Sample of HSFOL Problems – Year 9

1. What comes next in this pattern? 1, 49, 8, 35, 27, 21, _____

2. If Mrs Farmer has 9 cows, in how many different ways can she categorise the herd?

3. If $x^3 + 13 = 229$, what is the value of x?

4. A bag contains 15 blue marbles, 7 red marbles, and 9 yellow marbles. You randomly pull out one marble then replace it, and repeat this action twice more. What is the probability, as a percentage to one decimal place, that you will pick one marble of each colour?
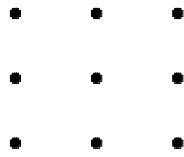

5. In Australia, a goods and services tax (GST) of 10 percent is charged on most purchased items and services. Ms Plenty went to the department store to buy a sweater for $68.50 and a skirt for $45.70. She asked for a discount and was given 10 percent. How much GST was included in her final purchase price?

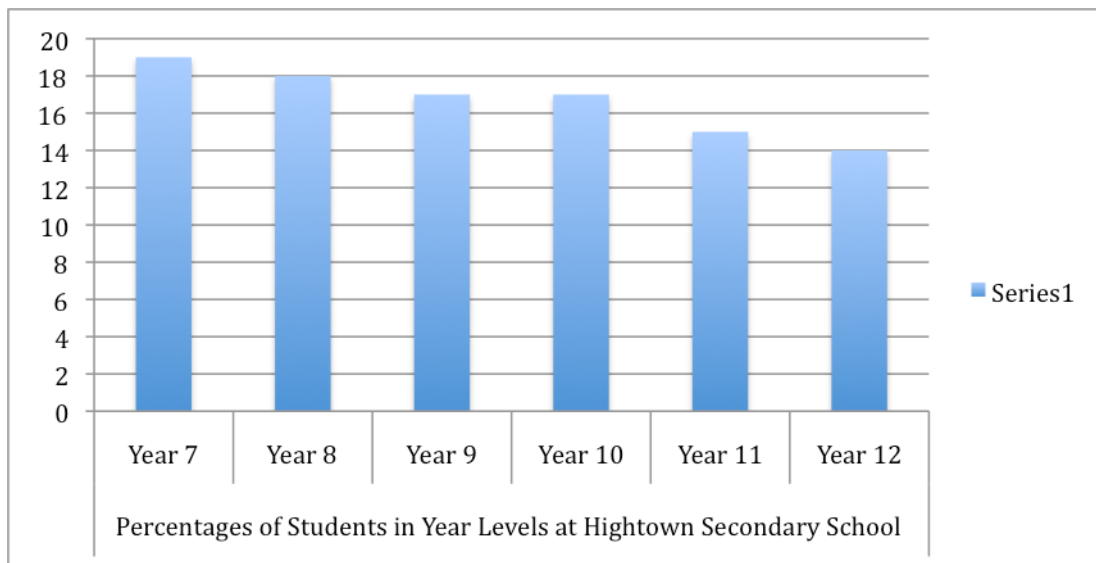**6.** What four numbers have a mode of 3, a median of 6.5, and a mean of 11.25?

7. In the figure below, the sizes of certain angles are shown in degrees. What is the value of x? (Diagram not drawn to scale)

8. How many different straight lines can be drawn through two or more of the dots arranged in the square below?

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9. From the graph below, state whether each statement that follows is true or false.

Percentages of Students in Year Levels at Hightown Secondary School

The total of the percentages is exactly 100.
None of the year levels have the same percentages of students.
Year 8 has three percent more students than Year 11.
Thirty percent of students are in Years 11-12.
The numbers of students continually declined as the year levels increased.
More than a third of the students are in Years 9-10.

10. If a 3.3-metre tall cylindrical water tank can hold 10 kilolitres, what is its diameter to the nearest centimetre?