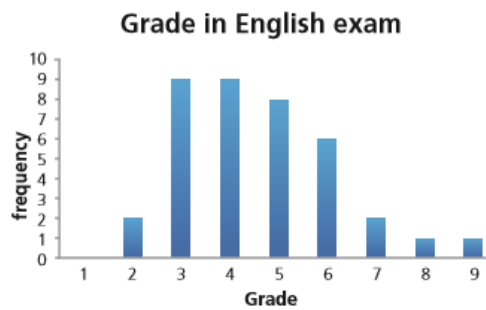
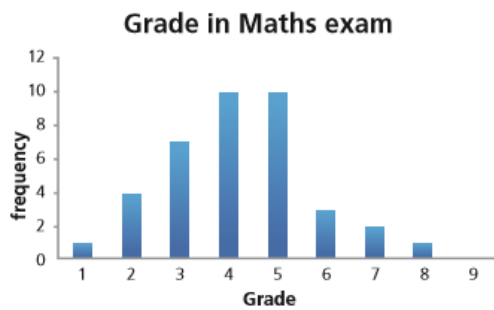
Problem of the Week: Week 2 (Sum1): Year 9: Statistics

- Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs. Describe and interpret correlation. Develop statistical reasoning and begin to express arguments formally

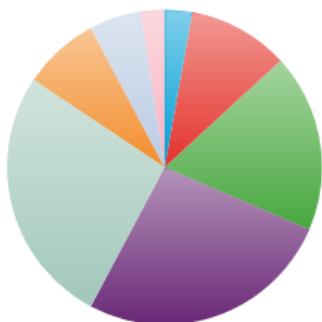
Justine is exploring the hypothesis ‘students who are good at English are also good at maths.’

She has data for some of the students in her school showing how well they scored in their maths exam and their English exam.

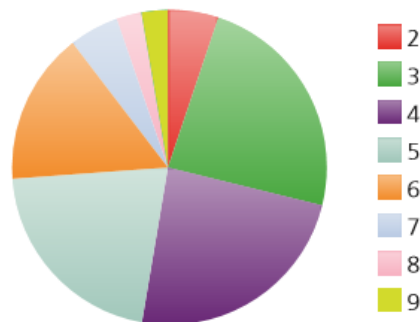
Justine draws these graphs. Comment on what each graph shows and whether it helps Justine in exploring her hypothesis.



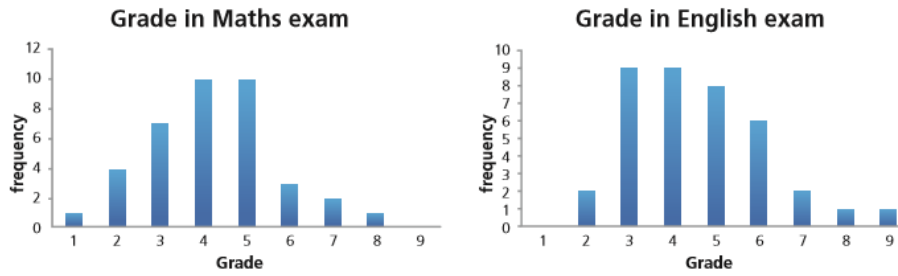
Grade in Maths exam



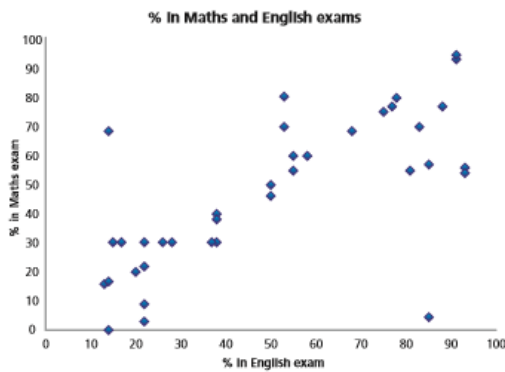
Grade in English exam



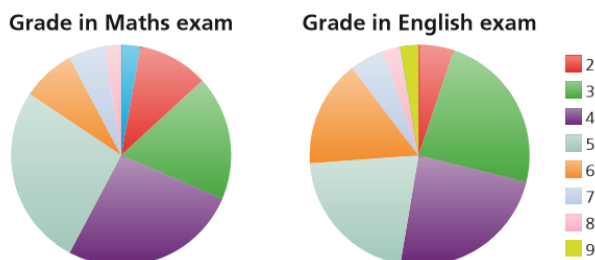
Solution



These two bar charts show the frequency (number of children) at each grade. The modal (most common) grades in Maths are 4 and 5 whereas for English they are 3 and 4. Other comments could be made about the number of lower grades or higher grades. This representation does not support Justine’s hypothesis.



This scatter graph shows the percentage achieved in English against the percentage in maths. There appears to be a positive correlation. The relationship suggests that generally the higher a pupil scored in English the higher their maths score was. This representation does support Justine’s hypothesis. There are a few points that do not fit this relationship (outliers), for example the student who achieved 85% in English but only 5% in maths.



These pie charts show the proportion of students at each grade for English and maths. Grades 4 and 5 look similar in size. However, there are clear differences between some grades, for example those achieving grade 2 in English is lower than in maths. This representation does not support Justine’s hypothesis.