Name: Date:

Using Venn Diagrams to find probabilities

1. The Venn diagrams represent the ways the events A and B can take place. For each case find

(a) p(A and B)

(b) p(A but not B)

(c) p(A or B)

(d) p(B but not A)

Diagram (i)

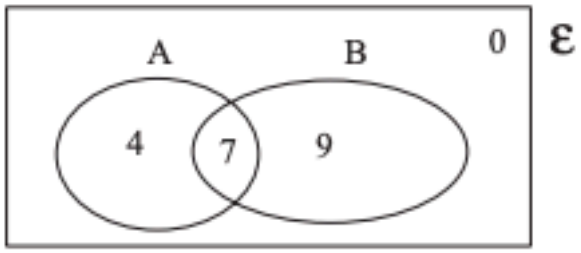


Diagram (ii)

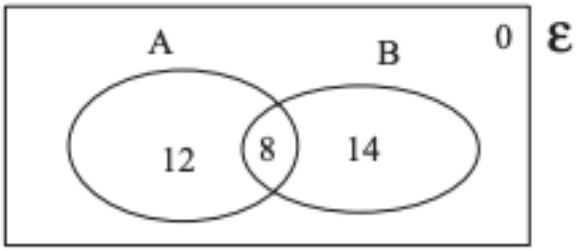


Diagram (iii)

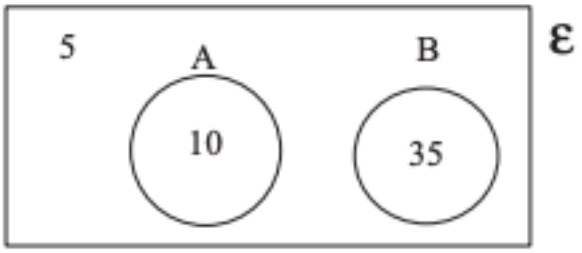
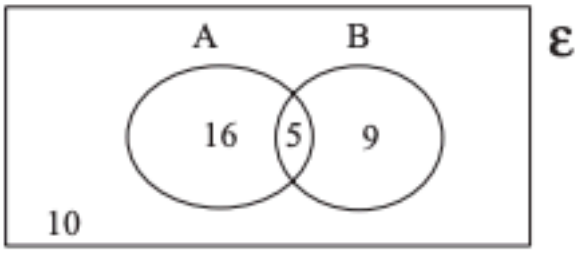


Diagram (iv)



2. When a card is selected at random from a full pack two possible events are:

R : A red card is selected.

Q : A queen is selected.

Draw a Venn diagram and use it to find the probabilities that a card is:

(a) a red queen,

(b) red or a queen,

(c) not red or a queen.

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Using Venn Diagrams to find probabilities

3. In a survey 100 people were asked whether they watched snooker or cricket when it was on TV.

20 watched neither, 80 watched snooker, 40 watched cricket.

Draw a Venn diagram and find the probabilities that a person selected at random from the sample:

(a) watched both cricket and snooker.

(b) watched cricket but not snooker,

(c) watched snooker but not cricket.

4. When a die is rolled the events defined below can be obtained.

E : an even number,

P : a prime number.

Draw a Venn diagram and find the following probabilities.

(a) p(E or P) (b) p(E and P)

(c) p(E but not P) (d) P(neither E or P)

5. The sequence of lights at a set of traffic lights is:

Red	10 seconds
Red + Amber	2 seconds
Green	15 seconds
Amber	3 seconds

Use a Venn diagram to find the following probabilities:

(a) p(red light shows),

(b) p(amber light shows),

(c) p(red or amber lights show).

Answers

Using Venn Diagrams to find probabilities

1. (i) (a) 7/20 (b) 4/20 (c) 1 (d) 9/20
   (ii) (a) 4/17 (b) 6/17 (c) 1 (d) 7/17
   (iii) (a) 0 (b) 1/5 (c) 9/10 (d) 7/10
   (iv) (a) 1/8 (b) 2/5 (c) 3/4 (d) 9/40

2. (a) 1/26 (b) 7/13 (c) 6/13

3. (a) 0.4 (b) 0 (c) 0.4

4. (a) 5/6 (b) 1/6 (c) 1/3 (d) 1/6

5. (a) 2/5 (b) 1/6 (c) 1/2