**Instructions:** For each problem, find the probability that a robot would end up on the finish position, given the number of moves indicated and the indicated available moves.

Note 1: The robot is allowed to move off the target if it reaches it early.

Note 2: You may assume the grid is infinitely large (i.e. the grid has no boundary)

**Problem 1**

**Total moves:** 2

**Available movements:** Left, Right, Up, Down

(Note: The robot finishes where it starts)

Start

Finish

**Problem 2**

**Total moves:** 4

**Available movements:** Right, Up

Start

Finish

**Problem 3**

**Total moves:** 4

**Available movements:** Left, Right, Up, Down

Start

Finish

**Problem 4**

**Total moves:** 4

**Available movements:** Left, Right

Start

Finish

**Problem 5**

**Total moves:** 4

**Available movements:** Left, Right, Up, Down

Start

Finish

**Problem 6**

**Total moves:** 4

**Available movements:** Left, Right, Up, Down

Start

Finish

**Problem 7**

**Total moves:** 5

**Available movements:** Left, Right

Start

Finish

Answer Sheet

|  |  |
| --- | --- |
| Problem | Answer |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

Answer Sheet

|  |  |
| --- | --- |
| Problem | Answer |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

Answer Sheet

|  |  |
| --- | --- |
| Problem | Answer |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

**Answers**

|  |  |
| --- | --- |
| Problem | Answer |
| 1 | (LR, UD, RL, DU) |
| 2 | (RRUU, RURU, RUUR, URRU, URUR, UURU) |
| 3 | (URRD, URDR, UDRR, DRRU, DRUR, DURR, RURD, RDRU, RLRR, RRRL, RRDU, RRUD, RRLR, RUDR, RDUR, LRRR) |
| 4 | (LRRR, RLRR, RRLR, RRRL) |
| 5 | (URRR, RURR, RRUR, RRRU) |
| 6 | (RRUL, RRLU, RURL, RLRU, RULR, RLUR, URRL, LRRU, URLR, LRUR, ULRR, LURR, UURD, UUDR, URUD, UDUR, URDU, UDRU, RUUD, DUUR, RUDU, DURU, RDUU, DRUU) |
| 7 | (RRRLL, RRLRL, RRLLR, RLRRL, RLRLR, RLLRR, LRRRL, LRRLR, LRLRR, LLRRR) |