**Logo, icon

Description automatically generatedFX Library Modules**

**Simple Probability**

Age 14-15

**Copyright Information**

If you are an Efofex subscriber and work in a school, you can copy and/or modify the FX Library materials and use them with your students. We hope that this material will help you write your tests, worksheets, exams, presentations and any other educational materials. You cannot claim copyright over the FX Library materials or present them as your own work.

**FAQ**

**Who are the questions/materials for?**

We are providing the materials for teachers in schools. If you are a teacher in a school (or similar context) you are welcome to use the questions/materials freely in just about any manner. Most other usages of our questions/materials are prohibited. In particular, you are expressly prohibited from using our materials in any context where the aim is to generate a profit.

**Can I photocopy the questions/materials for use by my students?**

YES.

**Can I copy questions/materials and paste them into my own documents?**

YES.

**Do I have to include the Efofex Software copyright notice on my own documents if I have included some of your questions/materials?**

NO.

**Can I use your questions/materials to generate a profit?**

NO.

**Can I use the questions/materials on my website/PowerPoint presentation/Moodle...?**

It depends. If your usage is within the context of a teacher of students at an educational institution, YES. If you want to use the materials for profit, NO.

**I am a home-schooling parent. Can I use your materials?**

YES.

**I am a student and want to use your products for revision. Can I use them?**

YES (but make sure to tell your teachers how good they are!)

**Can I modify your questions/materials for my own use?**

YES.

**If I modify your questions, can I claim copyright?**

It depends. If the modifications are substantial, YES. If the modifications are trivial or superficial, NO. Using the Parameter Regeneration feature of our products is NOT a substantial modification

**I am a professional tutor. Can I use your materials with my students?**

NO.

**Can I republish your materials?**

NO.

**I think that I might be able to use your materials but don't seem to fit any of your FAQs. What do I do?**

Send us an email describing what you want to do (to info@efofex.com) and we will get back to you as soon as possible.

**How To Use This Material**

Copy a question from this document and paste (with reparametizing) into your document. This allows you to quickly build a collection of regeneratable questions into a test, worksheet, presentation or exam.

**Question**

A letter is chosen from the word <EFOFEX>
id:fxe{e947e0da-5803-48e3-9c0b-c4eeb6fbb0f6}
FXGP:DP-5TQtwWf
FXData:

</EFOFEX> Find the probability that the chosen letter is:

1. <EFOFEX>
   id:fxe{116ccaa2-cf9a-4f88-96eb-650173102b1f}
   FXGP:DP-5TQtwWf
   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{0416ecab-48f6-4973-a84a-78355a3e564e}
   FXGP:DP-5TQtwWf
   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{d9e23bc9-3382-49bd-8b56-825cb9a2dc6e}
   FXGP:DP-5TQtwWf
   FXData:

   </EFOFEX>
4. <EFOFEX>
   id:fxe{62920aad-8ad2-4c00-b154-34c36f82792a}
   FXGP:DP-5TQtwWf
   FXData:

   </EFOFEX>
5. A vowel

**Solution**

<EFOFEX>
id:fxe{697abcc1-1147-4ef1-b779-b3eec6177af1}
FXGP:DP-5TQtwWf
FXData:

</EFOFEX>

**Notes**

10000+ variations

**Question**

An experiment is conducted where three coins are tossed and the number of heads is recorded. The experiment is repeated <EFOFEX>
id:fxe{7b303b0e-525b-4085-b823-504b4e42aabe}
FXGP:DP-dEQJGDB
FXData:

</EFOFEX> times and the results are shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of heads | 0 | 1 | 2 | 3 |
| Frequency | <EFOFEX> id:fxe{b1df61e1-3a47-4b23-b314-f1451282740e} FXGP:DP-dEQJGDB FXData:  </EFOFEX> | <EFOFEX> id:fxe{0dcc0828-a959-4bca-86cf-a036de05d22e} FXGP:DP-dEQJGDB FXData:  </EFOFEX> | <EFOFEX> id:fxe{e4c4195f-f773-406f-ab96-ebf9f1f89354} FXGP:DP-dEQJGDB FXData:  </EFOFEX> | <EFOFEX> id:fxe{d4bfa9f1-e77e-4274-b564-f56333862fa0} FXGP:DP-dEQJGDB FXData:  </EFOFEX> |

Using the information in the table, find the experimental probability of throwing:

1. All heads
2. One head.
3. At least one head.

**Solution**

<EFOFEX>
id:fxe{58383eae-5d39-42a5-a2f3-9cd121d31795}
FXGP:DP-dEQJGDB
FXData:

</EFOFEX>

**Notes**

10000+ variations

**Question**

An online gaming company records how many failed connections there were to their servers during each hour. They have recorded the results for the past <EFOFEX>
id:fxe{c1e9573e-e8a4-4467-a4ee-865fd7e82ef2}
FXGP:DP-5f75GJj
FXData:

</EFOFEX> hours in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Failed Connections | 0 | 1 | 2 | 3 | 4 | 5 |
| Frequency | <EFOFEX> id:fxe{f9cdedc5-bed8-4b97-89a1-ce904f404c35} FXGP:DP-5f75GJj FXData:  </EFOFEX> | <EFOFEX> id:fxe{602b5f30-2589-4b73-9cd7-89f7d21cf54b} FXGP:DP-5f75GJj FXData:  </EFOFEX> | <EFOFEX> id:fxe{fb3cb1b3-941b-4799-b709-73fd7e4c2cec} FXGP:DP-5f75GJj FXData:  </EFOFEX> | <EFOFEX> id:fxe{764d18a5-0fd7-413f-8d24-e5aa603526b4} FXGP:DP-5f75GJj FXData:  </EFOFEX> | <EFOFEX> id:fxe{48764678-ff7f-4960-b8bd-4403af888344} FXGP:DP-5f75GJj FXData:  </EFOFEX> | <EFOFEX> id:fxe{be804a58-09a4-4a71-b63f-c8a97c0e2600} FXGP:DP-5f75GJj FXData:  </EFOFEX> |

Determine the experimental probability that there will be:

1. No failed connections during an hour.
2. At most 2 failed connections during an hour.

If there are more than 3 failed connections in an hour, the server is automatically rebooted to ensure that gamers’ response times are kept to a minimum.

1. What is the probability that a server will be automatically rebooted?

**Solution**

<EFOFEX>
id:fxe{41e91f3c-c448-4517-9164-28b95da17d1a}
FXGP:DP-5f75GJj
FXData:

</EFOFEX>

**Notes**

1000+ variations

**Question**

A bag contains red, green and blue marbles. A marble is drawn from the bag and then replaced. This happens <EFOFEX>
id:fxe{876301ad-b37d-4b41-9924-bc2dd352bb1e}
FXGP:DP-gJMv5gN
FXData:

</EFOFEX> times with a blue marble being drawn <EFOFEX>
id:fxe{e711bb92-4046-4196-997c-3899ef4be16b}
FXGP:DP-gJMv5gN
FXData:

</EFOFEX> times.

Which of the following is the **most likely** combination of marbles in the bag?

1. <EFOFEX>
   id:fxe{0da57ad6-3a7c-40c2-9ebc-30933861baa9}
   FXGP:DP-gJMv5gN
   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{c0cfb71f-d3c9-46e4-b13e-121fafc2a7c1}
   FXGP:DP-gJMv5gN
   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{34716212-df78-4c6c-b3aa-4a58ce36ff03}
   FXGP:DP-gJMv5gN
   FXData:

   </EFOFEX>
4. <EFOFEX>
   id:fxe{9f78620f-3323-41e2-96f0-ecfcced1db8a}
   FXGP:DP-gJMv5gN
   FXData:

   </EFOFEX>

**Solution**

<EFOFEX>
id:fxe{7c22b983-cd00-4de6-8779-1b0caf287aac}
FXGP:DP-gJMv5gN
FXData:

</EFOFEX>

**Notes**

10000+ variations

**Question**

<EFOFEX>
id:fxe{4e456671-b04e-4a53-95a3-4a953ed4898a}
FXGP:DP-dr9jXHj
FXData:

</EFOFEX> Year 10 students were asked if they liked studying Mathematics and English. Of the group, <EFOFEX>
id:fxe{5c144d2b-533e-4664-a6fa-9794de1e79fa}
FXGP:DP-dr9jXHj
FXData:

</EFOFEX> enjoyed studying Mathematics, <EFOFEX>
id:fxe{31c3f0b1-0595-4f80-9a61-75b9c7d7885f}
FXGP:DP-dr9jXHj
FXData:

</EFOFEX> enjoyed studying English. Of those students, <EFOFEX>
id:fxe{b06dd55f-0a6d-4065-8b5d-539f928eddca}
FXGP:DP-dr9jXHj
FXData:

</EFOFEX> enjoyed studying both subjects.

1. Show this information on a Venn diagram.
2. How many students enjoyed studying Mathematics only?
3. How many students did not enjoy studying either subject?
4. If a student is chosen at random, what is the probability that they enjoy studying English?
5. If a student is chosen at random, what is the probability that they enjoy studying both subjects?

**Solution**

<EFOFEX>
id:fxd{299e3da3-bf6e-43d2-a325-c8a264a7b7fb}
FXGP:DP-dr9jXHj
FXData:

</EFOFEX>

1. <EFOFEX>
   id:fxe{a51d1189-09b3-409b-8518-02c038e3e6ac}
   FXGP:DP-dr9jXHj
   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{e72f2f03-e266-4f0b-bb5c-a5567223b7ca}
   FXGP:DP-dr9jXHj
   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{b07c0218-771f-406f-9803-f2668f611334}
   FXGP:DP-dr9jXHj
   FXData:

   </EFOFEX>
4. <EFOFEX>
   id:fxe{10a2bfcc-a09a-48bb-9690-33625eb5a85e}
   FXGP:DP-dr9jXHj
   FXData:

   </EFOFEX>

**Notes**

30000+ variations

**Question**

Sets A and B are numbers taken from the first 12 positive integers.

<EFOFEX>
id:fxe{f8126a5a-7eba-43bd-a364-494c11171659}
FXGP:DP-8nWanyd
FXData:

</EFOFEX>

1. List the numbers which are in <EFOFEX>
   id:fxe{a96fd7a6-b7f9-49f4-ab13-5c7bc17164a6}

   FXData:

   </EFOFEX>
2. List the numbers which are in <EFOFEX>
   id:fxe{491d38fc-285f-4ce0-adf2-d22fcc06c5c0}

   FXData:

   </EFOFEX>

A number is chosen, at random, from the first 12 positive integers. Find:

1. The probability that the number is in set A
2. The probability that the number is in set B and not in set A
3. The probability that the number is not in A or B

**Solution**

<EFOFEX>
id:fxe{1bdd880b-62d6-40fe-a12e-420d0e4c4dae}
FXGP:DP-8nWanyd
FXData:

</EFOFEX>

**Notes**

10000+ variations

**Question**

The Venn diagram below shows the number of elements in two sets, A and B.

<EFOFEX>
id:fxd{f1fc3b99-5177-429a-9ade-d86282156abd}
FXGP:DP-QwEV59R
FXData:

</EFOFEX>

Find:

1. <EFOFEX>
   id:fxe{3729385a-fed8-4045-8ad1-2eb79e787fc8}

   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{76ec5b4f-ff78-4bc8-a05f-43568e6f6e6d}

   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{49a57166-9c38-4c1f-a0ff-d496fe1f35dc}

   FXData:

   </EFOFEX>
4. <EFOFEX>
   id:fxe{686d7dd5-2adc-465d-8f25-6ad8697e2ae5}

   FXData:

   </EFOFEX>

If a element is selected at random, find the following probabilities.

1. <EFOFEX>
   id:fxe{967c40d5-17d7-42dd-b696-cb43074e0206}

   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{9ef1e7e6-b946-4cce-bbff-b0968860733f}

   FXData:

   </EFOFEX>

**Solution**

<EFOFEX>
id:fxe{ff3a7b78-927c-4fbe-b38a-4d97d36d619c}
FXGP:DP-QwEV59R
FXData:

</EFOFEX>

**Notes**

2000+ variations

**Question**

A survey of <EFOFEX>
id:fxe{7fd77f65-ad5d-418b-901e-2c1cbf80163e}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX> people showed that <EFOFEX>
id:fxe{c16853c1-f1ca-4ce6-bb3a-c9cecf8556e2}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX> people liked tea (T), <EFOFEX>
id:fxe{21182ea9-2a19-4fb3-abc3-a8c3ea475843}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX> people liked coffee (C) and <EFOFEX>
id:fxe{6d42f9b6-6045-4173-831f-70d3fc0e2fdf}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX> people liked both tea and coffee.

1. Show this information on a Venn diagram.
2. How many people did not like tea or coffee?
3. Use your Venn diagram to find <EFOFEX>
   id:fxe{9f0e1535-0467-4209-8ae0-18d2a4b8720a}

   FXData:

   </EFOFEX>
4. Use your Venn diagram to find <EFOFEX>
   id:fxe{37ca628d-32f8-4bdb-8037-fc7d3ceedac0}

   FXData:

   </EFOFEX>

**Solution**

a)

<EFOFEX>
id:fxd{c9ad783c-6b82-4b2c-8192-8f0974455455}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX>

b) <EFOFEX>
id:fxe{210df859-95bb-406d-ac3b-e0791cde31f5}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX>

c) <EFOFEX>
id:fxe{4267d99b-9514-4f27-a49c-4acbeb1d66c7}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX>

d) <EFOFEX>
id:fxe{590cd720-3012-4a88-af46-94d702d28868}
FXGP:DP-WP9RggQ
FXData:

</EFOFEX>

**Notes**

250+ variations

**Question**

Complete this two-way table.

<EFOFEX>
id:fxd{090232ec-062c-4ff7-9d07-9743d18606b0}
FXGP:DP-vFaU4mm
FXData:

</EFOFEX>

Use your complete two-way table to calculate these probabilities.

1. <EFOFEX>
   id:fxe{3397721e-0620-45b6-bd6a-ba9cd2c432b5}

   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{0bfbade1-89d0-4968-b295-5e1794c90e48}

   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{b633bfb9-dd31-4c69-98c3-641192f2ec27}

   FXData:

   </EFOFEX>

**Solution**

<EFOFEX>
id:fxd{180f2be0-4f6d-4d7c-ae7b-cae666ead4cc}
FXGP:DP-vFaU4mm
FXData:

</EFOFEX>

1. <EFOFEX>
   id:fxe{293c493b-9954-43c9-83d7-8bc01e2faf95}
   FXGP:DP-vFaU4mm
   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{dd058b78-c998-40ae-9afc-b5da982b3cc2}
   FXGP:DP-vFaU4mm
   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{5e246af3-69fc-4e91-9c7a-f1d04644bb66}
   FXGP:DP-vFaU4mm
   FXData:

   </EFOFEX>

**Notes**

250+ variations

**Question**

If set A = <EFOFEX>
id:fxe{f0df674a-585e-4fa8-a3a6-d1b926bdf226}
FXGP:DP-Gf2CfeD
FXData:

</EFOFEX> and set B = <EFOFEX>
id:fxe{928ed843-50ad-40cd-8a38-73cce6bca654}
FXGP:DP-Gf2CfeD
FXData:

</EFOFEX>, what elements need to be removed from the two sets to make the sets mutually exclusive.

**Solution**

<EFOFEX>
id:fxe{39d43951-2380-4d92-b6e4-0465ee31926a}
FXGP:DP-Gf2CfeD
FXData:

</EFOFEX>

**Notes**

2000+ variations

**Question**

A card is selected at random from a standard deck of 52 playing cards.

1. <EFOFEX>
   id:fxe{18ddff5e-54b2-4f5c-b181-2c77426c79ff}
   FXGP:DP-R8VcdX6
   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{b8021ccc-02f1-4110-8a24-0400d7cbe54f}
   FXGP:DP-R8VcdX6
   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{15ed0f69-05d7-474f-8243-ece4e39dfe00}
   FXGP:DP-R8VcdX6
   FXData:

   </EFOFEX>

**Solution**

<EFOFEX>
id:fxe{60b1119b-32d0-489b-a997-082059813f0f}
FXGP:DP-3LnAq7Z
FXData:

</EFOFEX>

**Notes**

10 variations

**Question**

Two events, A and B, occur with the following probabilities:

<EFOFEX>
id:fxe{c0c77c2e-26c7-4c96-97ff-6cc1964e81ed}
FXGP:DP-mTbreYW
FXData:

</EFOFEX>

Use this information to find:

1. <EFOFEX>
   id:fxe{7303b6a5-545f-468e-be1e-a1268cb5e0c5}

   FXData:

   </EFOFEX>
2. <EFOFEX>
   id:fxe{0aa665ee-a91e-45b8-956b-27945f742162}

   FXData:

   </EFOFEX>
3. <EFOFEX>
   id:fxe{84035735-711e-481f-b166-badc843680fe}

   FXData:

   </EFOFEX>

**Solution**

<EFOFEX>
id:fxe{d5d3c4d2-7de2-4383-bbff-c28450529370}
FXGP:DP-mTbreYW
FXData:

</EFOFEX>

**Notes**

800+ variations

**Question**

Two six-sided dice are thrown, and the scores added together.

1. Show the possible outcomes in a table.
2. Find the probability that the scores add up to <EFOFEX>
   id:fxe{1a3bb243-c83c-4d89-bc76-ccc30d99efbf}
   FXGP:DP-B8uKZZx
   FXData:

   </EFOFEX>.
3. Find the probability that the scores add up to at least <EFOFEX>
   id:fxe{f2c556be-92f1-45e3-bbe4-51c3065d04d0}
   FXGP:DP-B8uKZZx
   FXData:

   </EFOFEX>.
4. Find the probability that the scores add to an even number.

**Solution**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

a)

b) <EFOFEX>
id:fxe{ccc6d916-c681-4c4c-941c-7467e50c1a2c}
FXGP:DP-B8uKZZx
FXData:

</EFOFEX>

c) <EFOFEX>
id:fxe{f9a1909e-1175-4242-917b-906b009a4cad}
FXGP:DP-B8uKZZx
FXData:

</EFOFEX>

d) <EFOFEX>
id:fxe{4e969565-2ae1-493b-96cb-afd83241f756}

FXData:

</EFOFEX>

**Notes**

50+ variations