3. (i) Bob shops at a market each week. The event that

Bob buys carrots is denoted by C

Bob buys onions is denoted by O

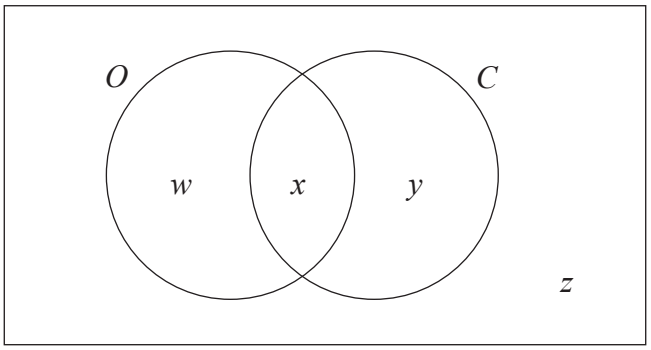
At each visit, Bob may buy neither, or one, or both of these items. The probability that

Bob buys carrots is 0.65

Bob does **not** buy onions is 0.3

Bob buys onions but not carrots is 0.15

The Venn diagram below represents the events C and O



where w, x, y and z are probabilities.

(a) Find the value of w, the value of x, the value of y and the value of z

(4)

For one visit to the market,

(b) find the probability that Bob buys either carrots or onions but not both.

(1)

(c) Show that the events C and O are **not** independent.

(2)

(ii) F, G and H are 3 events. F and H are mutually exclusive. F and G are independent.

Given that

$$P(F) = \frac{2}{7} \qquad P(H) = \frac{1}{4} \qquad P(F \cup G) = \frac{5}{8}$$

(a) find $P(F \cup H)$

(1)

(b) find $P(G)$

(3)

(c) find $P(F \cap G)$

(1)

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Question 3 continued

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Question 3 continued

(Total for Question 3 is 12 marks)