**THE CUTTING PROBLEM**

**NAME**

**Introduction**

What exactly is the problem to be solved? Describe it in much detail as you can so that the reader fully understands it. (A short paragraph.)

The aim of this report is to …? (What does this report intend to do? Just one sentence)

**Methods**

How are you going to solve this problem? (Write this section after you have solved the problem!!!)

What mathematical knowledge or procedures are needed?

What notation will you use? ‘Let *n* represent the number of ….

**Observations**

Include here your circle diagrams and the tabulated results of these diagrams.

Table 1: the outcome of manually collecting daa

|  |  |
| --- | --- |
| n | Pn |
| 1 | 2 |
| 2 | 4 |
| 3 | 7 |
| 4 | 11 |
| 5 | 16 |
| 6 | 22 |

**Solution**

**The ruccerence**

**Numeric solution**

|  |  |
| --- | --- |
| n | P\_n |
| 1 | 2 |
| 2 | 4 |
| 3 | 7 |
| 4 | 11 |
| 5 | 16 |
| 6 | 22 |
| 7 | 29 |
| 8 | 37 |
| 9 | 46 |
| 10 | 56 |
| 11 | 67 |
| 12 | 79 |
| 13 | 92 |
| 14 | 106 |
| 15 | 121 |
| 16 | 137 |
| 17 | 154 |
| 18 | 172 |
| 19 | 191 |
| 20 | 211 |

Chart, line chart

Description automatically generated

**Algebraic Solution**

**How to sum up the numbers 1 to n**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **..** | **..** | **..** | **n-2** | **n-1** | **N** |
| **n** | **n-1** | **n-2** | **..** | **..** | **..** | **3** | **2** | **1** |
| **n+1** | **n+1** | **n+1** | **n+1** | **n+1** | **n+1** | **n+1** | **n+1** | **n+1** |

**This table equals.**

**We must divide this by 2 to only have one copy.**

**To apply this formula to the cutting problem you must add 1**

You will describe step-by-step the derivation of the formula.

You will use Equation Editor in Word.

You will use your formula to make some predictions.

**Discussion**

What evidence do you have that your formula is correct?

What advantages are there to using a formula over drawing diagrams? Explain what these are.

Does the circle shape used in the problem have any significance? Explain.

Could we have used a square or the entire plane instead and still get the same results? Justify- perhaps give examples.

**Acknowledgements**

Acknowledge any help received other than from your partner or your teacher.

**References**

Needed only if you sourced information from elsewhere and these must be in APA format (see <https://libguides.murdoch.edu.au/APA/entries>)

**IMPORTANT NOTE:**

Your report is to be written in the first person: ‘I’ or ‘we’

Appendix 1

Table 2: Numerical solutions

|  |  |
| --- | --- |
| n | P\_n |
| 1 | 2 |
| =B5+1 | =B6+C5 |
| =B6+1 | =B7+C6 |
| =B7+1 | =B8+C7 |
| =B8+1 | =B9+C8 |
| =B9+1 | =B10+C9 |
| =B10+1 | =B11+C10 |
| =B11+1 | =B12+C11 |
| =B12+1 | =B13+C12 |
| =B13+1 | =B14+C13 |
| =B14+1 | =B15+C14 |
| =B15+1 | =B16+C15 |
| =B16+1 | =B17+C16 |
| =B17+1 | =B18+C17 |
| =B18+1 | =B19+C18 |
| =B19+1 | =B20+C19 |

Appendix 2