Probability and Three Set Venns

90 children were asked they had in their packed lunch. Their replies are as follows: 38 had sandwich, crisps and cake. 60 had sandwich and a cake. 52 had sandwich and crisps. One student had crisps and cake only, and 5 students had a sandwich only. 10 students had none of these items in their packed lunch.

(a) Show this on a Venn diagram.

(b) Find the probability that a child chosen at random has both crisps and cake in their packed lunch.

(c) Given that a child had a sandwich, find the probability that this child also had crisps.

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100 people were asked which sports they watched on television. Here are the results.

36 people watched cricket, 28 people watched rugby, 36 people watched football, 17 people watched both cricket and rugby, 19 people watched both cricket and football, 15 people watched both rugby and football, and 10 people watched all three sports.

(a) Draw a Venn diagram.

(b) One of the 100 people is selected at random. Find the probability that they watch none of these sports.

(c) Given that a person watches cricket, find the probability that this person also watches football.

(d) Given that a person watches at least one of the sports, find the probability that this person watches all three.