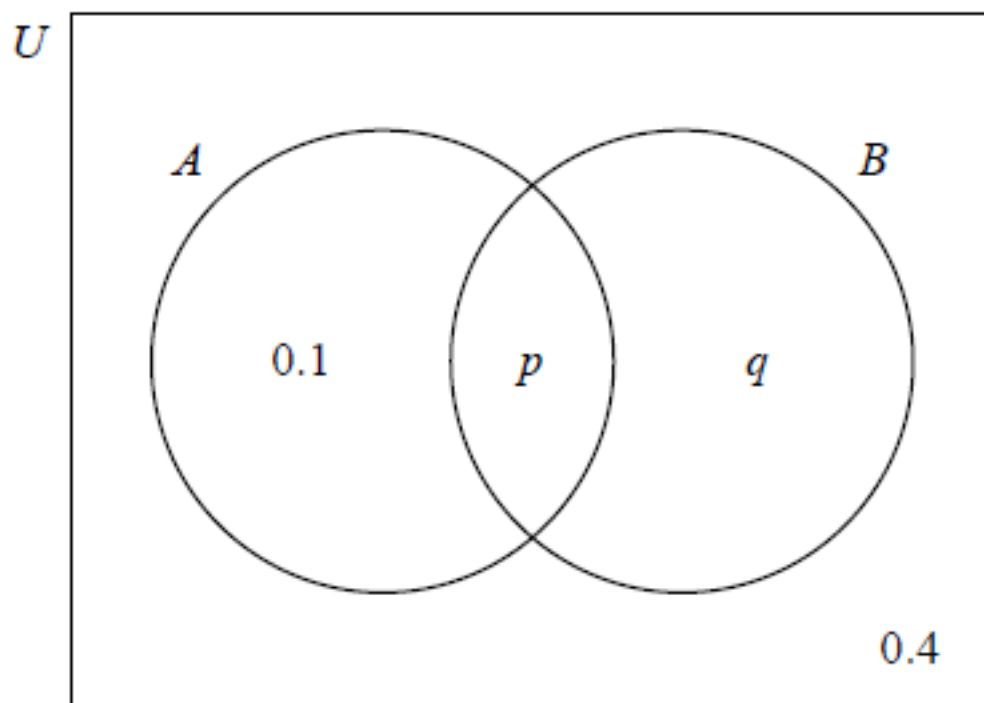


Probability IB practice

1a. [2 marks]

The following Venn diagram shows the events A and B , where $P(A) = 0.3$. The values shown are probabilities.



Find the value of p .

1b. [2 marks]

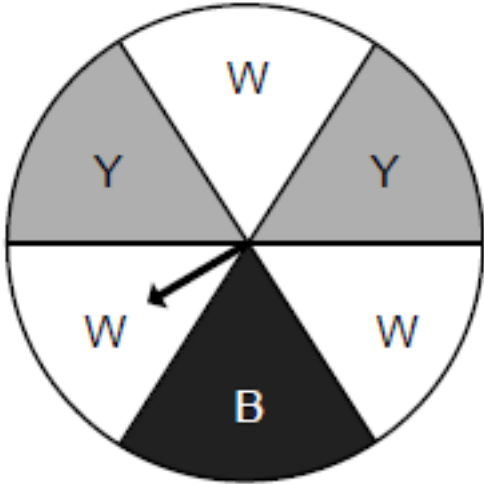
Find the value of q .

1c. [2 marks]

Find $P(A' \cup B)$.

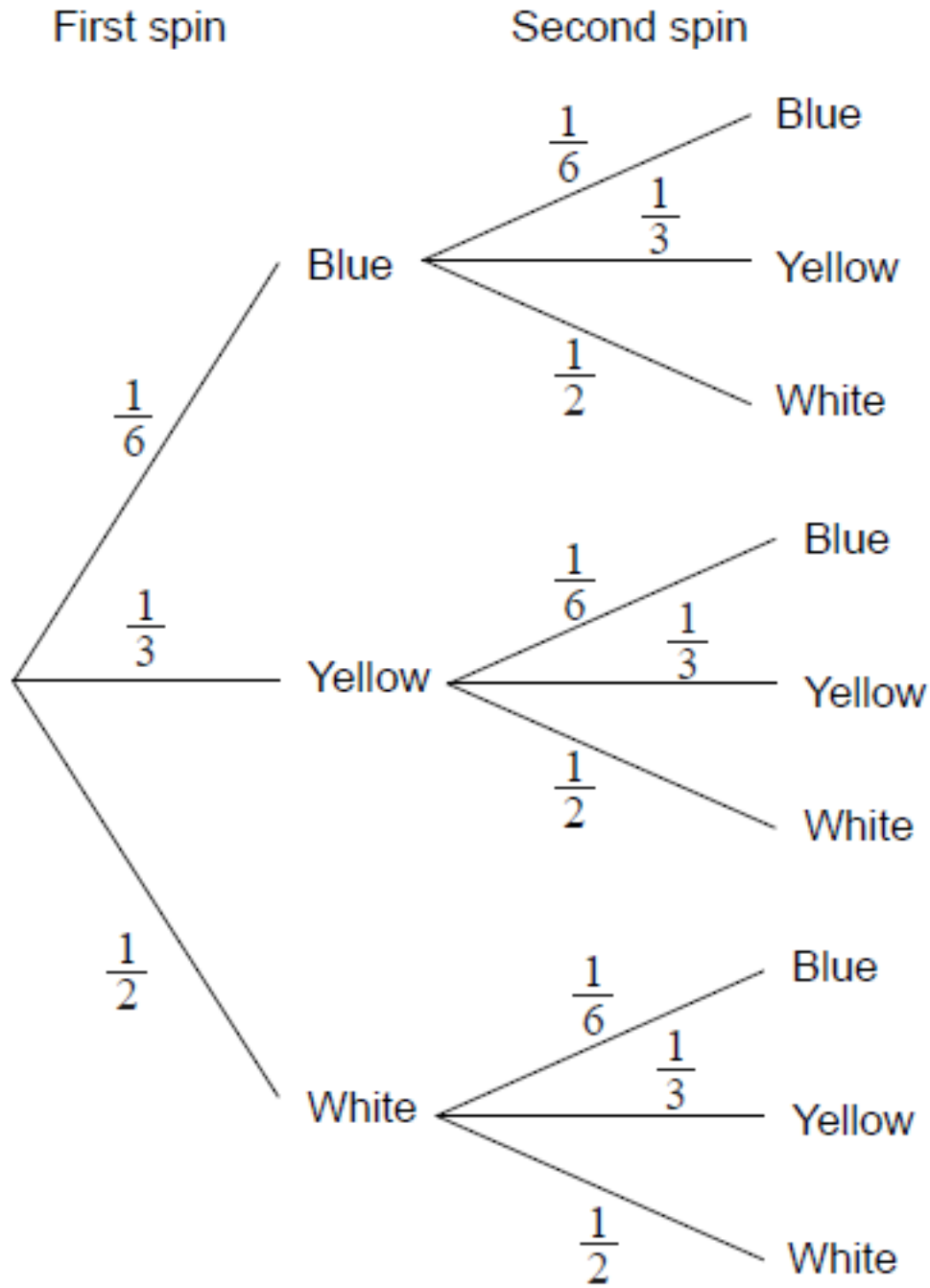
2a. [2 marks]

The diagram shows a circular horizontal board divided into six equal sectors. The sectors are labelled white (W), yellow (Y) and blue (B).



A pointer is pinned to the centre of the board. The pointer is to be spun and when it stops the colour of the sector on which the pointer stops is recorded. The pointer is equally likely to stop on any of the six sectors.

Eva will spin the pointer twice. The following tree diagram shows all the possible outcomes.



Find the probability that both spins are yellow.

2b. [3 marks]

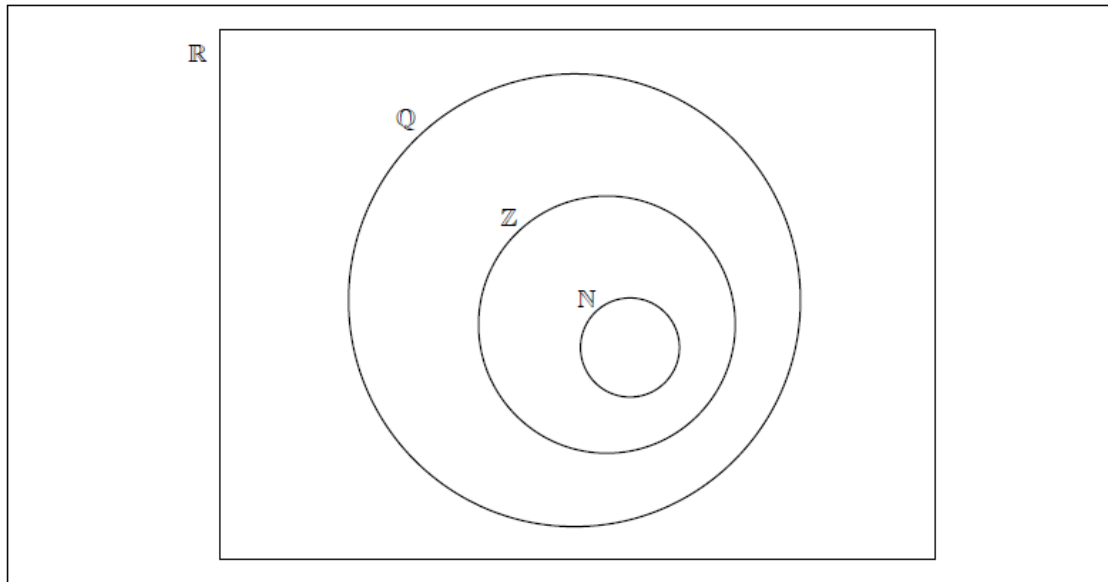
Find the probability that at least one of the spins is yellow.

2c. [1 mark]

Write down the probability that the second spin is yellow, given that the first spin is blue.

3a. [4 marks]

Place the numbers 2π , -5 , 3^{-1} and $2^{\frac{3}{2}}$ in the correct position on the Venn diagram.



3b. [2 marks]

In the table indicate which **two** of the given statements are true by placing a tick (\checkmark) in the right hand column.

Statement	True
$Z \subset Q$	
$N \subset Q'$	
$N \cap Z = N$	
$Q \cup R = Z'$	

4a. [3 marks]

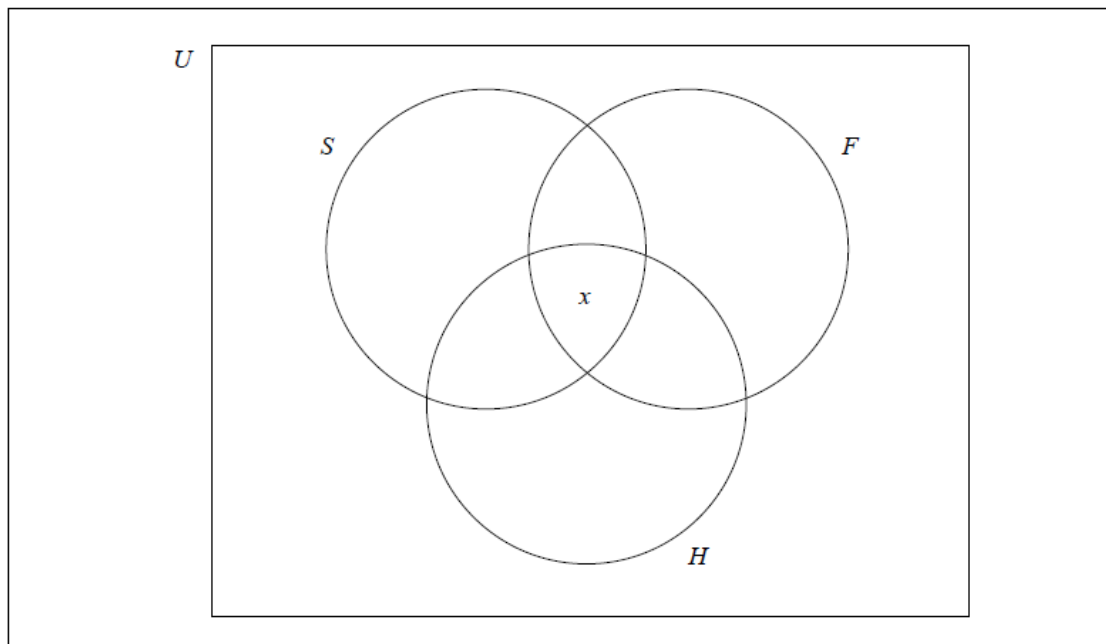
A group of 60 sports enthusiasts visited the PyeongChang 2018 Winter Olympic games to watch a variety of sporting events.

The most popular sports were snowboarding (S), figure skating (F) and ice hockey (H).

For this group of 60 people:

- 4 did not watch any of the most popular sports,
- x watched all three of the most popular sports,
- 9 watched snowboarding only,
- 11 watched figure skating only,
- 15 watched ice hockey only,
- 7 watched snowboarding and figure skating,
- 13 watched figure skating and ice hockey,
- 11 watched snowboarding and ice hockey.

Complete the Venn diagram using the given information.



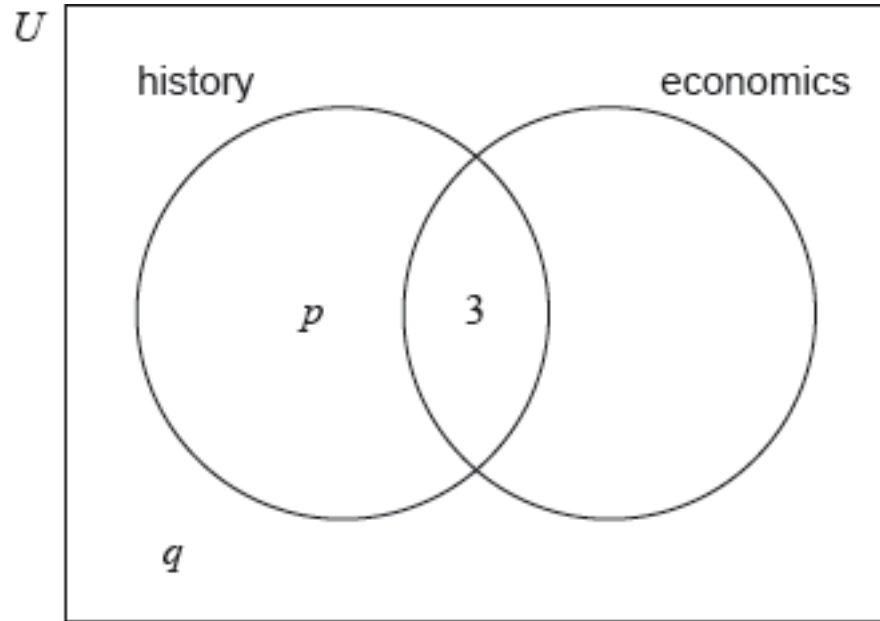
4b. [2 marks]

Find the value of x .

4c. [1 mark] Write down the value of $n((F \cup H) \cap S')$.

5a. [2 marks]

In a group of 20 girls, 13 take history and 8 take economics. Three girls take both history and economics, as shown in the following Venn diagram. The values p and q represent numbers of girls.



Find the value of p ;

5b. [2 marks]

Find the value of q .

5c. [2 marks]

A girl is selected at random. Find the probability that she takes economics but not history.

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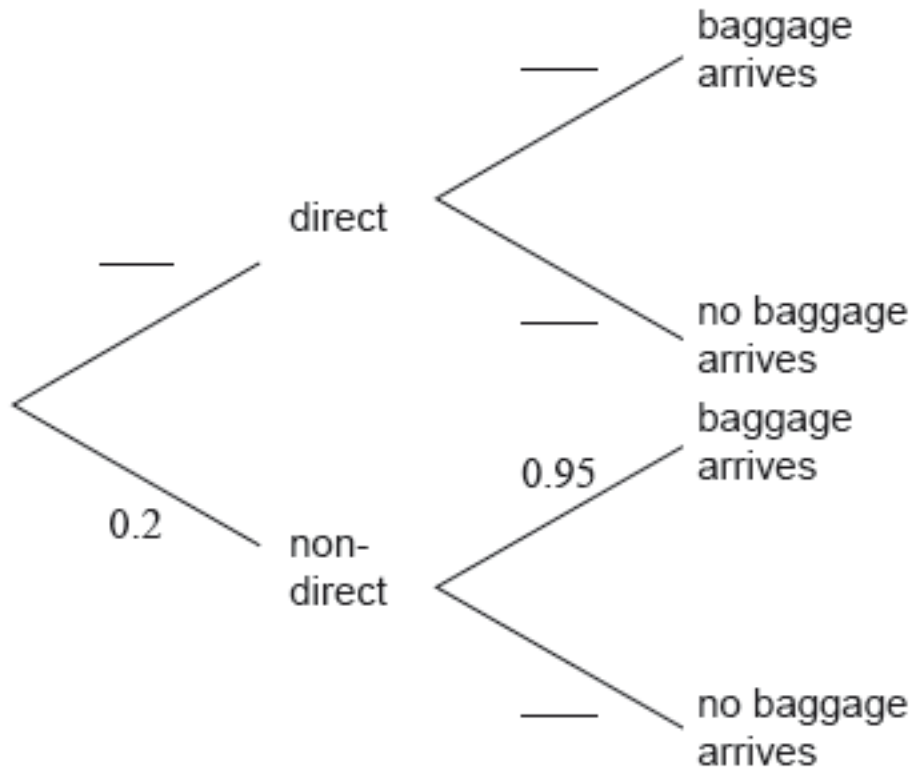
7a. [3 marks]

Sara regularly flies from Geneva to London. She takes either a direct flight or a non-direct flight that goes via Amsterdam.

If she takes a direct flight, the probability that her baggage does not arrive in London is 0.01.

If she takes a non-direct flight the probability that her baggage arrives in London is 0.95.

The probability that she takes a non-direct flight is 0.2.



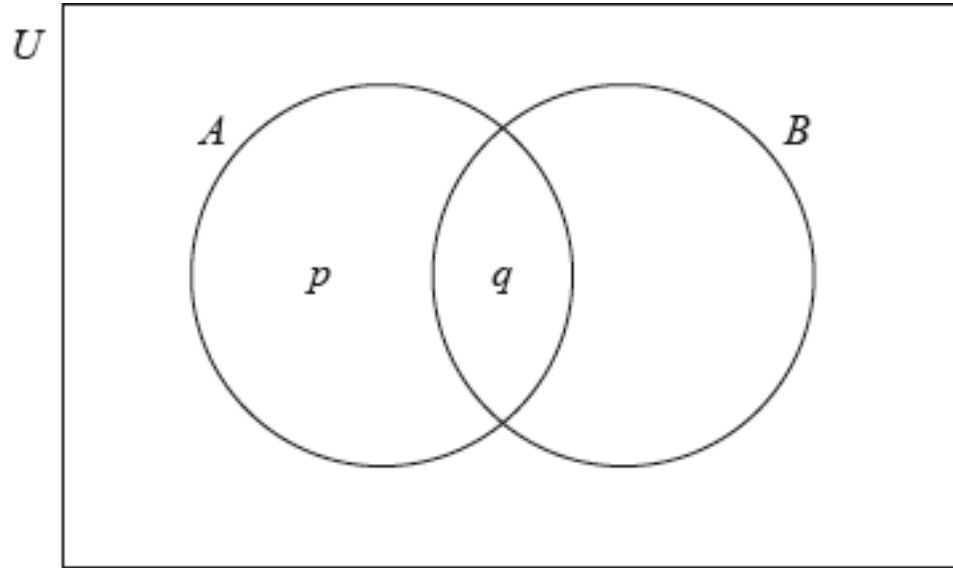
Complete the tree diagram.

7b. [3 marks]

Find the probability that Sara's baggage arrives in London.

8a. [3 marks]

The following Venn diagram shows the events A and B , where $P(A) = 0.4$, $P(A \cup B) = 0.8$ and $P(A \cap B) = 0.1$. The values p and q are probabilities.



- (i) Write down the value of q .
- (ii) Find the value of p .

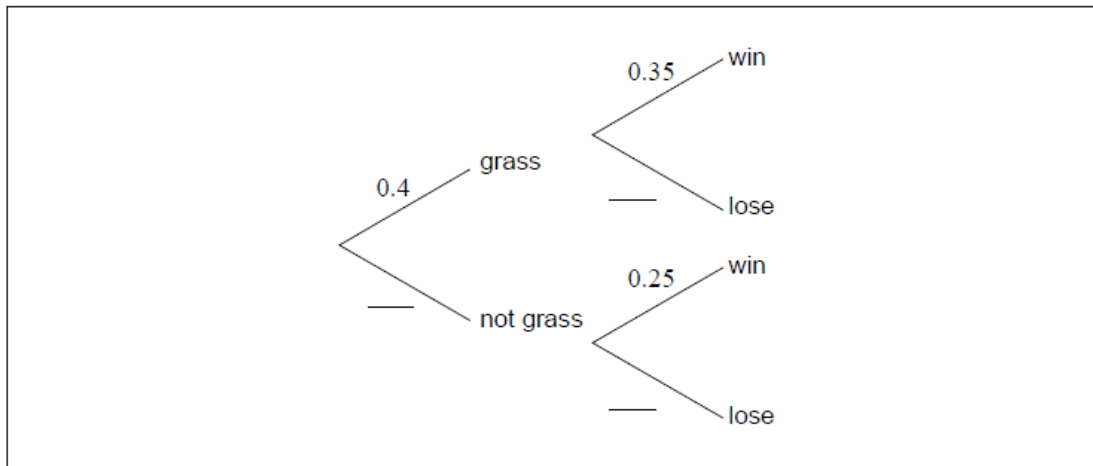
8b. [3 marks]

Find $P(B)$.

9a. [3 marks]

The probability that Nikita wins a tennis match depends on the surface of the tennis court on which she is playing. The probability that she plays on a grass court is 0.4. The probability that Nikita wins on a grass court is 0.35. The probability that Nikita wins when the court is not grass is 0.25.

Complete the following tree diagram.



9b. [3 marks]

Find the probability that Nikita wins a match.