1 A bag contains 8 balls.

3 are red and 5 are blue.

2 balls are taken from the bag at random without replacement.

1 (a) Write down the probability that there is **at least** 1 red ball still in the bag.

[1 mark]

Answer _____

1 (b) Work out the probability that there are **at least** 2 red balls still in the bag.

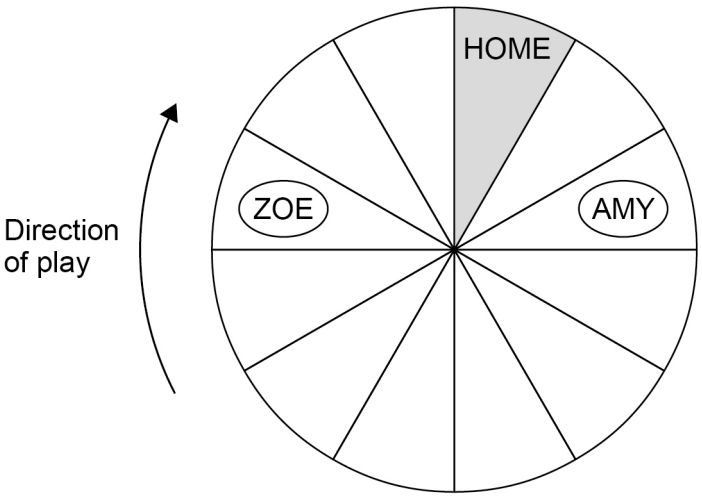
[3 marks]

Answer _____

2 Zoe and Amy are playing a board game.

- They each have one disc and take turns to roll a fair, ordinary dice.
- The player moves their disc **clockwise** the number of spaces shown on the dice.
- The winner is the first player whose disc is on HOME at the end of a turn.

Here is the board after Amy's turn.



Work out the probability that Zoe wins within her next two turns.

[4 marks]

Answer _____

3 Circle the expression that means the probability of A and **not** B.

[1 mark]

P(A' U B) P(A U B') P(A' ∩ B) P(A ∩ B')

4 Here are three sets of cards.

Set A	1	1	3	5	5	5	6	8
Set B	1	2	4	6	8	8	9	
Set C	3	4	5	6				

In a game, a player has two options.

Option 1
Pick two cards from Set A

Option 2
Pick one card from Set B
and
pick one card from Set C

The cards are picked at random.

The player wins if the total of their two cards is exactly 10

Which option gives a better chance of winning?

Option 1 ☐ Option 2 ☐

Show working to support your answer.

[4 marks]

5 There should be a train leaving a station every hour from 7 am

No trains leave early.

P(the **first train** leaves on time) = 0.9

For all the **other trains**,

if the previous train did leave on time, P(this train leaves on time) = 0.8

if the previous train did **not** leave on time, P(this train leaves on time) = 0.65

5 (a) Work out P(the first three trains leave on time)

[2 marks]

Answer _____

5 (b) The 2 pm train does **not** leave on time.

Work out P(exactly one of the next two trains does **not** leave on time)

[3 marks]

Answer _____