

Example 1

From the given number of names and surnames, determine how many different name–surname pairs are possible.

There are 6 names and for each of these, there are 5 surnames.

Name	Surname
Mary	Mooney
Jennifer	Byrne
Cormac	O'Brien
Kate	Lawiski
Barry	
Shane	McCarthy

Example 2

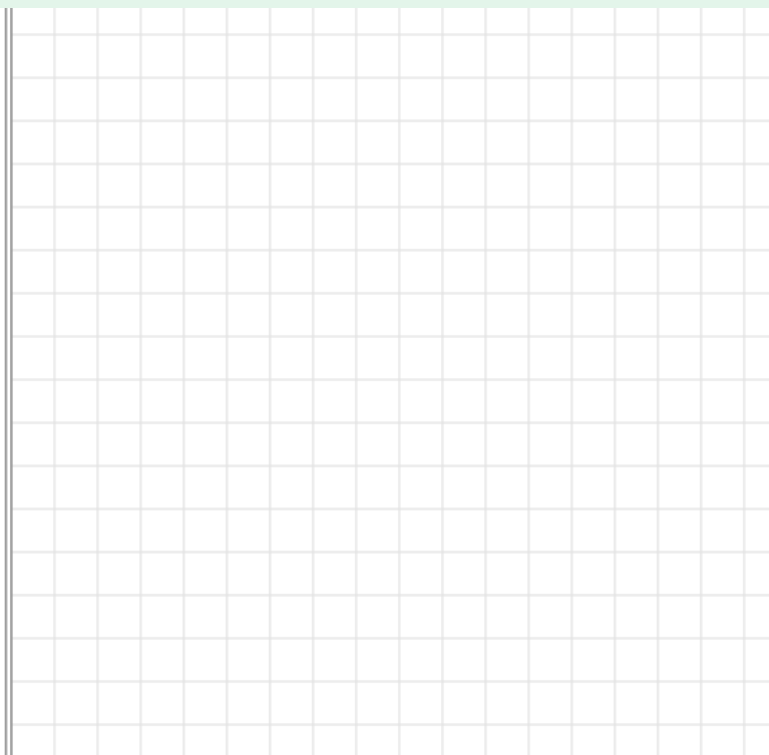
There are 6 different books, including a science book, on a shelf.

- (i) In how many different ways can the 6 books be arranged on the shelf?
- (ii) In how many ways can the 6 books be arranged if the science book is always on the extreme left?

Example 3

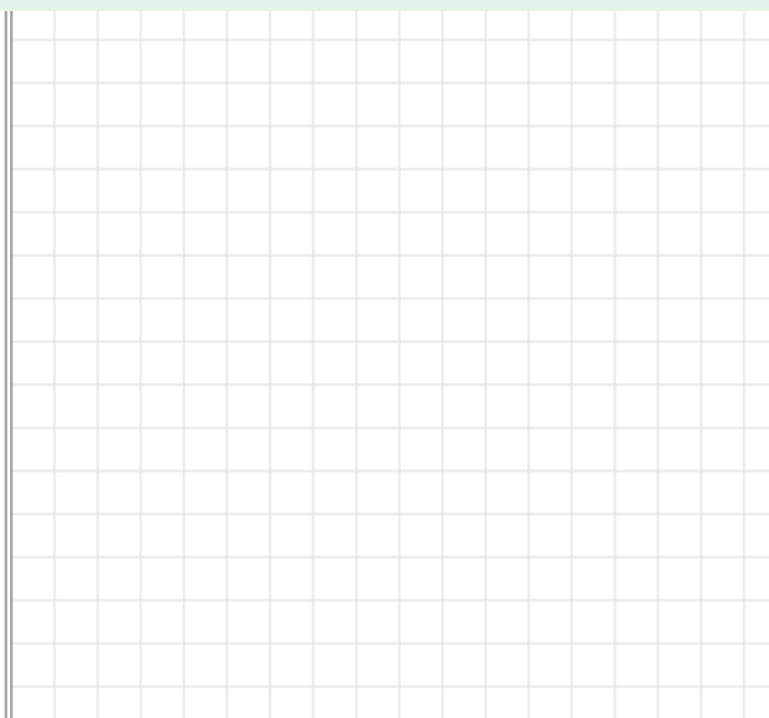
In how many ways can the letters of the word SCOTLAND be arranged in a line?

- (i) In how many of these arrangements do the two vowels come together?
- (ii) How many of the arrangements begin with S and end with the two vowels?

**Example 4**

How many four-digit numbers can be formed using the digits 0, 2, 5, 7, 8 if a digit cannot be used more than once in any number?

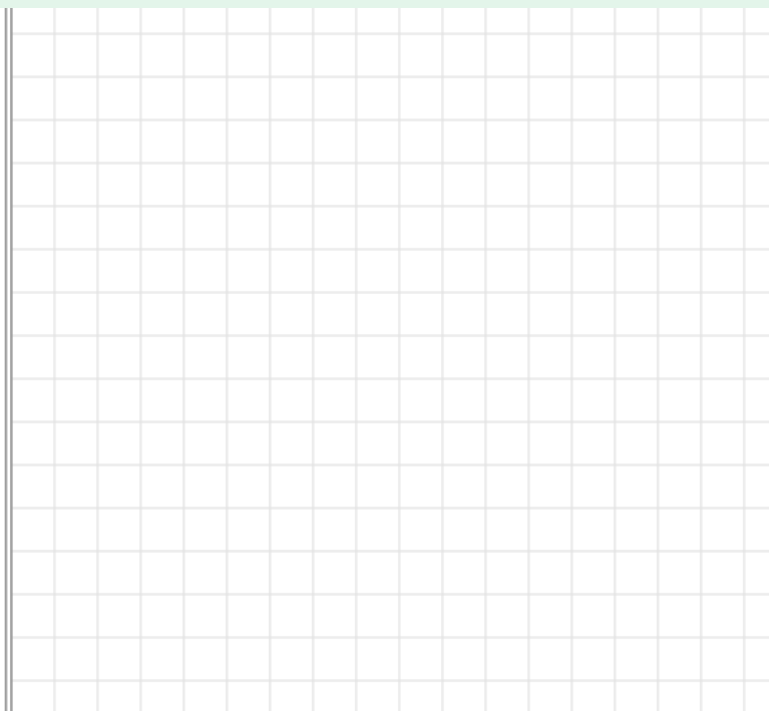
- (i) How many of these numbers are greater than 5000?
- (ii) How many of these numbers are odd?



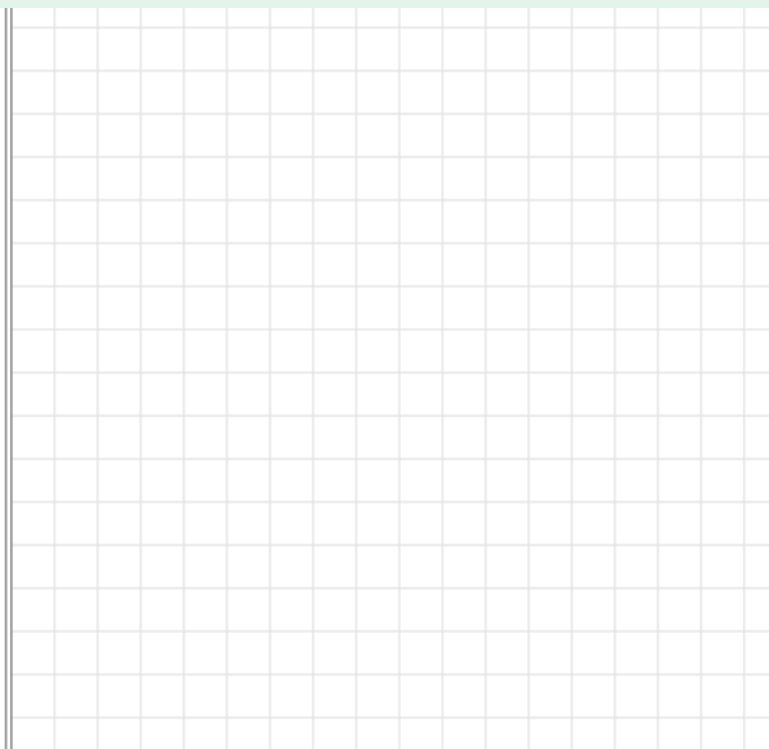
Example 4

How many four-digit numbers can be formed using the digits 0, 2, 5, 7, 8 if a digit cannot be used more than once in any number?

- (i) How many of these numbers are greater than 5000?
- (ii) How many of these numbers are odd?

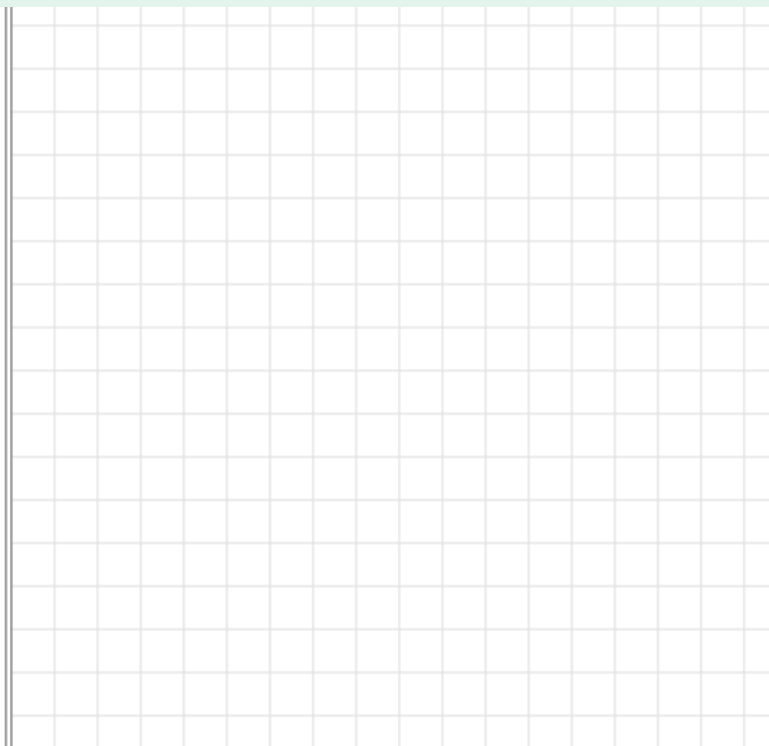
**Example 1**

- (i) In how many ways can a team of 5 players be chosen from 9 players?
- (ii) In how many ways can this be done if a certain player must be selected in each team?

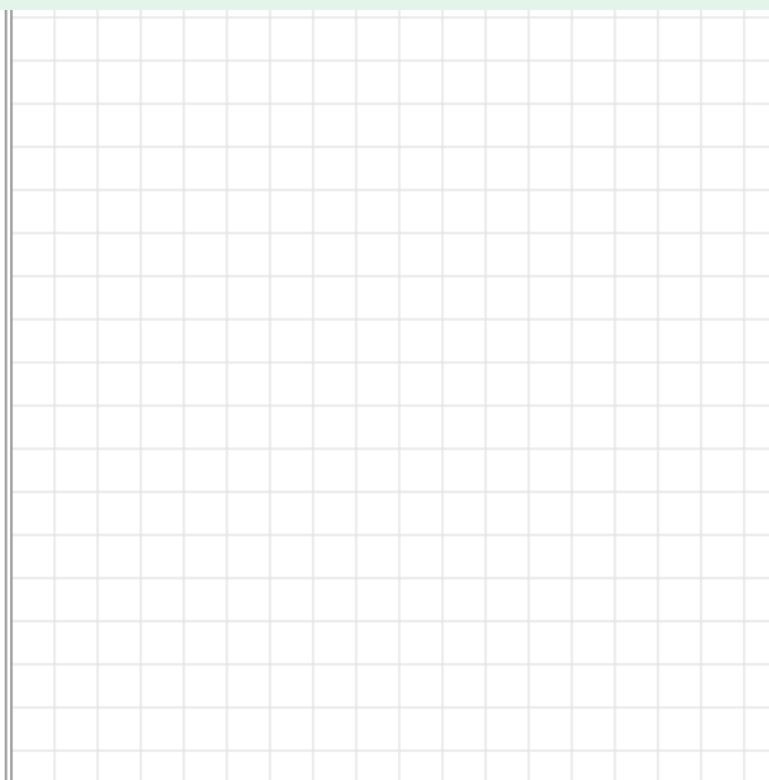


Example 2

In how many ways can a group of five be selected from ten people?
How many groups can be selected if two particular people from the ten cannot be in the same group?

**Example 3**

Find the number of ways in which a panel of four men and three women can be chosen from seven men and five women.

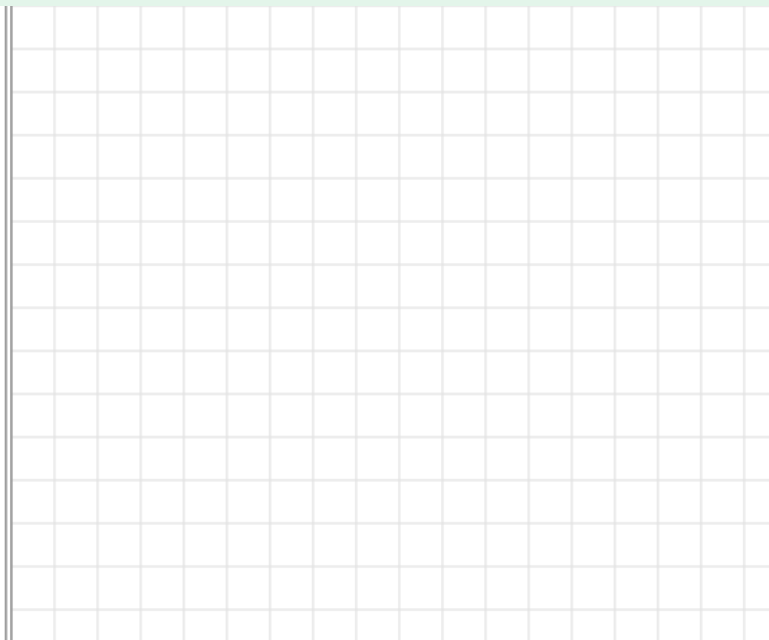


Example 4

In how many ways can a committee of six be formed from 5 teachers and 8 students if there are to be more teachers than students on each committee?

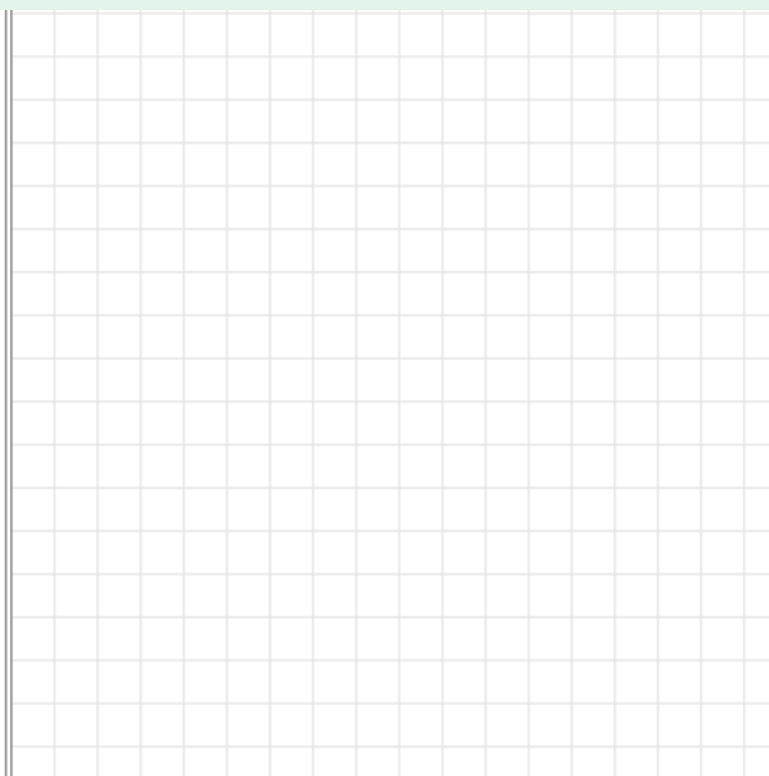
If there are more teachers than students on each committee, the committee will consist of either of the following combinations:

- (i) 4 teachers and 2 students
- (ii) 5 teachers and 1 student

**Example 1**

If a card is drawn from a pack of 52, find the probability that it is

- (i) an ace
- (ii) a diamond
- (iii) a red card.

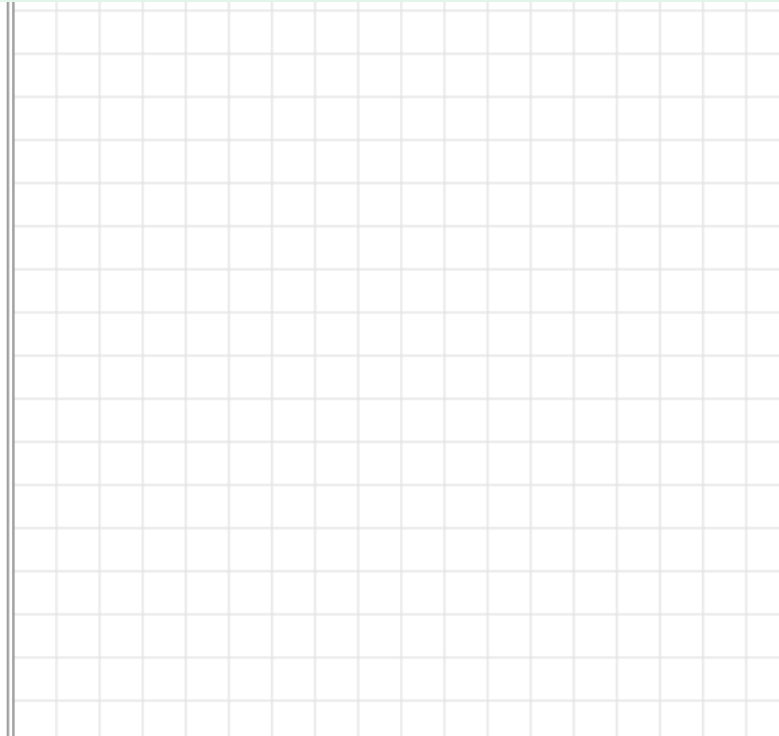


Example 2

A letter is selected at random from the letters of the word STATISTICS.

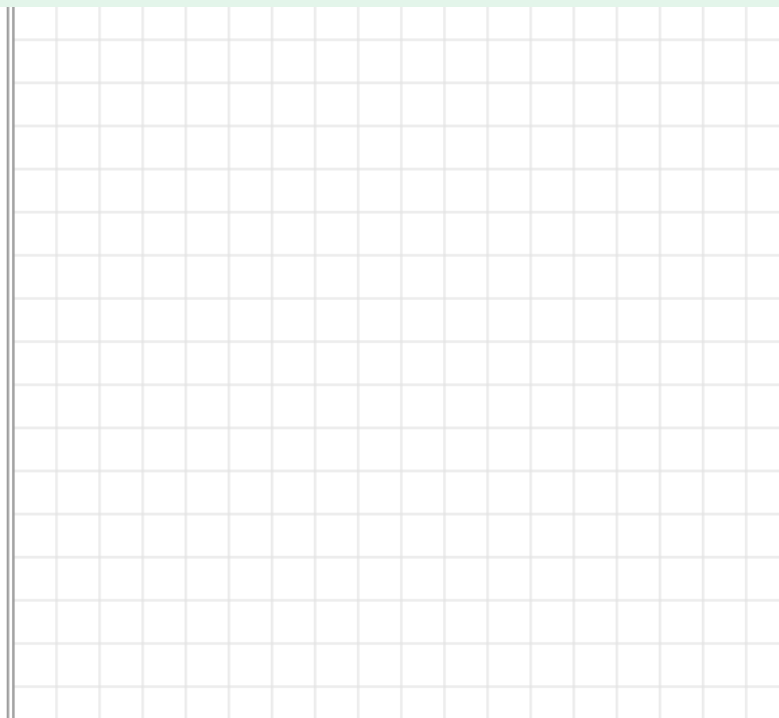
Find the probability that the letter is

- (i) C (ii) S (iii) S or T (iv) a vowel.

**Example 3**

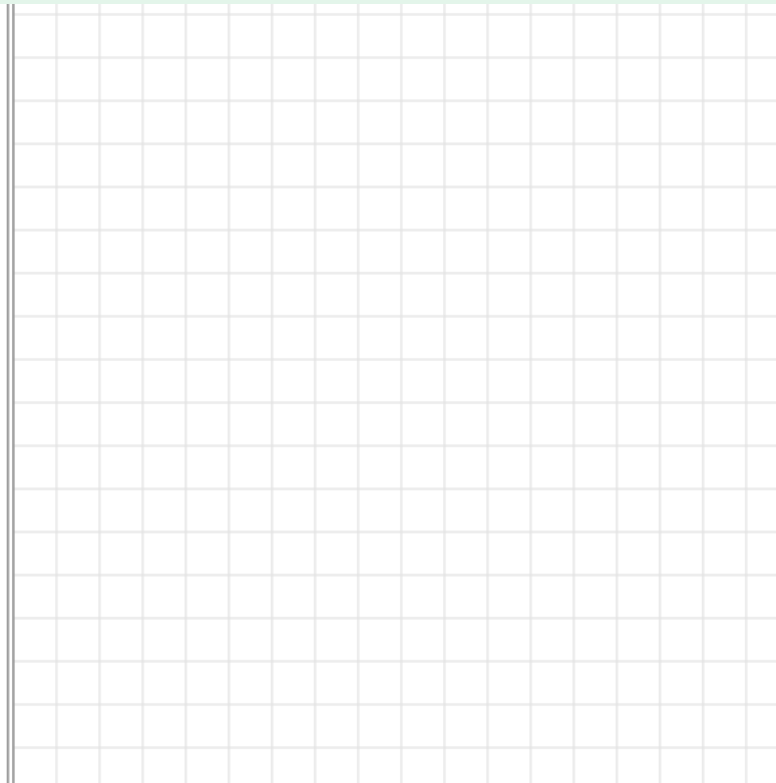
If two dice are thrown and the scores are added, set out a sample space giving all the possible outcomes. Find the probability that

- (i) the total is exactly 7 (ii) the total is 4 or less
(iii) the total is 11 or more (iv) the total is a multiple of 5.



Example 2

A and B are two events such that $P(A) = \frac{19}{30}$, $P(B) = \frac{2}{5}$ and $P(A \cup B) = \frac{4}{5}$.
Find $P(A \cap B)$.



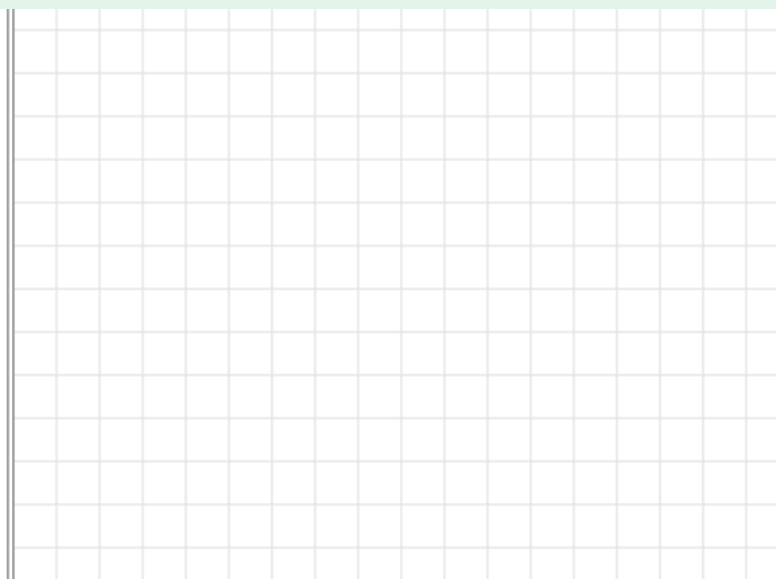
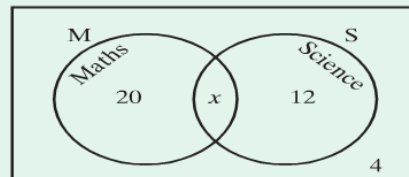
Example 3

The given Venn diagram represents the subjects taken by a group of 50 pupils.

(i) Find the value of x .

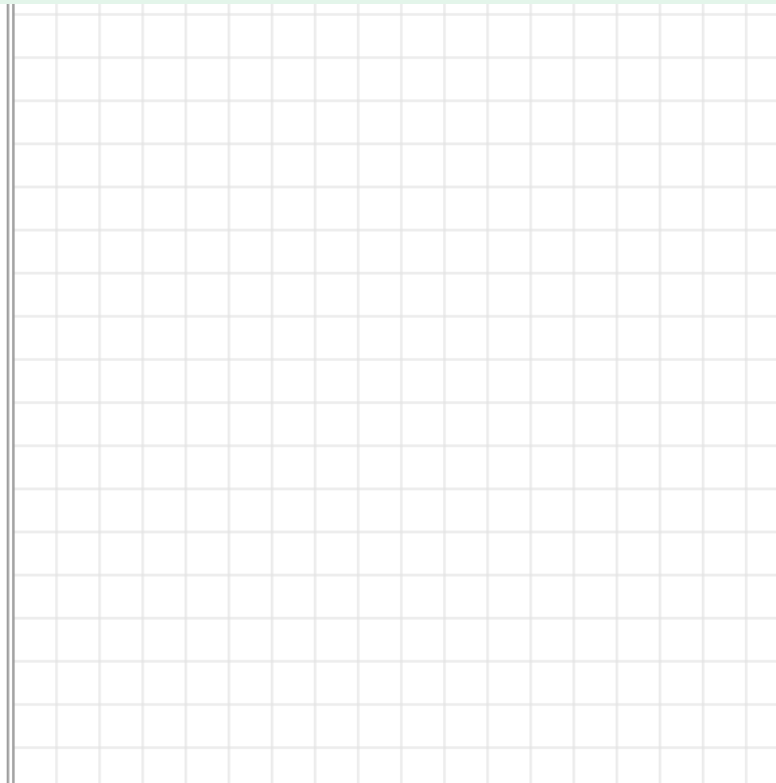
Now find the probability that a person chosen at random takes

- (ii) both subjects
- (iii) neither subject
- (iv) Science but not Maths
- (v) Maths or Science or both.



Example 1

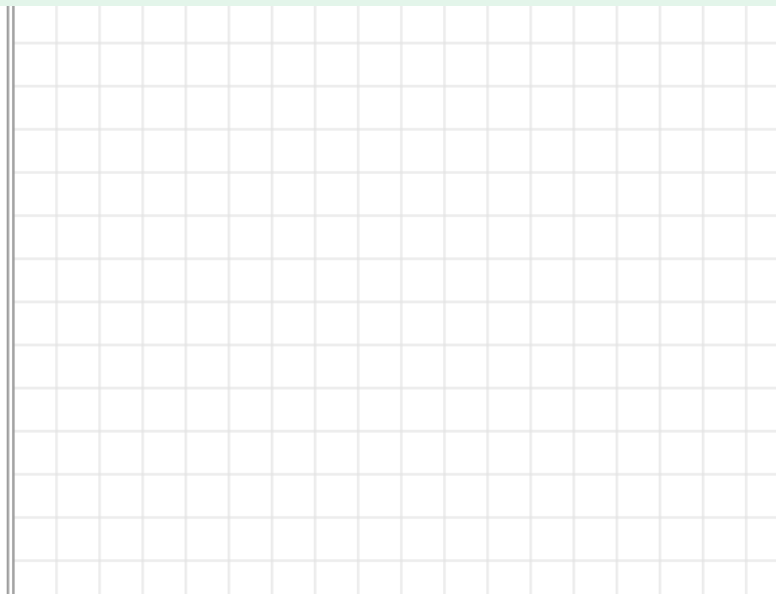
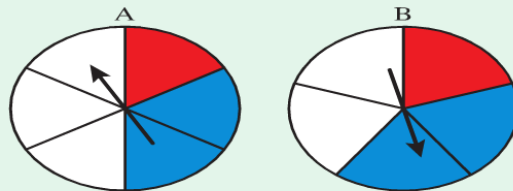
When two dice are thrown, what is the probability of getting
 (i) two sixes (ii) 4 or more on each die?



Example 2

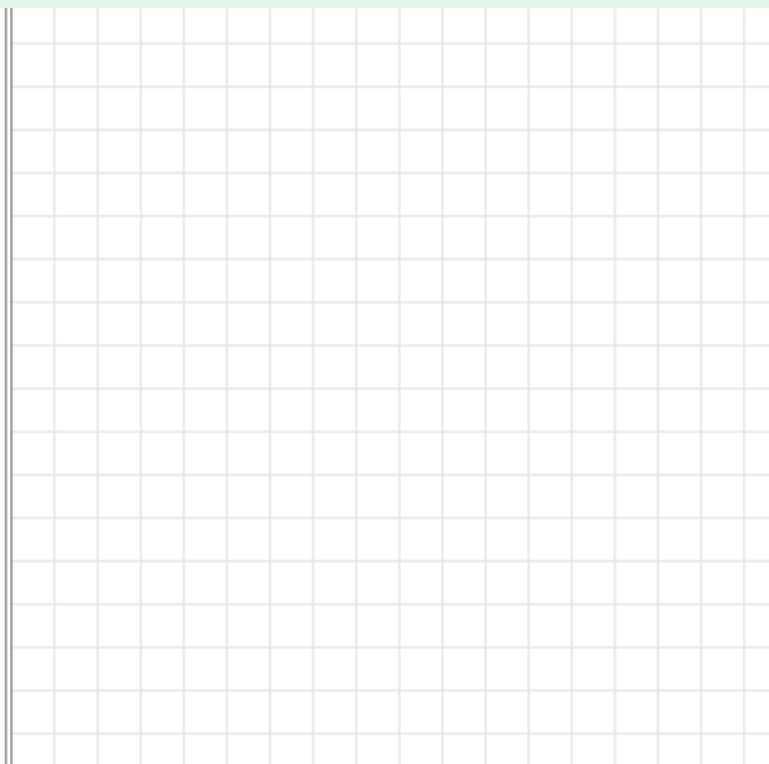
These two spinners are spun.
 What is the probability that

- (i) spinner A shows red
- (ii) spinner B shows red
- (iii) both spinners show red
- (iv) A shows red and B shows blue
- (v) both show blue
- (vi) both show white
- (vii) neither shows white?



Example 3

A gambler must throw a 6 with a single dice to win a prize.
Find the probability that he wins at his third attempt.

**Example 4**

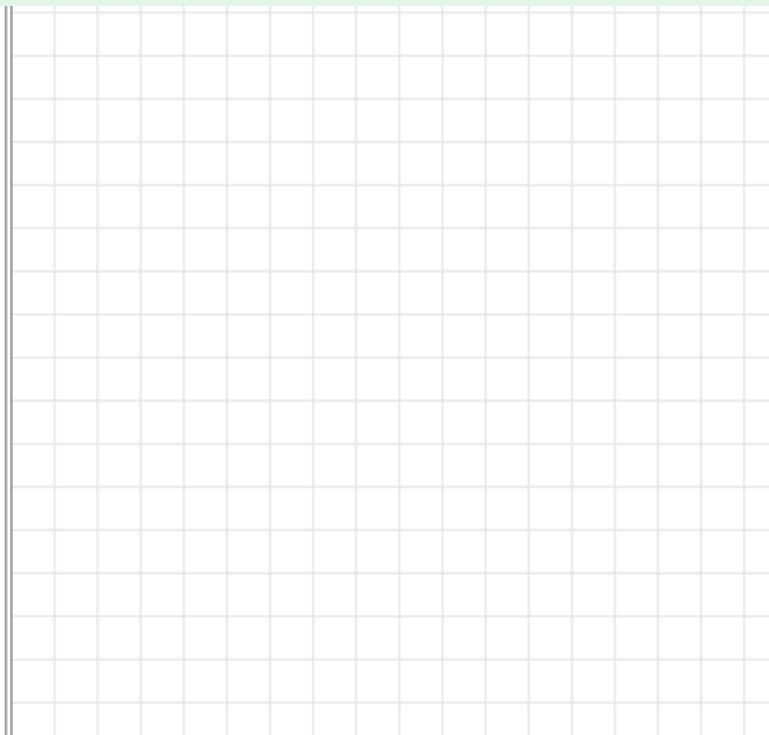
Three pupils A , B and C have their birthdays in the same week.
What is the probability that the three birthdays

- (i) fall on a Monday
- (ii) fall on the same day
- (iii) fall on three different days?



Example 1

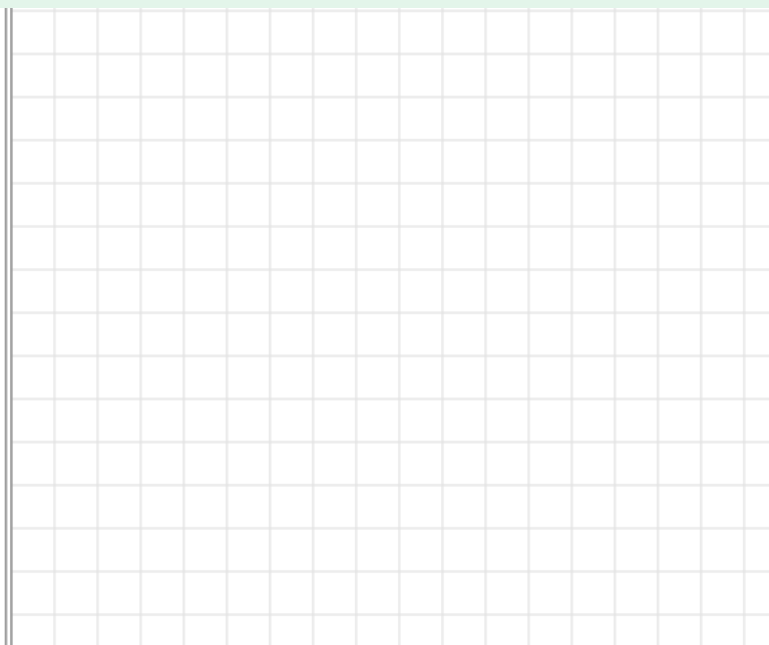
The numbers 1 to 9 are written on cards and placed in a box.
A card is drawn at random from the box.
Find the probability that the number is prime, given that the number is odd.

**Example 2**

A bag contains 6 red and 4 blue discs. A disc is drawn from the bag and not replaced. A second disc is then drawn.

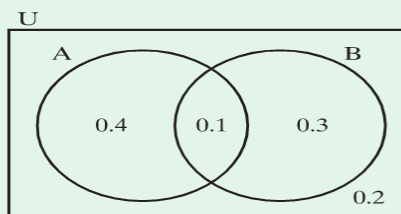
Find the probability that

- (i) the first two discs are blue
- (ii) the second disc drawn is red
- (iii) one disc is red and the other disc is blue
- (iv) both discs are the same colour.



Example 3

Use the given Venn diagram to write down
 (i) $P(A|B)$ (ii) $P(B|A)$



Grid area for working out the solution to Example 3.

Example 4

Two events A and B are such that $P(A) = 0.7$, $P(B) = 0.4$ and $P(A|B) = 0.3$.
 Determine the probability that neither A nor B occurs.

Grid area for working out the solution to Example 4.