

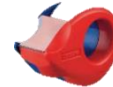
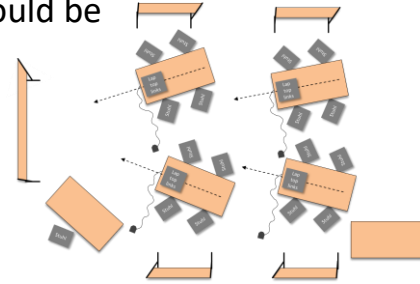


# Checklist Three day Introductory Kata Course (Page 1 of 6)

- ❑ All 3 days we will need well-lighted, well-ventilated room with movable tables, the room should be located close to the four processes we will practice on during the 2<sup>nd</sup> and 3<sup>rd</sup> day.
- ❑ Fill out table on page 2  , select 4 to 6 processes we will use as examples to analyse and work on during the three days
- ❑ Please inform your employees and works council in advance about the planned activities. We will be using stopwatches. Preparations on day 1 will start at 7:30, the workshop starts at 8:30 on day one. See agenda for all other times.
- ❑ Please print, perforate and put in a folder a sufficient number of handouts with the necessary documents you will find here: [www.verbesserungskata.de/katacourse1](http://www.verbesserungskata.de/katacourse1)
- ❑ 1 beamer (ideally hanging from the ceiling!)
- ❑ 2 flipcharts with enough new flipchartpaper
- ❑ 4 pinnboards (without brown paper)
- ❑ 60 white, rectangular moderation cards (aprox. 10 x 20 cms)
- ❑ 1 pencil per participant, 4 pencil sharpeners, 10 erasers
- ❑ 5 adhesive tapes, 4 scissors
- ❑ 1 clipboard per participant
- ❑ 1 flipchart marker black with **wide chisel tip** per person (e.g. Edding 383)
- ❑ 1 flipchart marker red with **wide chisel tip** per person (e.g. Edding 383)
- ❑ Food (drinks, pretzels or similar) during morning and afternoon breaks .
- ❑ 1 stopwatch or smartphone with stop watch function per participant
- ❑ For the coaching exercises on the shopfloor we will need a set of head-sets (one headphone per person) and one microphone (available during all 3 workshop days!)
- Note:** please make sure to test and charge the devices the day before!*
- ❑ 4 laptops with Excel process step analysis tool installed. Download the tool from [www.verbesserungskata.de/katacourse1](http://www.verbesserungskata.de/katacourse1).
- ❑ 1 pair of safety shoes  per person if needed



# Checklist Three day Introductory Kata Course (Page 2 of 6)

Selection of practice processes and required process information

Attention! This table needs to be filled out before the course starts!

Process name	Demand per month (for <u>all</u> variants of the selected product family)	Working time/day (minutes/day)	Breaks per day (Number and minutes/day)	Number of operators (per shift and day)
1				
2				
3				
4				
5				
6				

Best learning results are achieved when the processes:

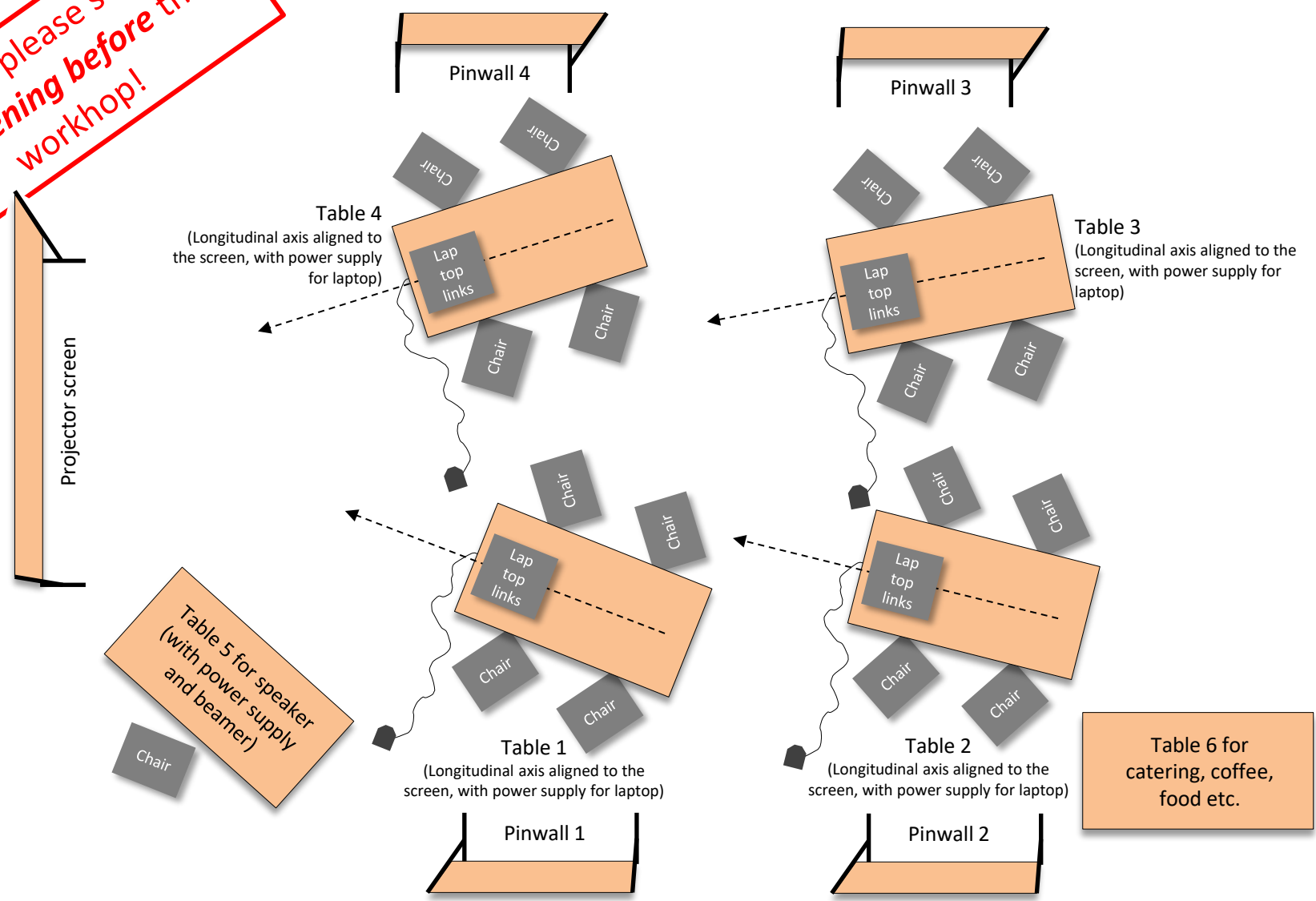
- 1- are manual,
- 2- use 2 to 3 operators,
- 3- have a cycle time of aprox. 30 secs to 2 mins. and
- 4- run all day (early and late shift).



# Checklist Three day Introductory Kata Course (Page 3 of 6)

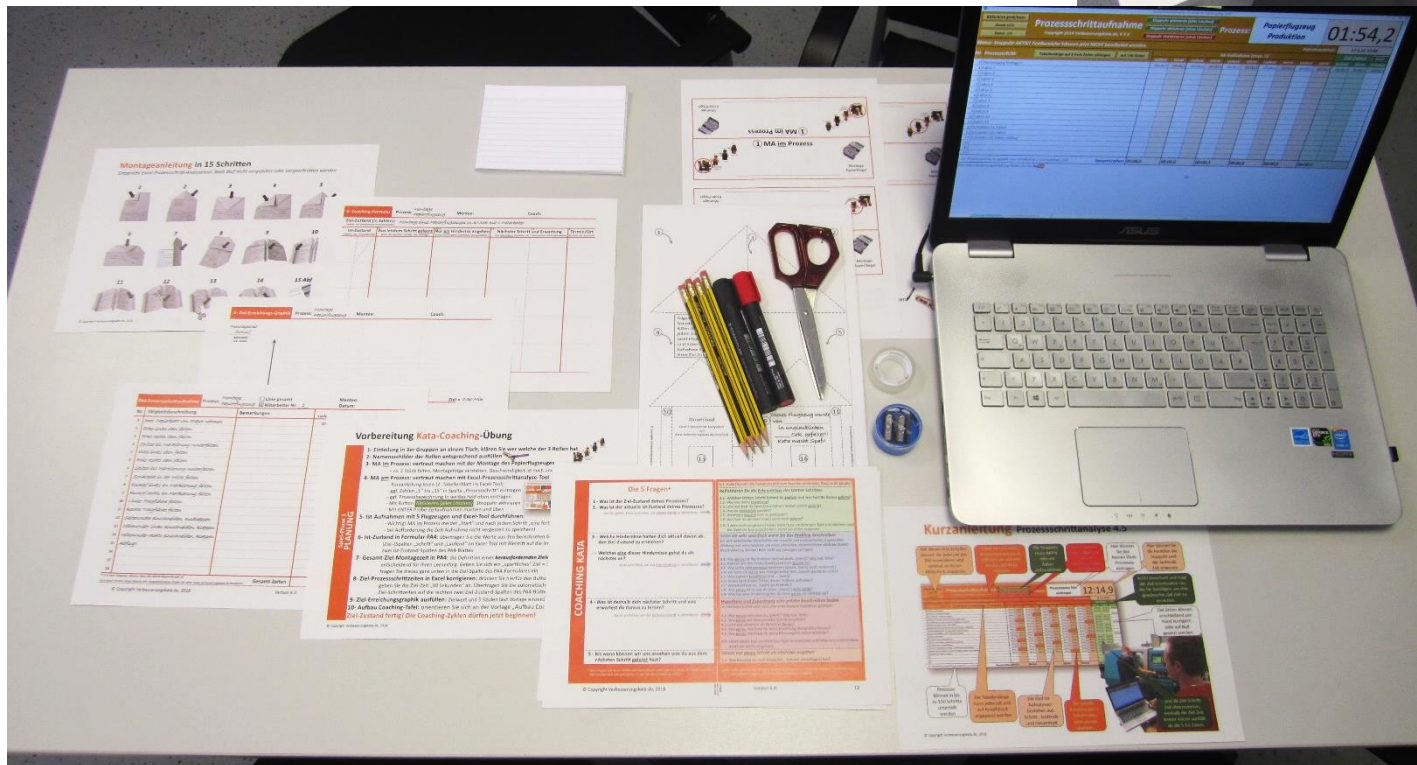
## Layout of the training room for 4 teams

If possible please set it up the **evening** before the workshop!



# Setting up the four **group tables** for the Coaching Exercises (4 of 6)

If possible please set it up the **evening** before the workshop!



# Setting up the four **Coaching Boards** for the Coaching Exercises (5 of 6)

If possible please set it up the **evening before** the workshop!

PA4-Process step analysis form

Titel

5- Target achievement chart

Kata-Coaching-Tafel

Prozess: Montage Papierflugzeug 1

6- Coaching form

# Necessary Forms

**Please print all following forms only once, in color and on one side. All four sets of forms needed for four teams are included.**



# Kata coaching board

Process: *Airplane Assembly Group 1*

# Kata coaching board

Process: *Airplane Assembly Group 2*

# Kata coaching board

Process: *Airplane Assembly Group 3*

# Kata coaching board

Process: *Airplane Assembly Group 4*

# Kata coaching board

Process: *Airplane Assembly Group 1*

# Kata coaching board

Process: *Airplane Assembly Group 2*

# Kata coaching board

Process: *Airplane Assembly Group 3*

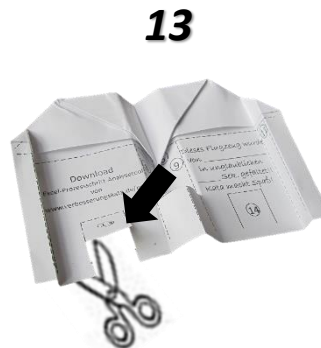
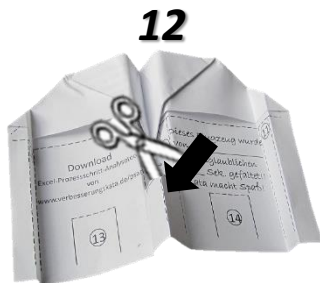
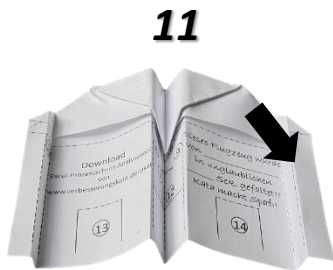
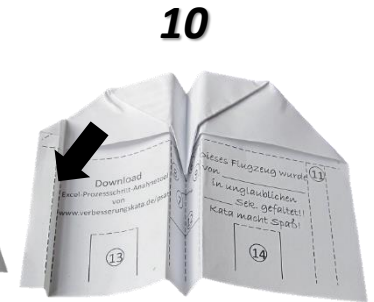
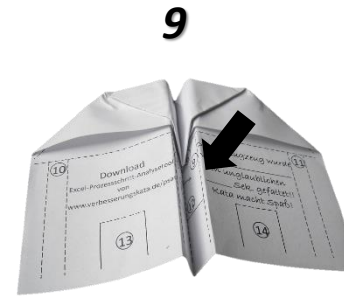
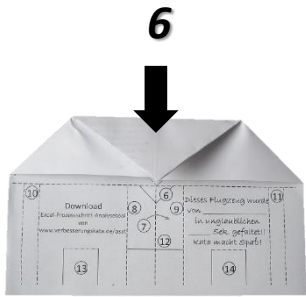
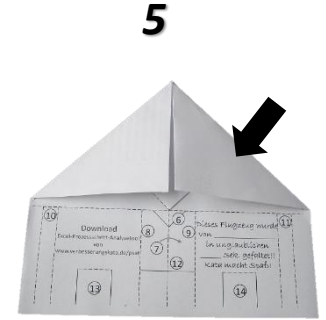
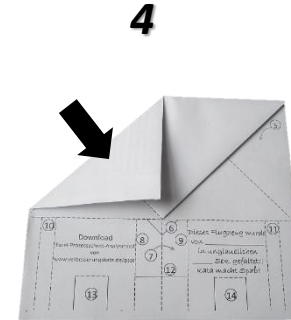
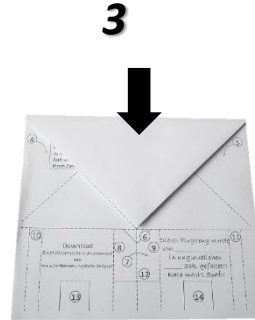
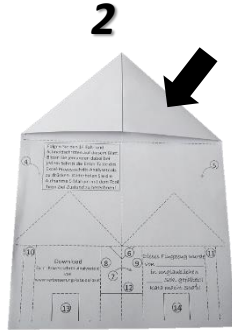
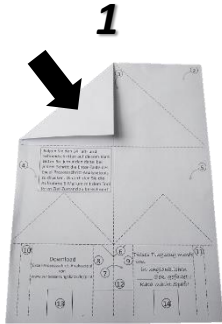
# Kata coaching board

Process: *Airplane Assembly Group 4*



# Assembly Instructions in 15 Steps

Steps correspond Excel Process Steps Analysis Tool. Printed paper should not be pre-folded nor pre-cut.

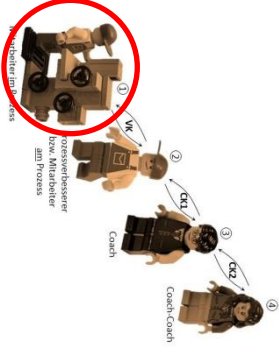


Demonstrate flight stability  
by 4 meter long flight!

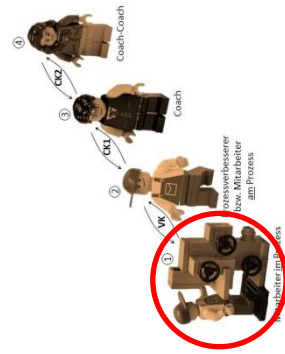
Assembly  
Paper Plane



# 1 Employee in process



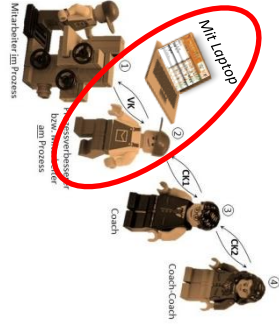
# 1 Employee in process



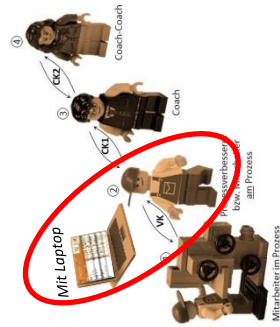
Assembly  
Paper Plane

# 2 Process improver

Assembly  
Paper Plane



# 2 Process improver



Assembly  
Paper Plane

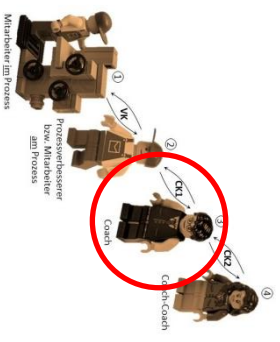
1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you



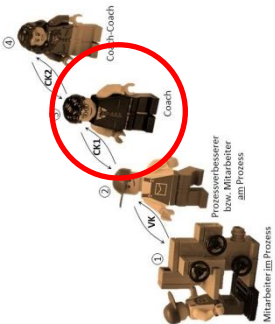
## Assembly Paper Plane



1 Coach



1 Coach



## Assembly Paper Plane

1. Cut out name tags



2. Complete your name using a black marker



3. Fold name tag and place it in front of you

# Preparing the **Kata Coaching** Exercise

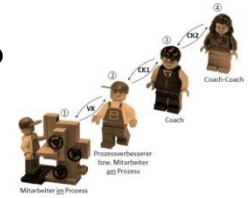
## 1- Planning Phase

- 1- Divide participants in groups of 3 per table: who will have which of the 3 roles?
- 2- Fill out and fold name tags, place on table
- 3- Employee in process: get familiarized with the assembly of the airplane

- fold 2 planes, understand the assembly sequence, speed is irrelevant at this point

#### 4- Process improver: get familiarized with Excel-Process-Step-Analysis-Tool

- Read instructions sheet (2nd sheet on Excel Tool)
- write step numbers 1 to 15 in column „Process step“
- Complete the processes name in the white field top right
- With button **Activate (delete everything)** activate stopwatch
- Use ENTER to test tool and practice some time stopping



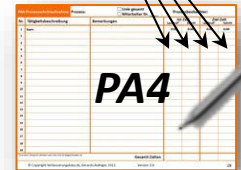
#### 5- Repeat assembly processes five times, time each repetition with the Excel-Tool:

- Employee in process says „Start“ and after every single step „one ready!“, „two ready!“ etc.
- Don't forget to save your times on your computer!
- Do not improve the process during these 5 cycles

#### 6- Current Condition with PA4-Sheet: Copy TC from green column to PA4, use a pencil

Copy values from Target columns „step“ and „running“ from Excel-Tool with pencil to the left to columns of the PA4-sheet

Fill out these 4 columns!



#### 7- Total Target Assembly Time in PA4: defining a **challenging Target Condition** is very important for your learning success. Your target is 30 seconds, write this value at the bottom of the Target Column of the PA4-Form

#### 8- Correct Target Step Times with Excel Tool: press the green button **AUTO**, write „30 secs“ when asked. Copy the automatically calculated numbers to column 3, 4.

#### 9- Prepare coaching boards (one pinboard per group):

- pin PA4 left, note target on Form 5 and draw 5 columns with the 5 times you stopped
- add three obstacles which you think you should tackle next



**The Coaching Board is ready! The Coaching Cycles can begin!**

# Instructions Prozess Steps Analysis-Tool 5.0

With these three buttons you can optimize the size of the sheet on your computer display.

The stopwatch must be ACTIVE in order to be able to stop your step and cycle times.

The stopwatch must be INACTIVE in order to edit text areas.

Here you can write the name of your process.

Here you can see if the watch is running and the time elapsed.

With the AUTO function you can automatically calculate the needed step times necessary to achieve your target time.

Target-times can be corrected by hand to define the target condition to achieve.

Processes can be broken down in as many as 150 single steps.

The length of the sheet can be adjusted anytime just by clicking these buttons.

The five time measurements consist of cumulated, step and total times.

The shortest step time is marked in darker orange...

...and taken over as Target-Step-Time. That's why the Total Target Time is always shorter than the five measured times.

Reduce, expand screen

Zoom +1%

Zoom -1%

## Process Step Analysis-Tool

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Activate stopwatch (delete all)

Activate stopwatch (no delete)

Deactivate stopwatch (no delete)

Process:

Case assembly example

00:23,0

Status: Stopwatch is ACTIVE! Text sections CAN NOT be edited now.

Hancho/Trainer: Michael Müller

Operator: Hans Fischer

Date: 13.8.24 17:32

Nr 4 process steps

Adjust sheet length to 3 free rows

Expand to 150 rows

Total time: 00:21,6 00:22,9 00:00,0 00:00,0 00:00,0 00:17,5

	Current condition (max. 5 time recordings)										Ziel-Zeiten		Auto
	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Correction
0 Take plastic case from bin	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0
1 Take plastic case out from package, place in fixture	00:04,1	00:04,1	00:07,1	00:07,1							00:04,1	00:04,1	
2 Place harness on PCB and connect plugs	00:09,5	00:05,4	00:12,0	00:04,8							00:08,9	00:04,8	
3 Place PCB in housing, take lid, close lid, place and tighten 6 screws	00:13,5	00:04,0	00:18,4	00:06,4							00:12,9	00:04,0	
4 Put housing in bag, put bag and instructions into box, place box on pa	00:21,6	00:08,1	00:22,9	00:04,6							00:17,5	00:04,6	
5													
6													
7													

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# The 5 Questions\*

1 - What is the Target Condition of this process?

2 - What is the Current Condition now?

Go to the process, Turn Card to Reflect on the Last Step



3 - What Obstacles do you think are preventing you from reaching the Target Condition?

3b - Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle



4 - What is therefore your Next Step and what do you expect to Learn from it?

Turn Card to Detail the Next Step



5 - When can we go and see what you have Learned from taking that step?

\* The 5 Questions on the front side of this Card and Question 2.1 on the rear side must be asked every time and always with the same wording as written here.

0.1- Hello [Name]! We had agreed on doing a Coaching Cycle now. Is it OK with you?

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2.6- Is there anything else you learned beyond what you already told me?

2.9- [Don't forget to praise!] Thank you! Please, let us (return to the board and) write down what we have learned so far, so that we do not forget anything.

## Be very specific when describing the One Obstacle to tackle next

A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!

3.1- What exactly is the problem with/why...[mkw]? Can you show me, please?

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## Be specific when describing the Hypothesis und Experiment

Because in our Next Step we should always be testing refutable hypothesis!

4.1- How exactly will you...[mkw]? Can you show me, please?

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## Always take just One Step at a time

5.1- What of that next step do you think you could do today/until...[propose time]?

mkw:= try to use the mentee's key words from the last answer he gave you in your next detailing question. He will appreciate that you are actively listening to him!

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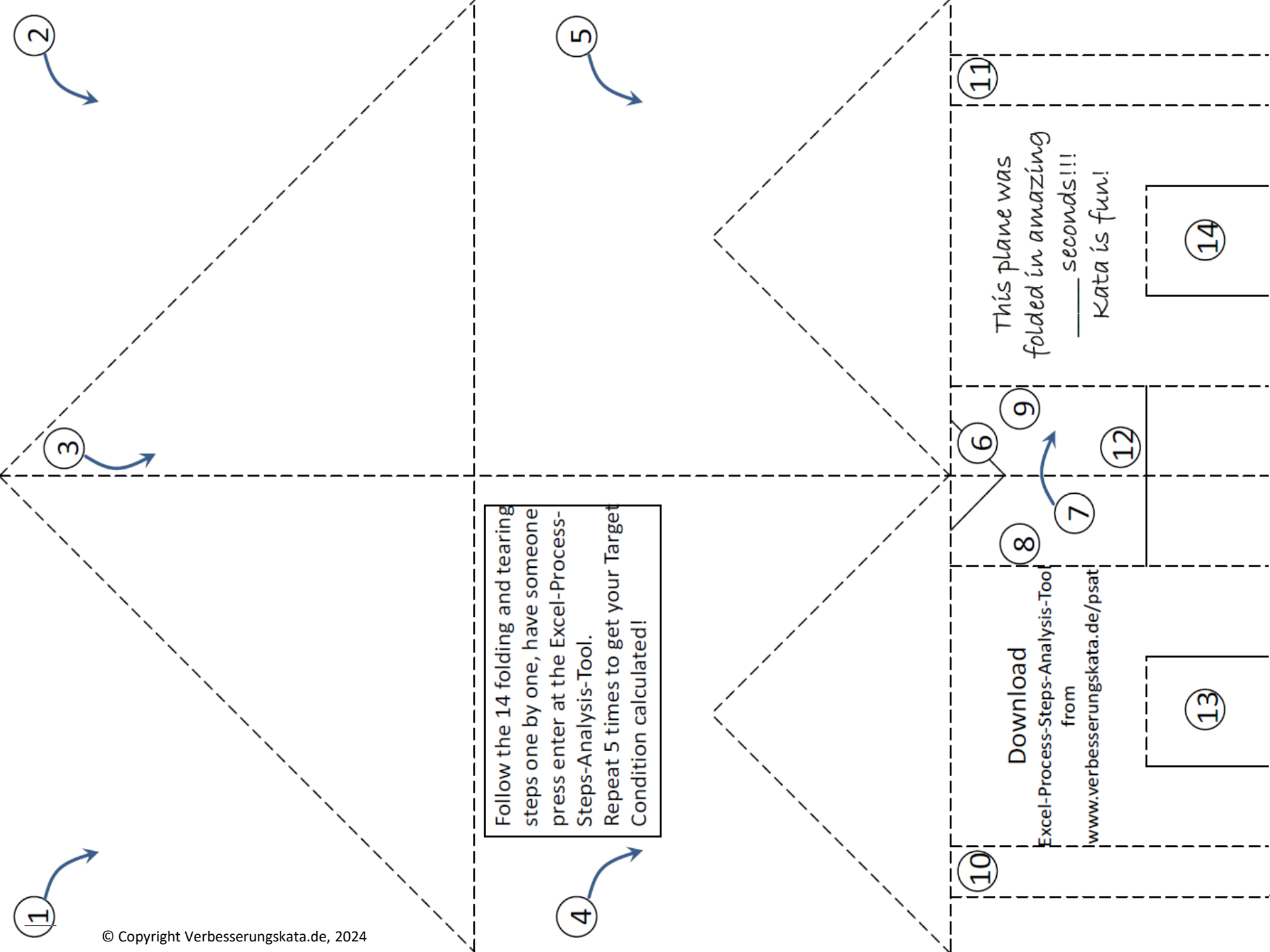
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1

5

11

14

3

9

12

13

1

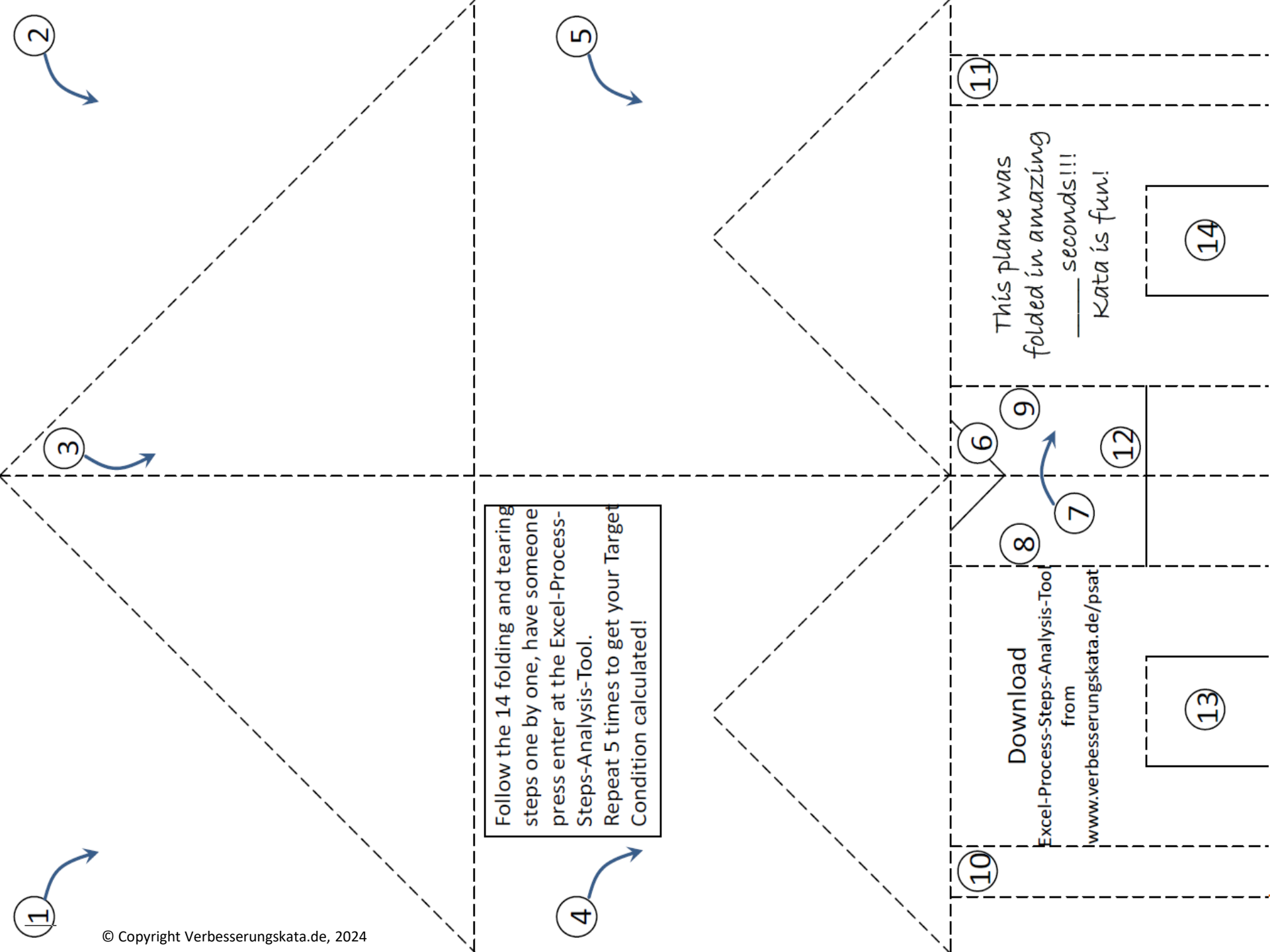
4

10

Follow the 14 folding and tearing  
steps one by one, have someone  
press enter at the Excel-Process-  
Steps-Analysis-Tool.  
Repeat 5 times to get your Target  
Condition calculated!

This plane was  
folded in amazing  
\_\_\_\_\_ seconds!!!  
Kata is fun!

Download  
Excel-Process-Steps-Analysis-Tool  
from  
[www.verbesserungskata.de/psat/](http://www.verbesserungskata.de/psat/)



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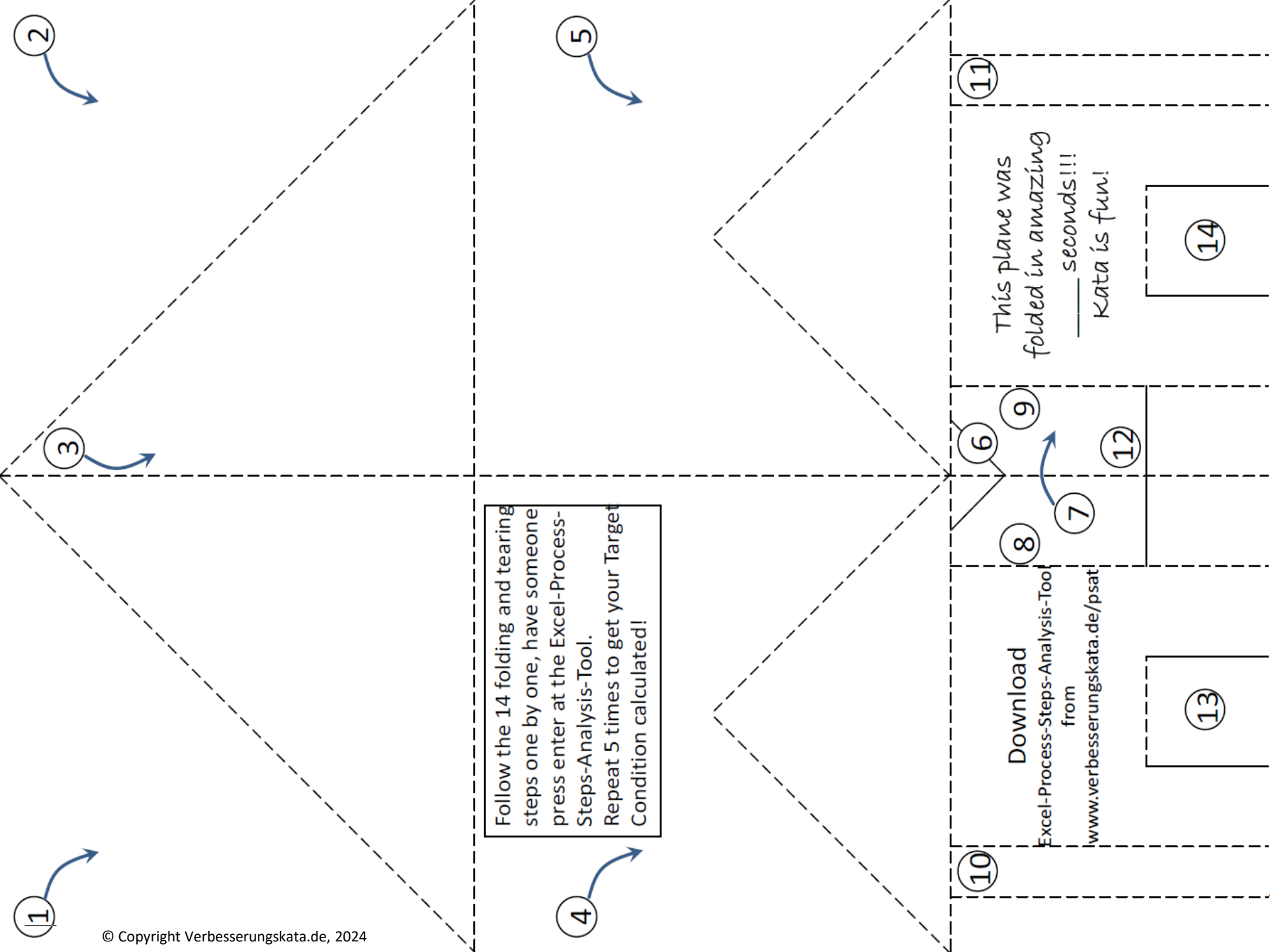
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Kata is fun!



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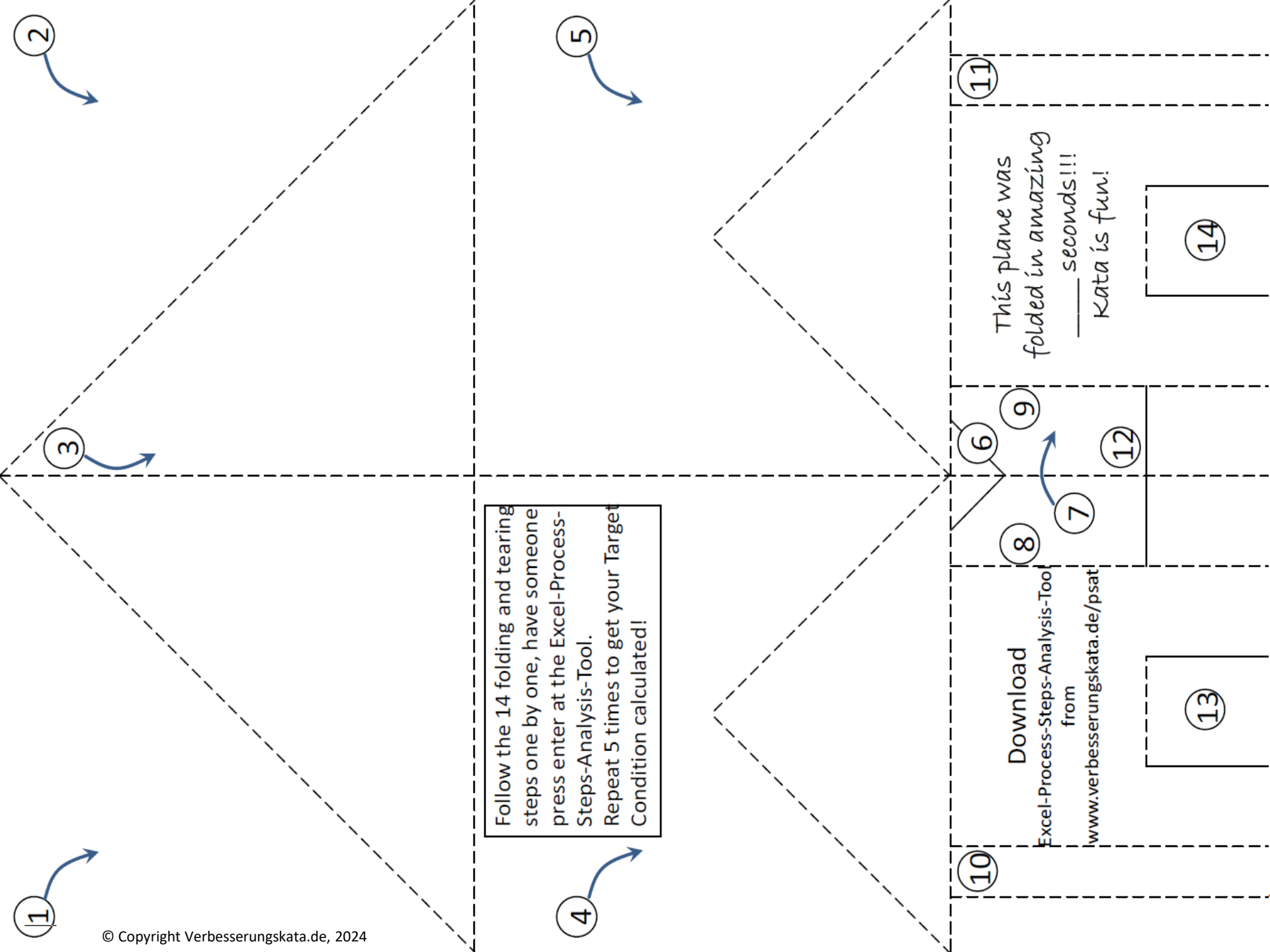
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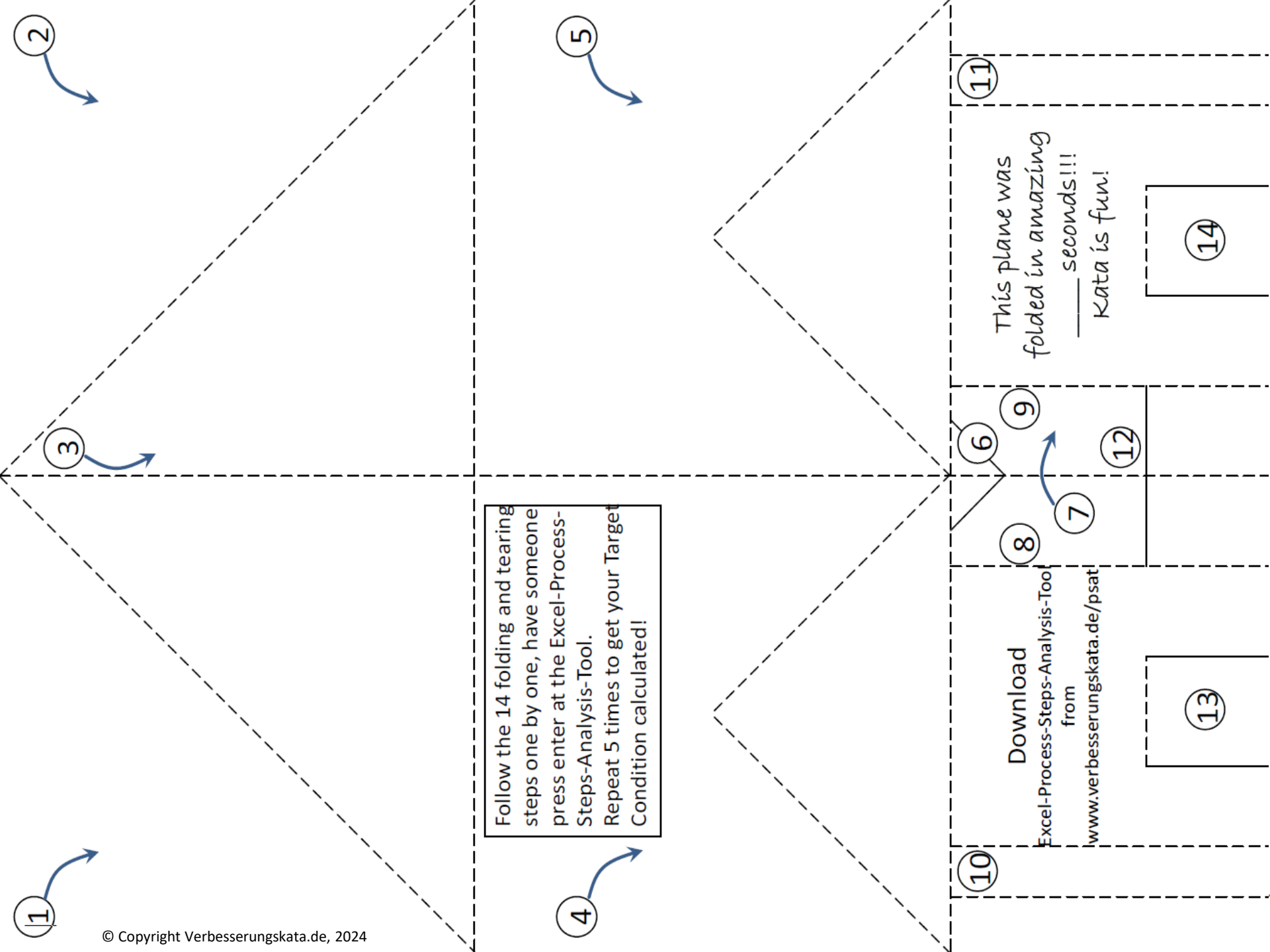
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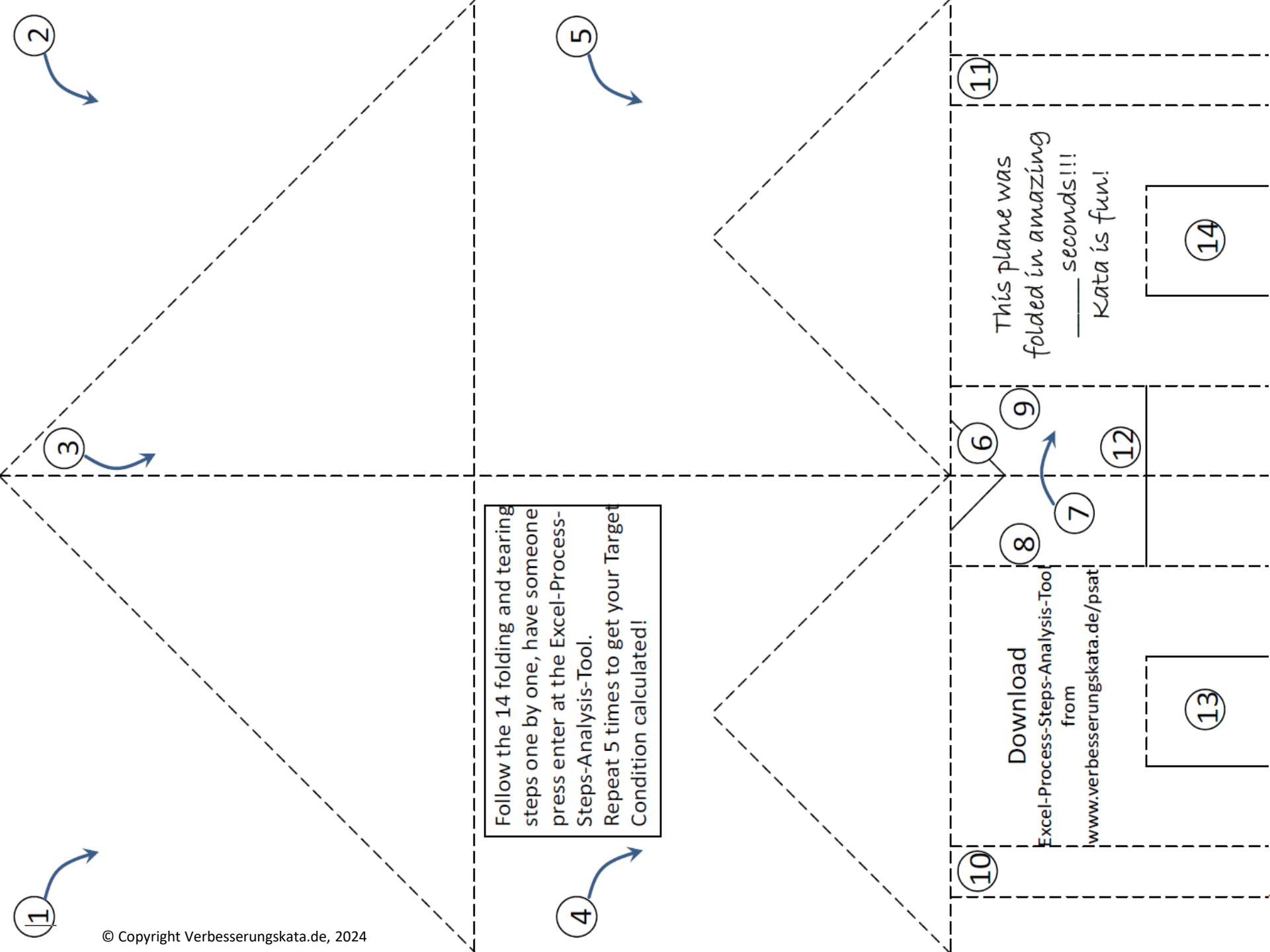
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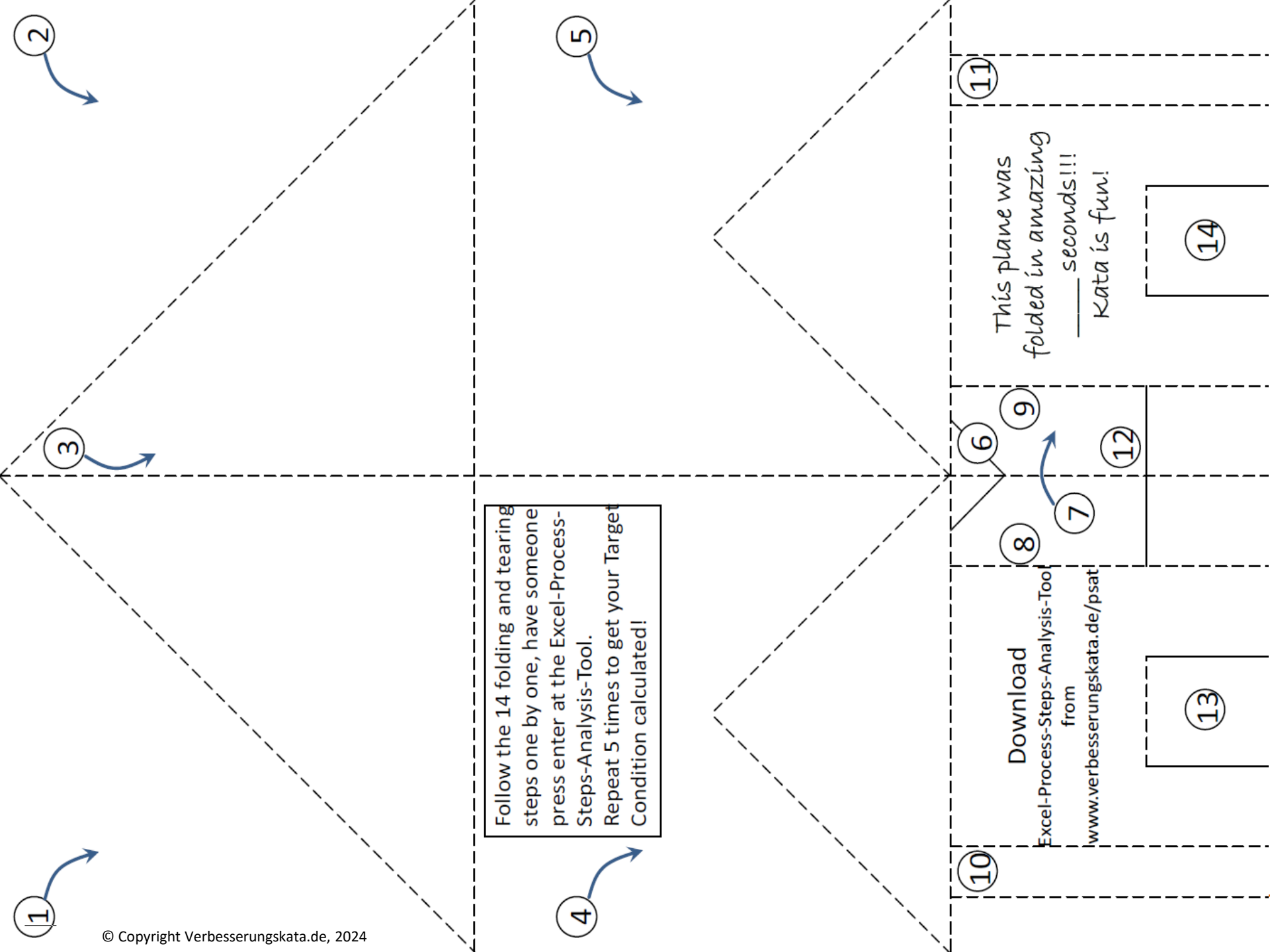
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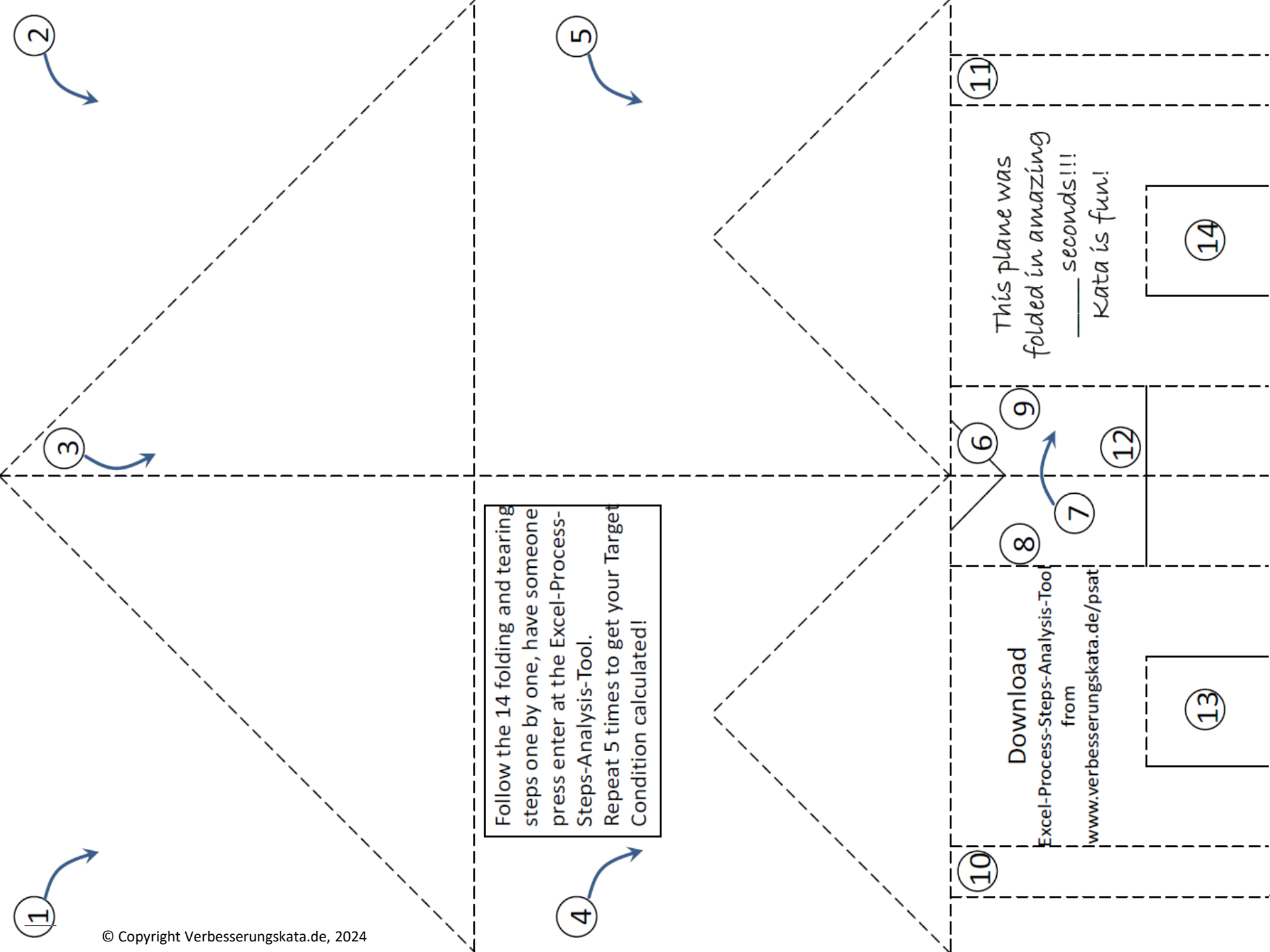
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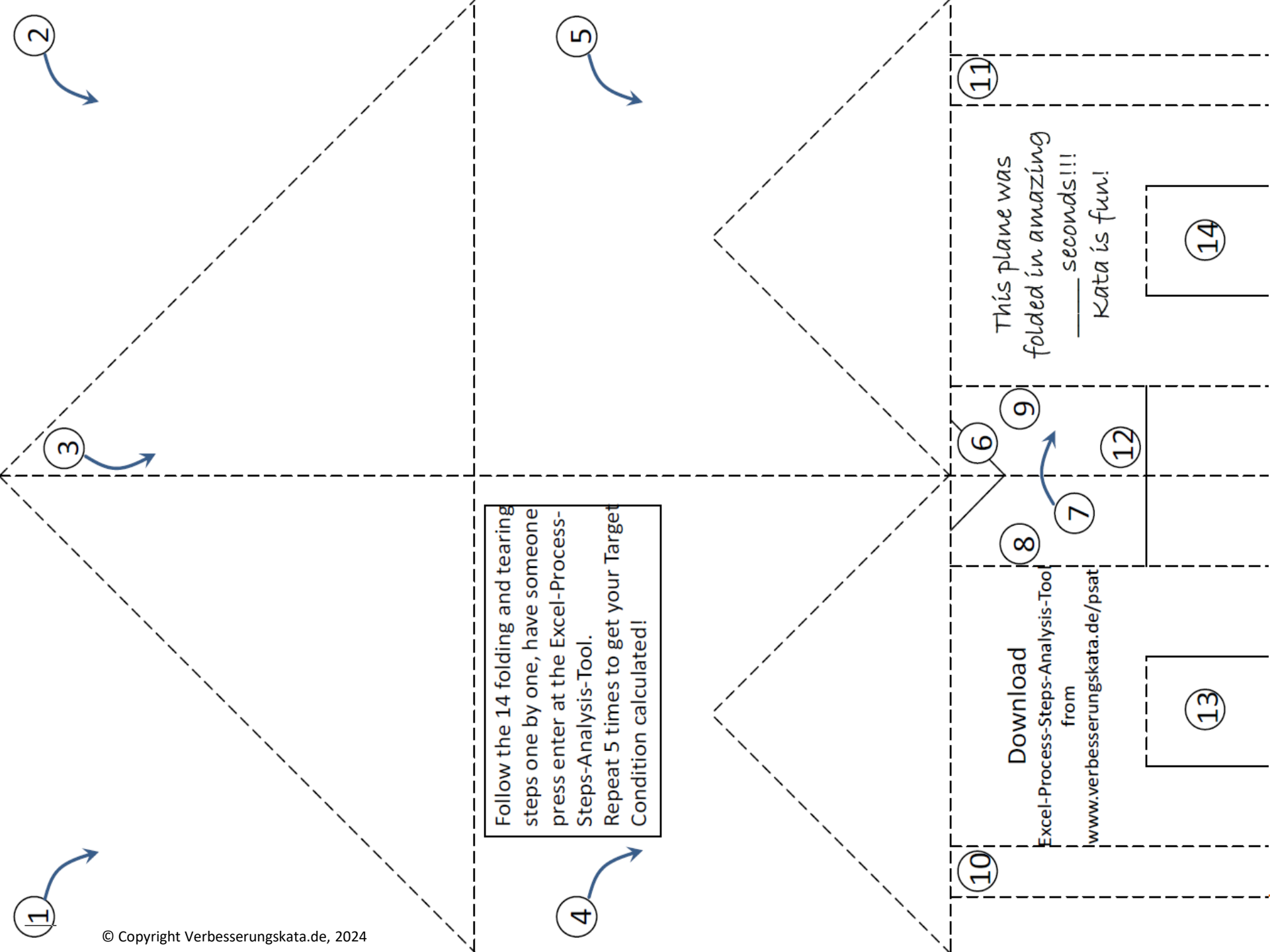
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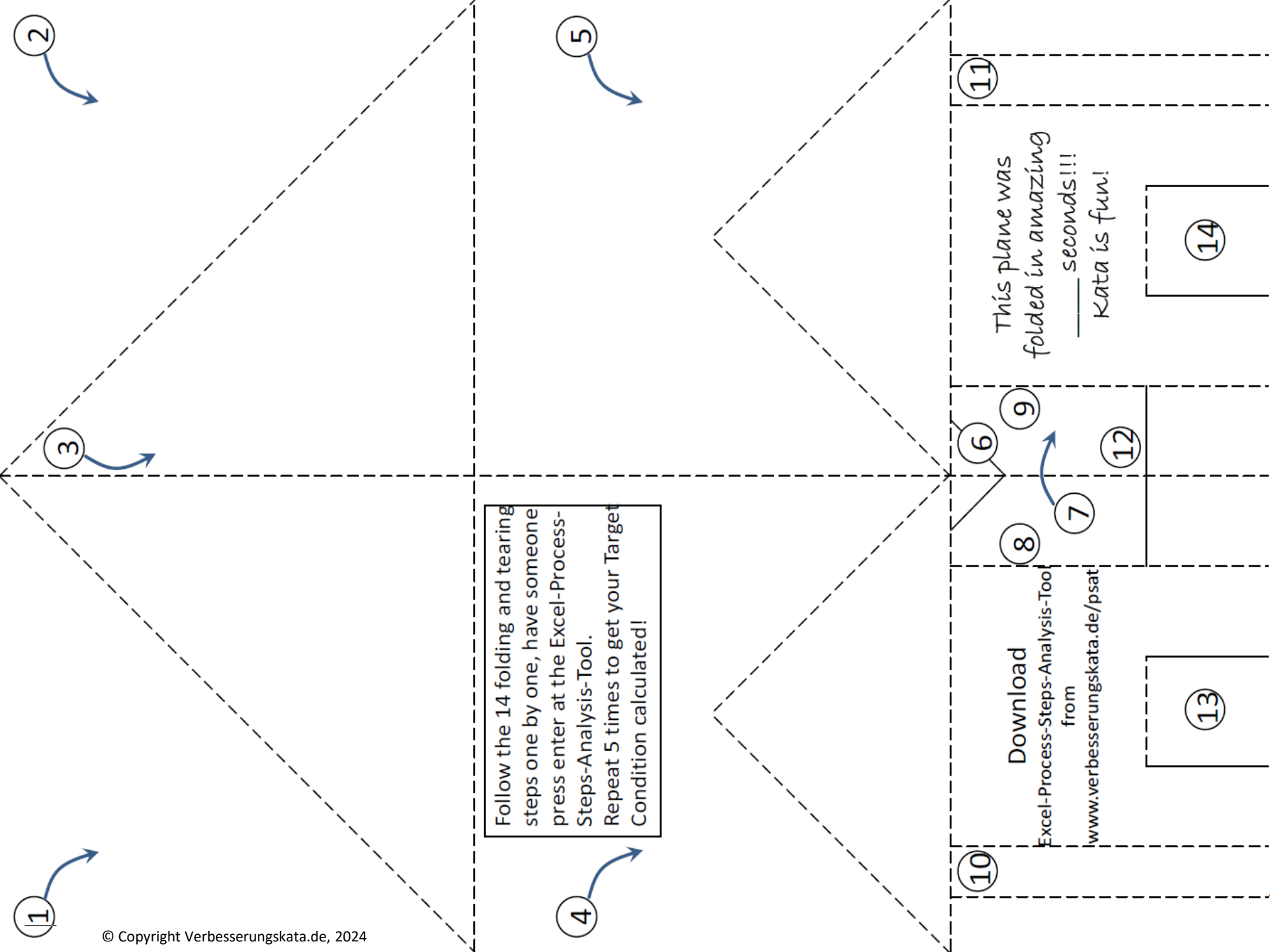
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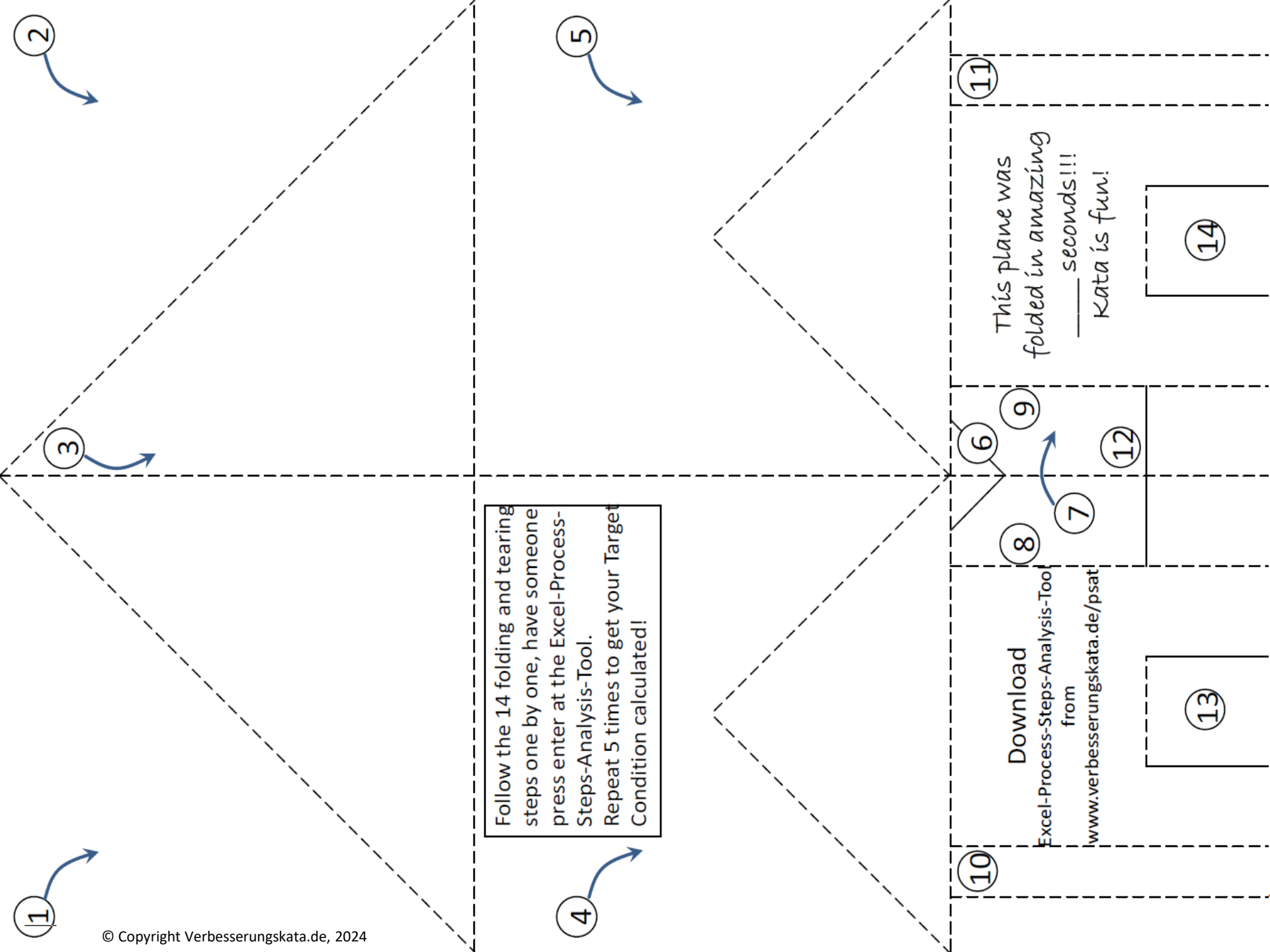
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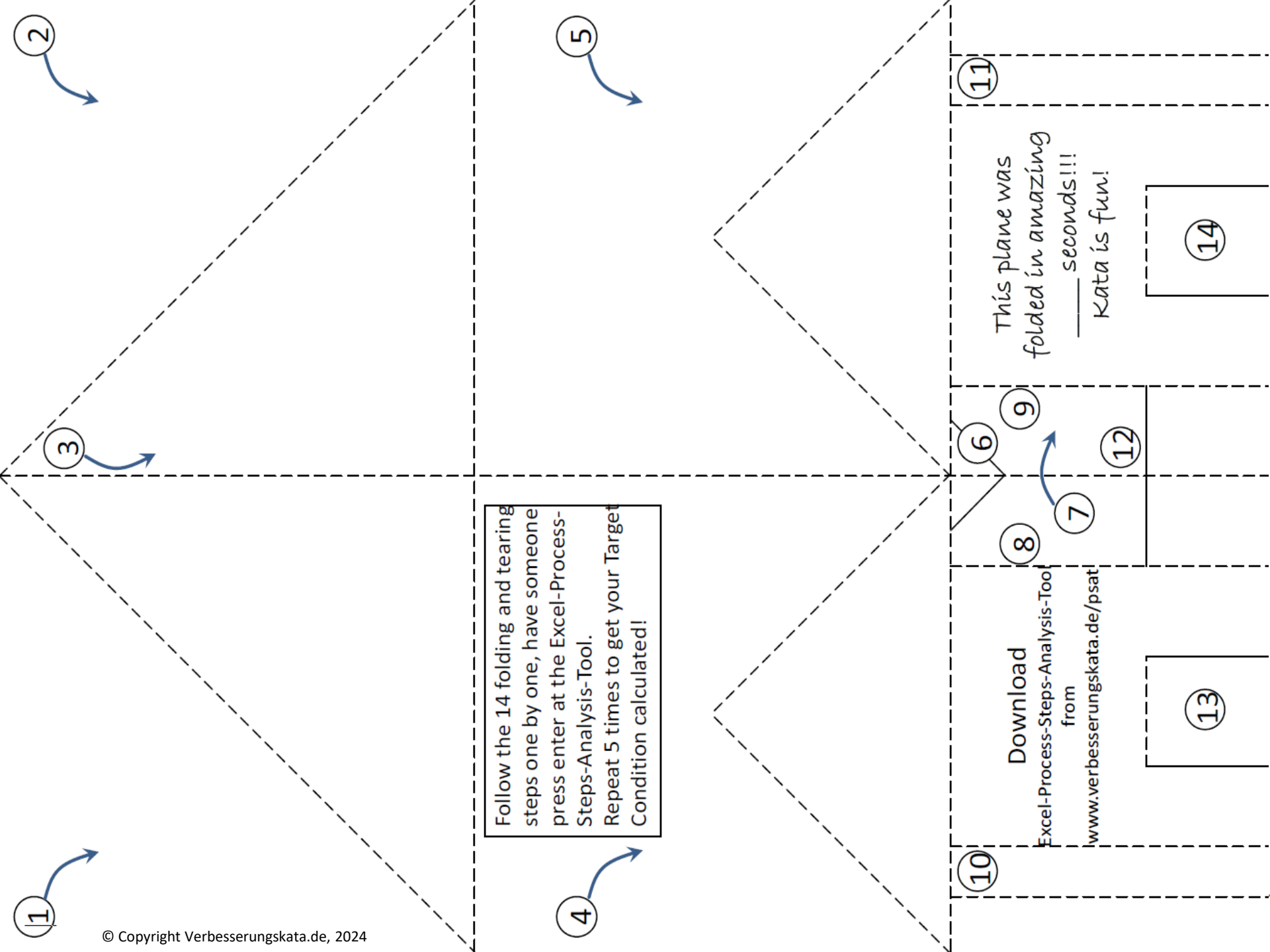
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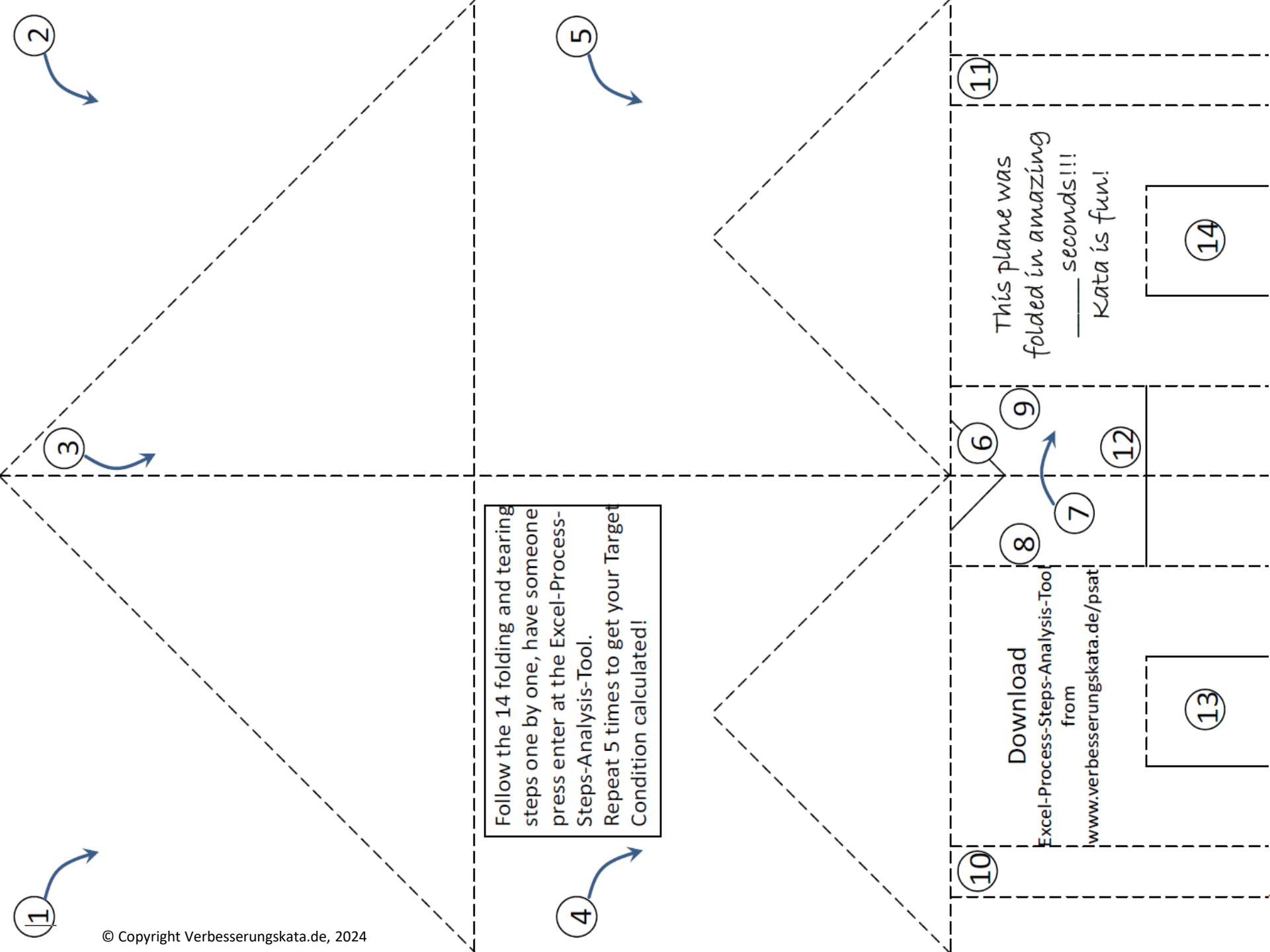
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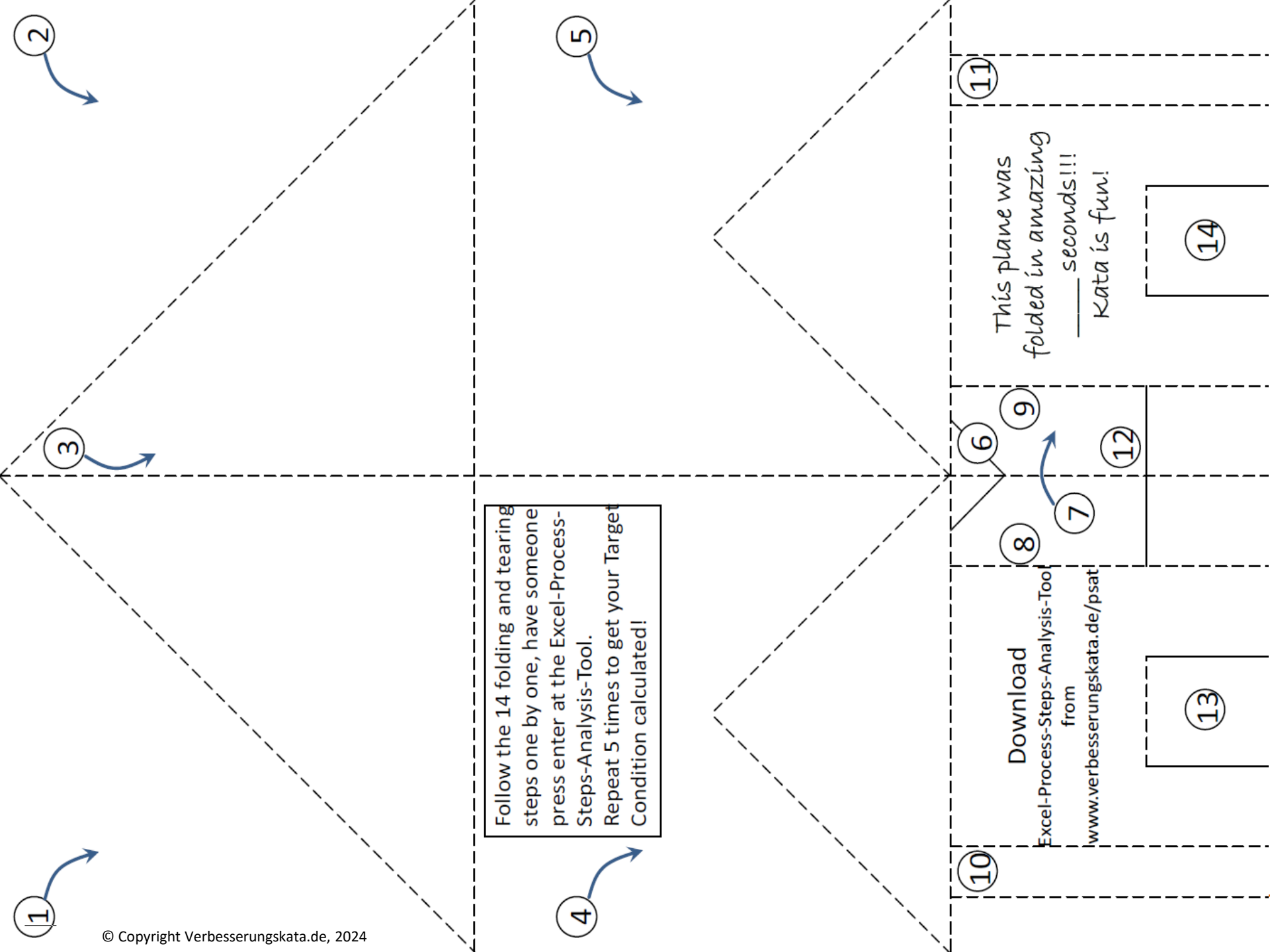
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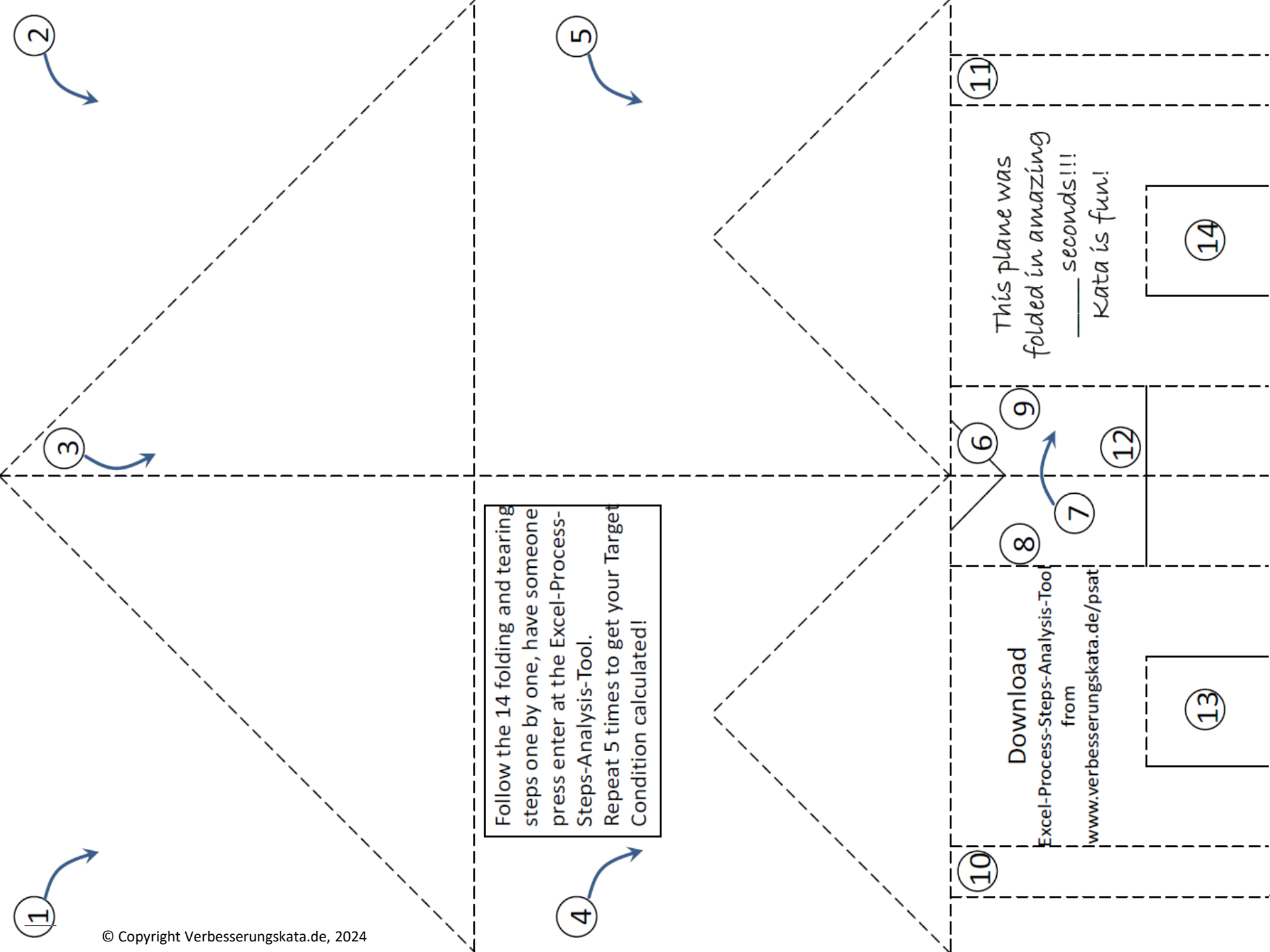
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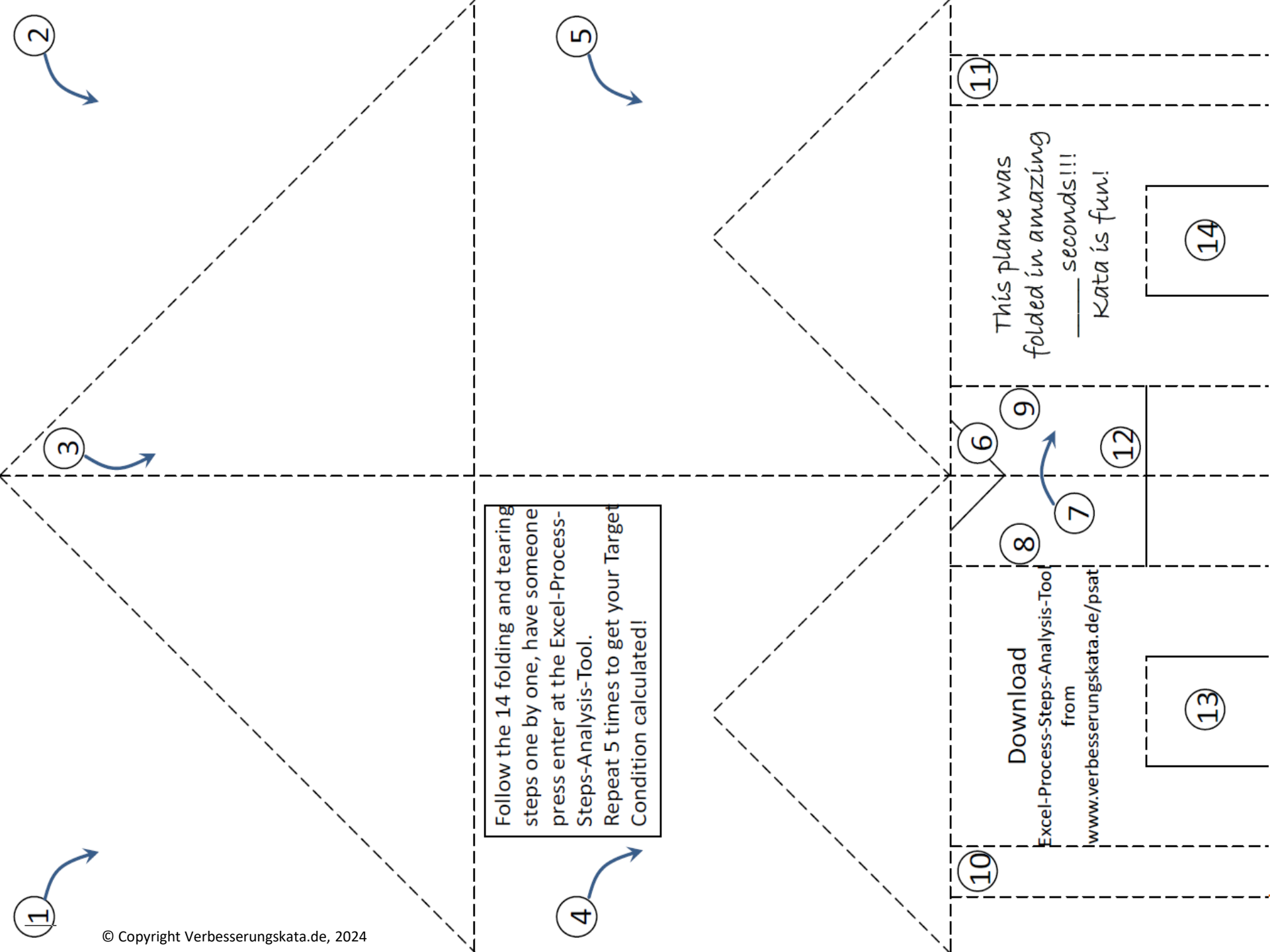
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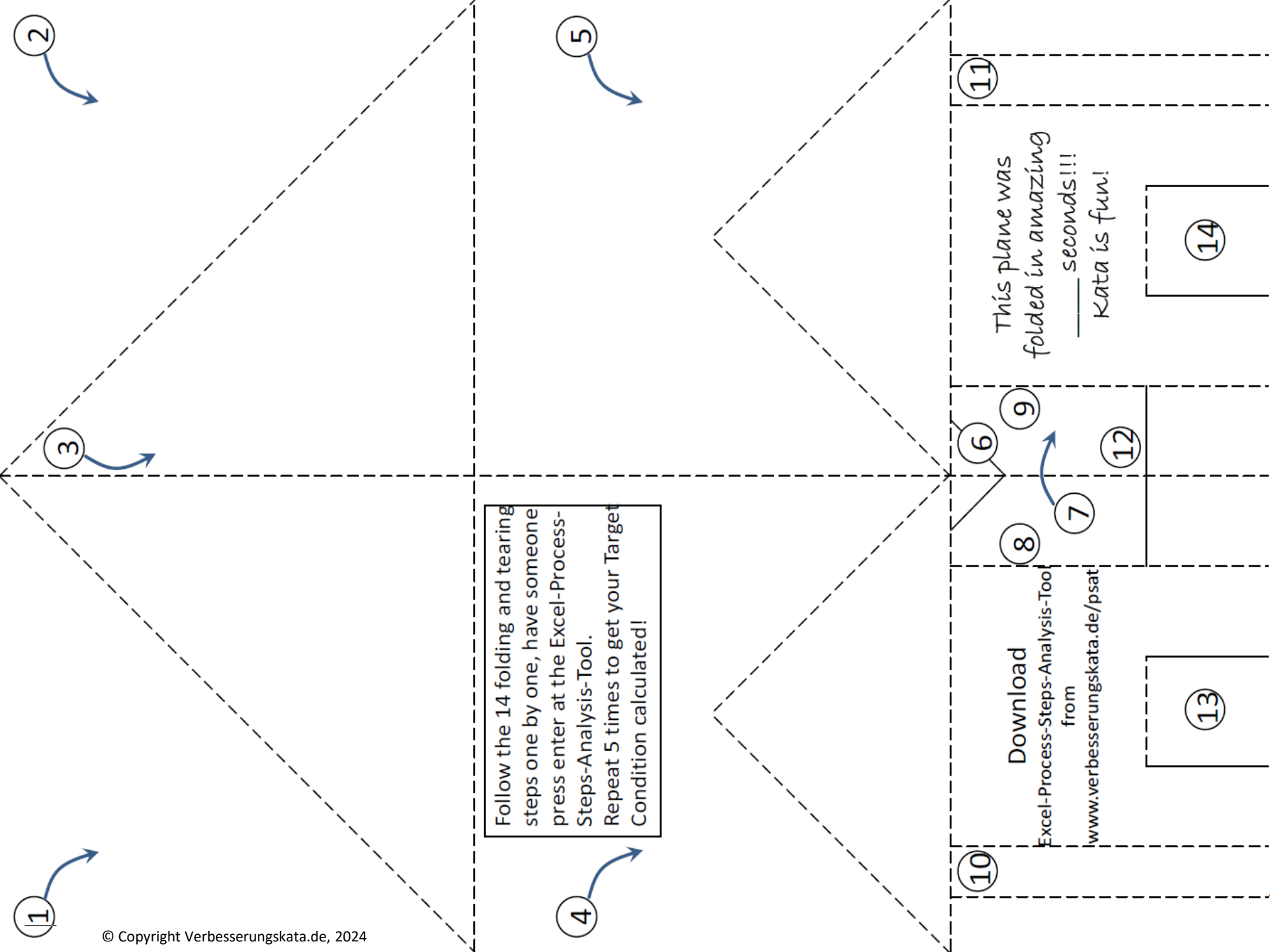
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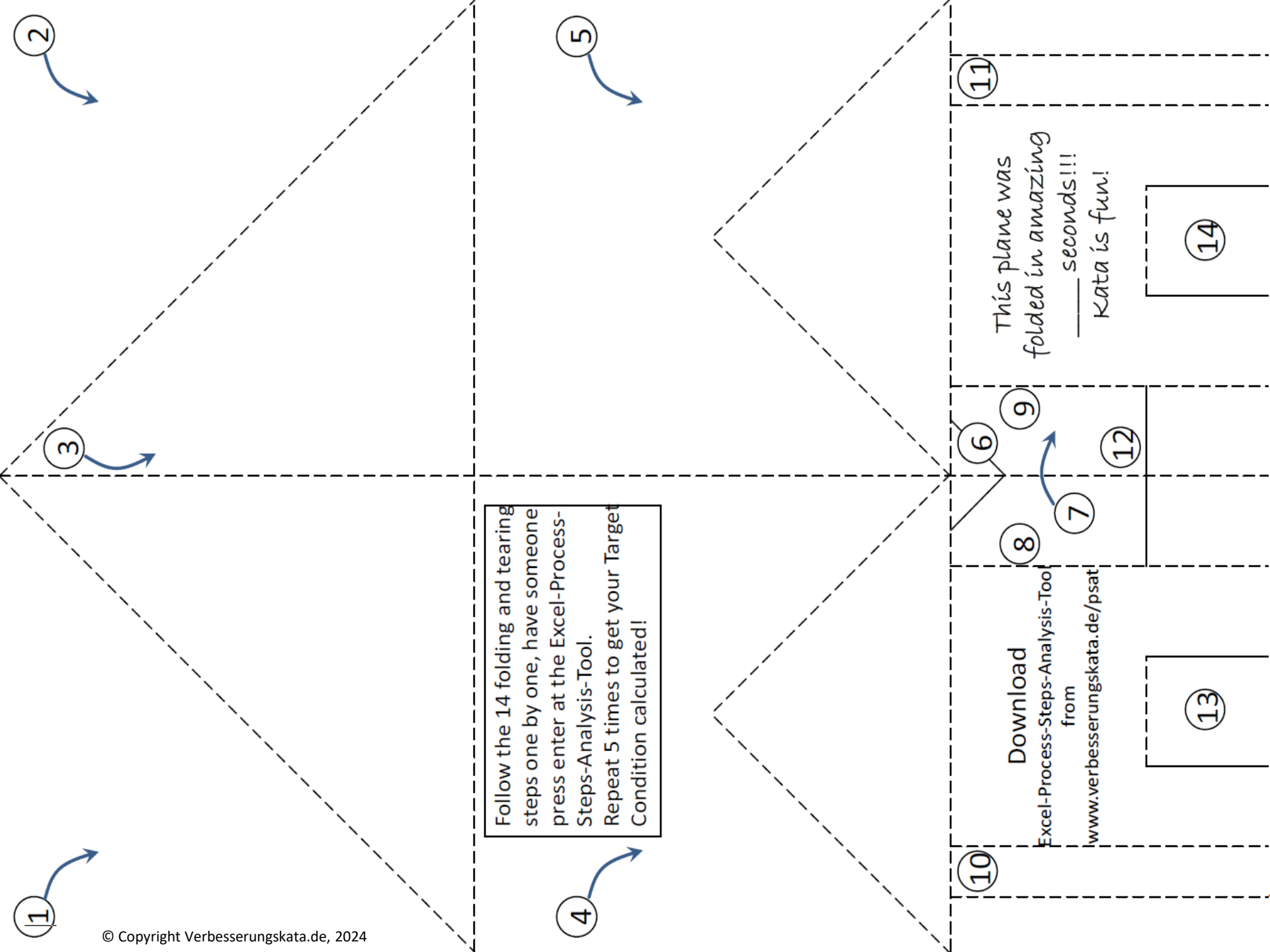
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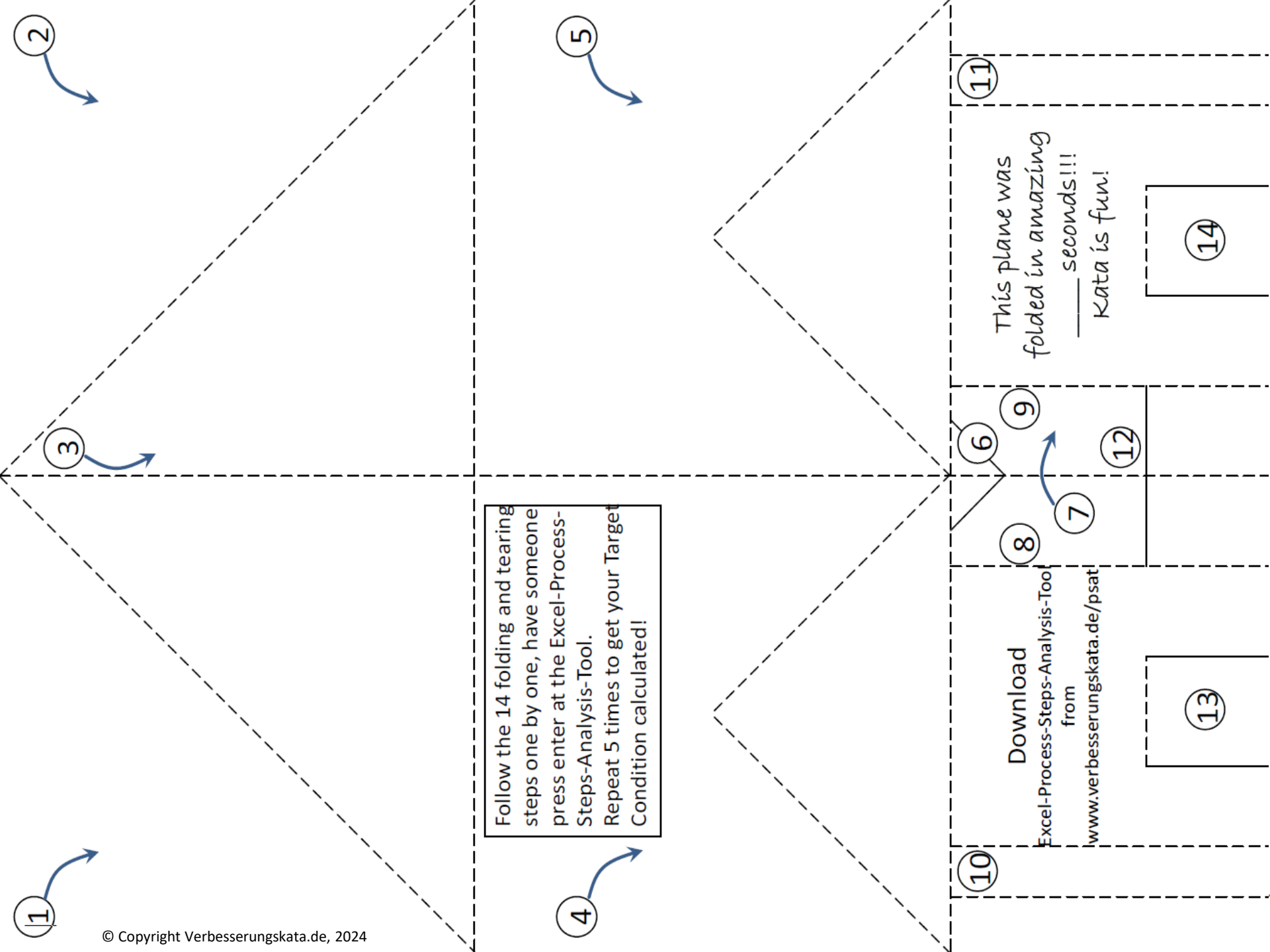
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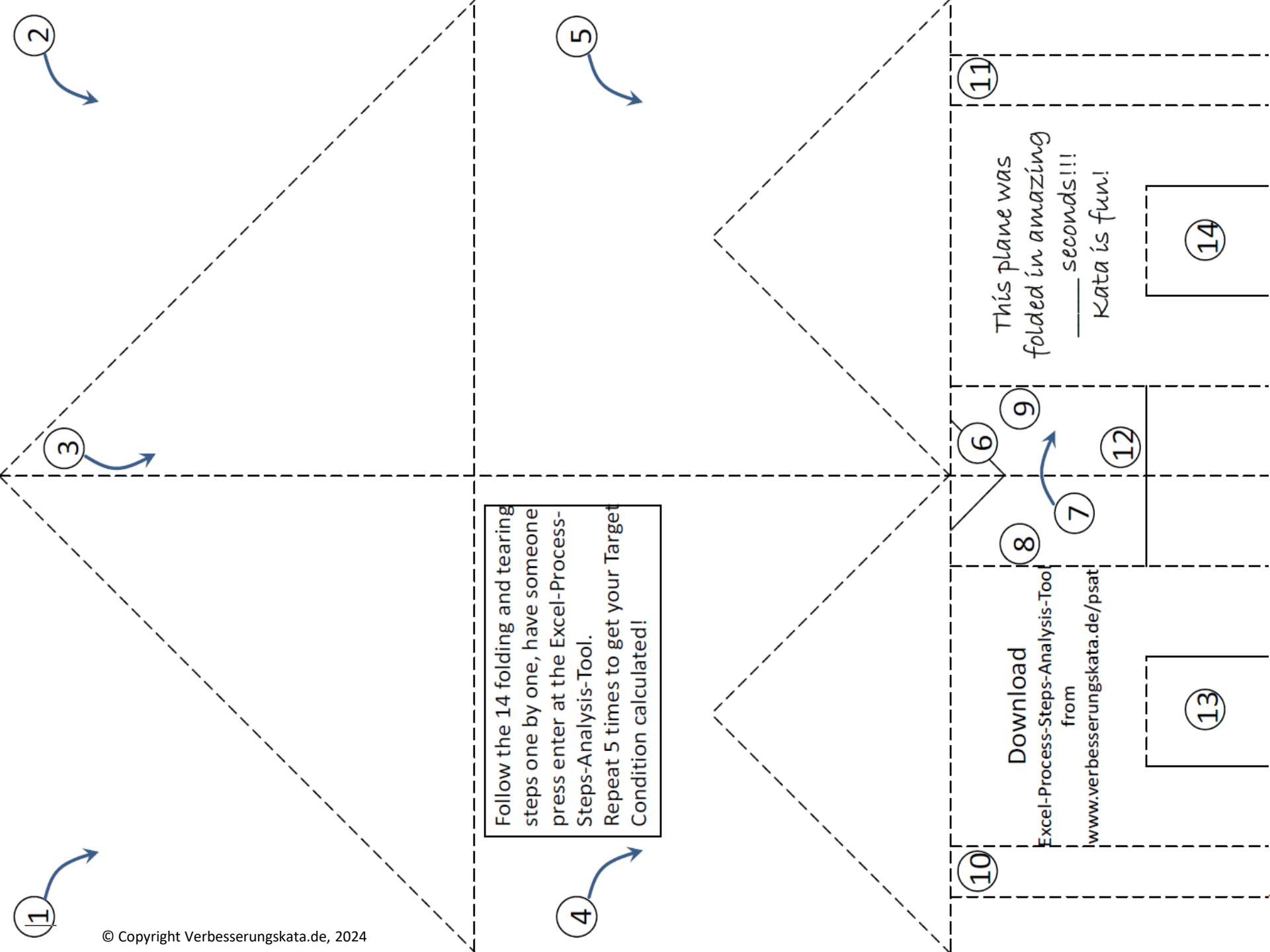
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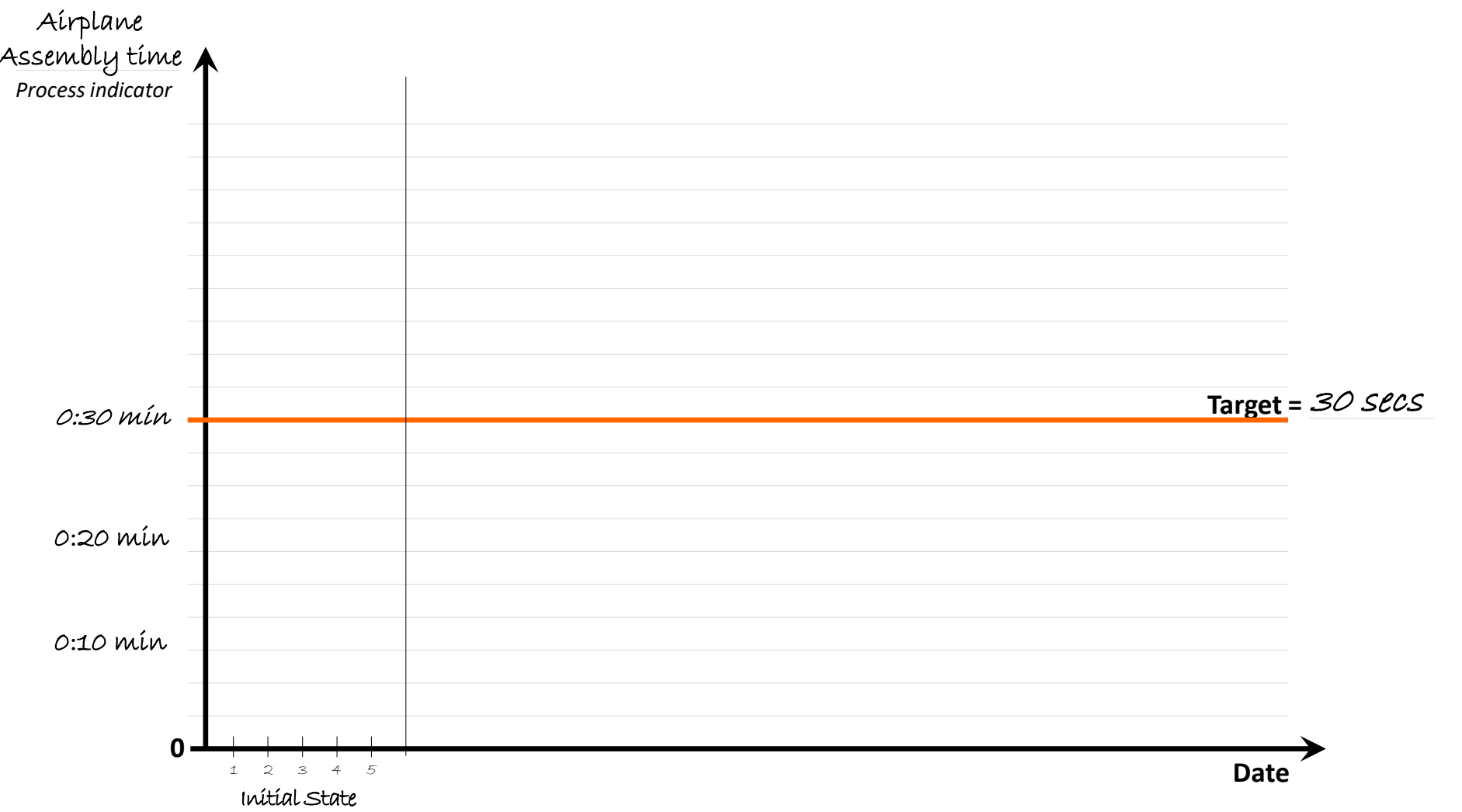
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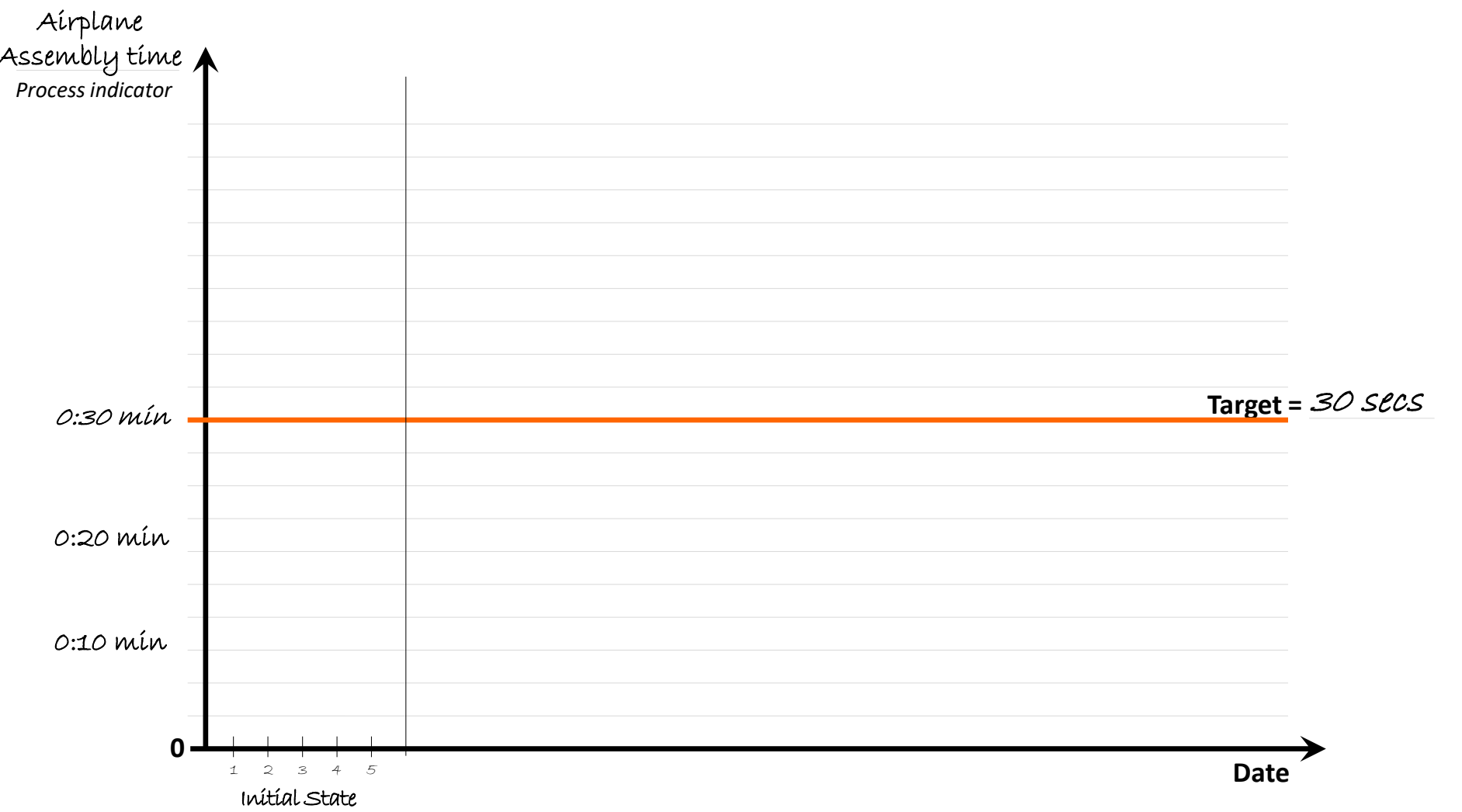
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<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*  
Output and Process Indicators

<sup>2</sup> Current condition Output and Process indicator		<sup>2.3</sup> Learned from last step? Was the last hypothesis refuted or confirmed?	<sup>3.8</sup> Only one obstacle at a time Has root cause been described and quantified?	<sup>4.0</sup> Next stept and what you expect A refutable hypothesis with an expected, numerical effect	<sup>5.0</sup> Date/Place Synchronized with step?
<div></div>	<div></div>	1-			
		2-			
		3-			

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<sup>5.0</sup> Date/Place

Synchronized with step?

1-  
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PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
1	Start: remove sheet of paper from stack		0:00	0:00	0:00	0:00
2	Fold top left corner					
3	Fold top right corner					
4	Fold the tip down to the marking					
5	Fold top left corner					
6	Fold top right corner					
7	Fold the tip down to the marking					
8	Fold vertically along the central axis					
9	Fold wing to the left at the marking					
10	Fold wing to the right at the marking					
11	Fold left winglets twice					
12	Fold right winglets twice					
13	Cut in rudder, fold out					
14	Cut left elevator and fold up					
15	Cut right elevator and fold up					
16	Grab aircraft by fuselage and take off!					
17						
18						
19						
Total time:					30 secs	

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Version 6.0

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PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

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			Running*	Step	Running*	Step
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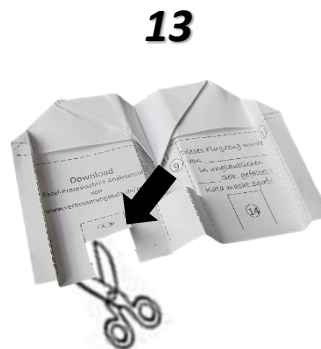
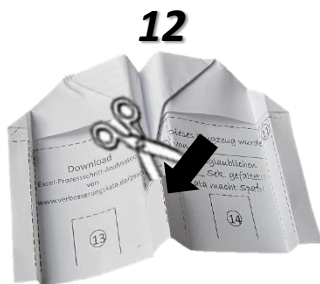
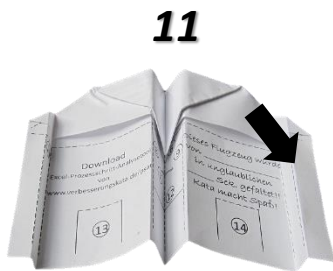
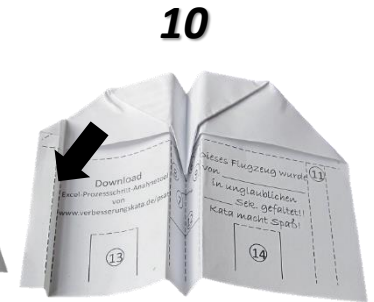
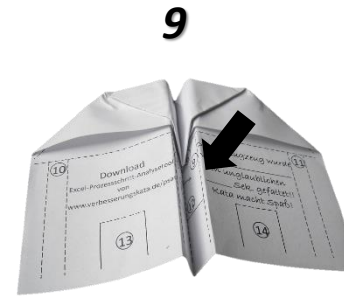
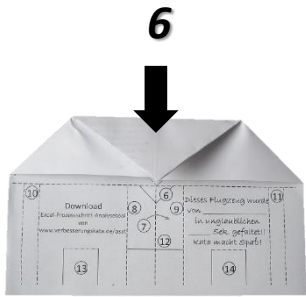
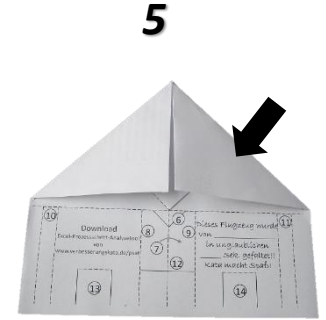
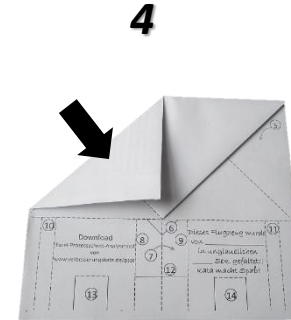
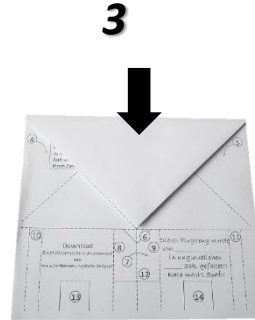
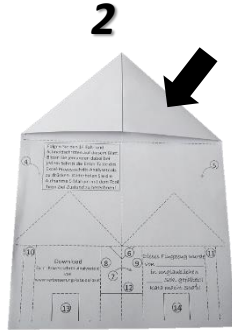
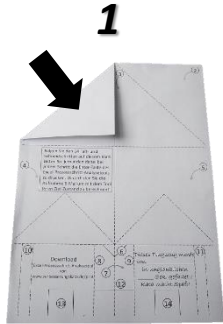
Version 6.0

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# Assembly Instructions in 15 Steps

Steps correspond Excel Process Steps Analysis Tool. Printed paper should not be pre-folded nor pre-cut.

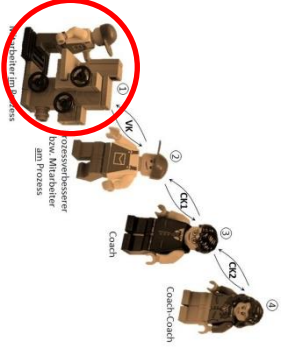


Demonstrate flight stability  
by 4 meter long flight!

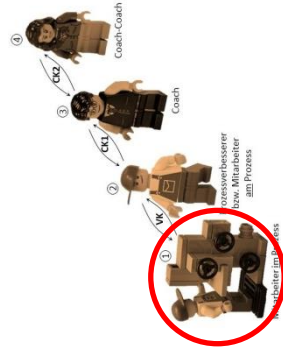
Assembly  
Paper Plane



# 1 Employee in process



# 1 Employee in process

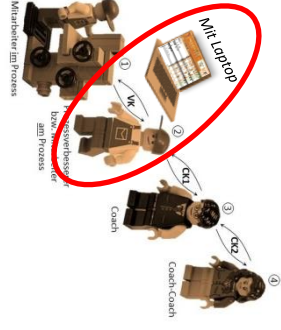


Assembly  
Paper Plane

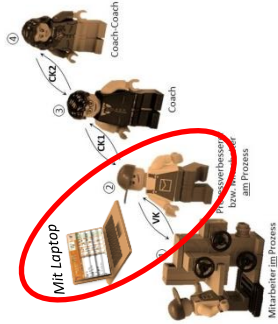
Assembly  
Paper Plane



# 2 Process improver



# 2 Process improver



Assembly  
Paper Plane

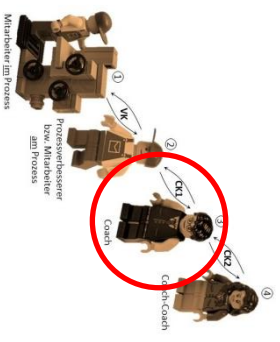
1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you



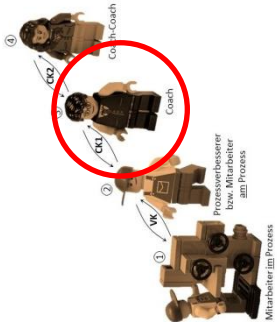
## Assembly Paper Plane



1 Coach



1 Coach



## Assembly Paper Plane

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you



# Preparing the **Kata Coaching** Exercise

## 1- Planning Phase

- 1- Divide participants in groups of 3 per table: who will have which of the 3 roles?
- 2- Fill out and fold name tags, place on table
- 3- Employee in process: get familiarized with the assembly of the airplane

- fold 2 planes, understand the assembly sequence, speed is irrelevant at this point

#### 4- Process improver: get familiarized with Excel-Process-Step-Analysis-Tool

- Read instructions sheet (2nd sheet on Excel Tool)
- write step numbers 1 to 15 in column „Process step“
- Complete the processes name in the white field top right
- With button **Activate (delete everything)** activate stopwatch
- Use ENTER to test tool and practice some time stopping



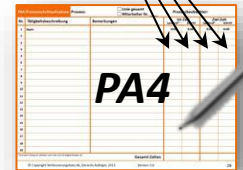
#### 5- Repeat assembly processes five times, time each repetition with the Excel-Tool:

- Employee in process says „Start“ and after every single step „one ready!“, „two ready!“ etc.
- Don't forget to save your times on your computer!
- Do not improve the process during these 5 cycles

#### 6- Current Condition with PA4-Sheet: Copy TC from green column to PA4, use a pencil

Copy values from Target columns „step“ and „running“ from Excel-Tool with pencil to the left to columns of the PA4-sheet

Fill out these 4 columns!



#### 7- Total Target Assembly Time in PA4: defining a **challenging Target Condition** is very important for your learning success. Your target is 30 seconds, write this value at the bottom of the Target Column of the PA4-Form

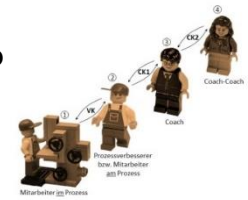
#### 8- Correct Target Step Times with Excel Tool: press the green button **AUTO**, write „30 secs“ when asked. Copy the automatically calculated numbers to column 3, 4.

#### 9- Prepare coaching boards (one pinboard per group):

- pin PA4 left, note target on Form 5 and draw 5 columns with the 5 times you stopped
- add three obstacles which you think you should tackle next



**The Coaching Board is ready! The Coaching Cycles can begin!**



# Instructions Prozess Steps Analysis-Tool 5.0

With these three buttons you can optimize the size of the sheet on your computer display.

The stopwatch must be ACTIVE in order to be able to stop your step and cycle times.

The stopwatch must be INACTIVE in order to edit text areas.

Here you can write the name of your process.

Here you can see if the watch is running and the time elapsed.

With the AUTO function you can automatically calculate the needed step times necessary to achieve your target time.

Target-times can be corrected by hand to define the target condition to achieve.

Processes can be broken down in as many as 150 single steps.

The length of the sheet can be adjusted anytime just by clicking these buttons.

The five time measurements consist of cumulated, step and total times.

The shortest step time is marked in darker orange...

...and taken over as Target-Step-Time. That's why the Total Target Time is always shorter than the five measured times.

Reduce, expand screen

Zoom +1%

Zoom -1%

## Process Step Analysis-Tool

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Activate stopwatch (delete all)

Activate stopwatch (no delete)

Deactivate stopwatch (no delete)

Process:

Case assembly example

00:23,0

Status: Stopwatch is ACTIVE! Text sections CAN NOT be edited now.

Hancho/Trainer: Michael Müller

Operator: Hans Fischer

Date: 13.8.24 17:32

Nr 4 process steps

Adjust sheet length to 3 free rows

Expand to 150 rows

Total time: 00:21,6

00:22,9

00:00,0

00:00,0

00:00,0

00:17,5

Nr	4 process steps	Current condition (max. 5 time recordings)										Ziel-Zeiten		Auto
		Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Correction
0	Take plastic case from bin	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0
1	Take plastic case out from package, place in fixture	00:04,1	00:04,1	00:07,1	00:07,1							00:04,1	00:04,1	
2	Place harness on PCB and connect plugs	00:09,5	00:05,4	00:12,0	00:04,8							00:08,9	00:04,8	
3	Place PCB in housing, take lid, close lid, place and tighten 6 screws	00:13,5	00:04,0	00:18,4	00:06,4							00:12,9	00:04,0	
4	Put housing in bag, put bag and instructions into box, place box on pa	00:21,6	00:08,1	00:22,9	00:04,6							00:17,5	00:04,6	
5														
6														
7														



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# The 5 Questions\*

1 - What is the Target Condition of this process?

2 - What is the Current Condition now?

Go to the process, Turn Card to Reflect on the Last Step



3 - What Obstacles do you think are preventing you from reaching the Target Condition?

3b - Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle



4 - What is therefore your Next Step and what do you expect to Learn from it?

Turn Card to Detail the Next Step



5 - When can we go and see what you have Learned from taking that step?

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## Be very specific when describing the One Obstacle to tackle next

A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!

3.1- What exactly is the problem with/why...[mkw]? Can you show me, please?

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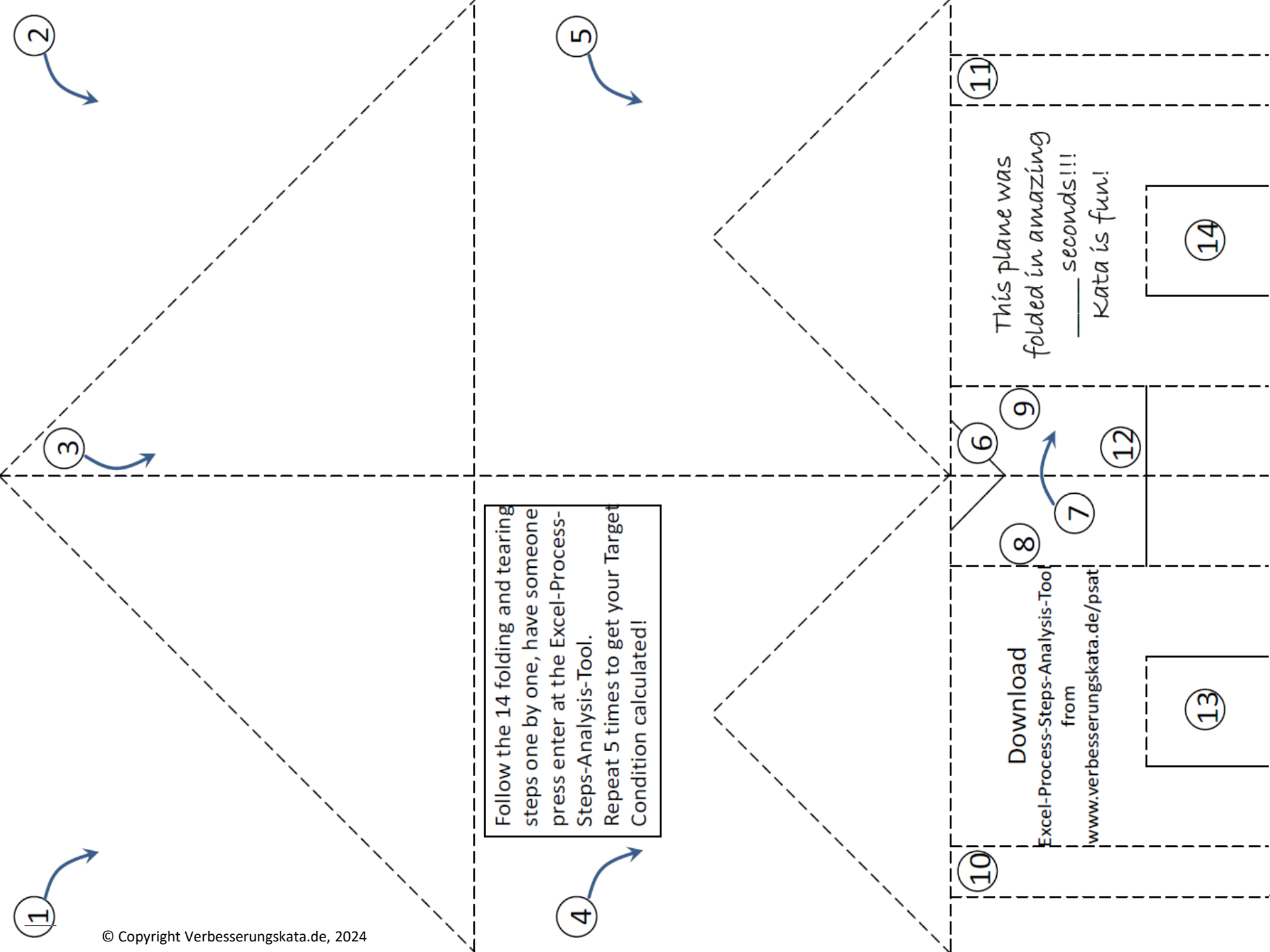
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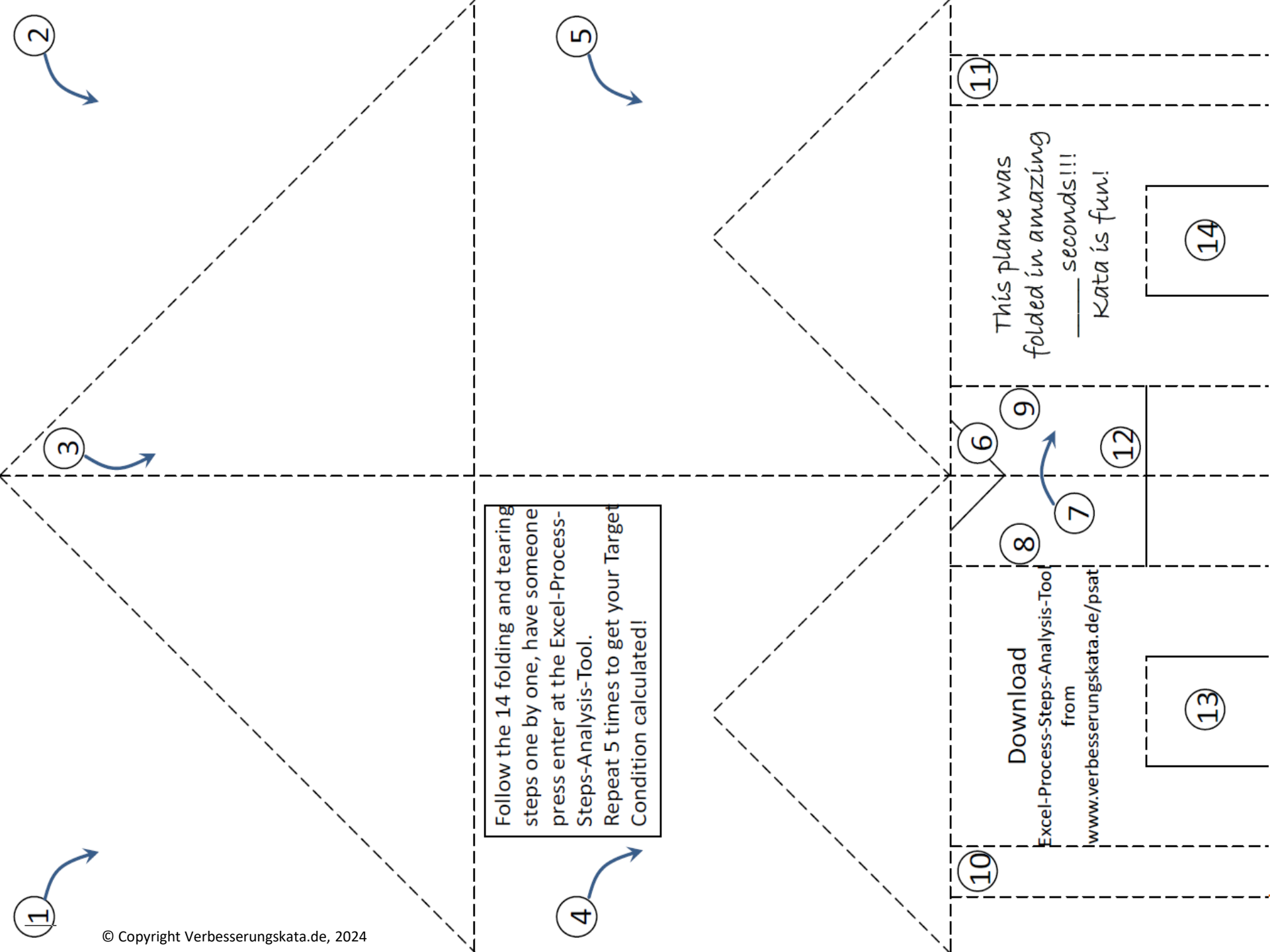
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Repeat 5 times to get your Target Condition calculated!

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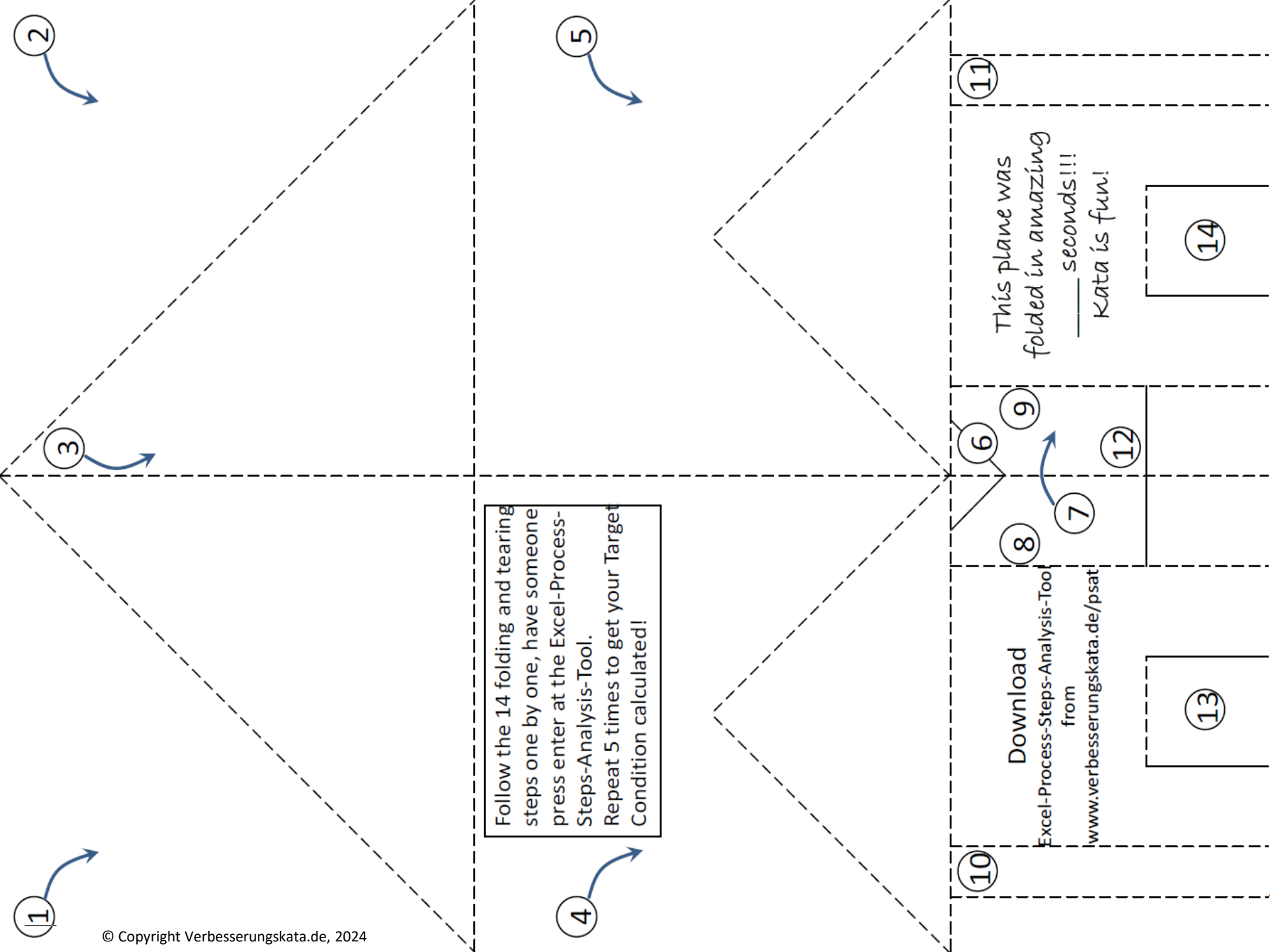
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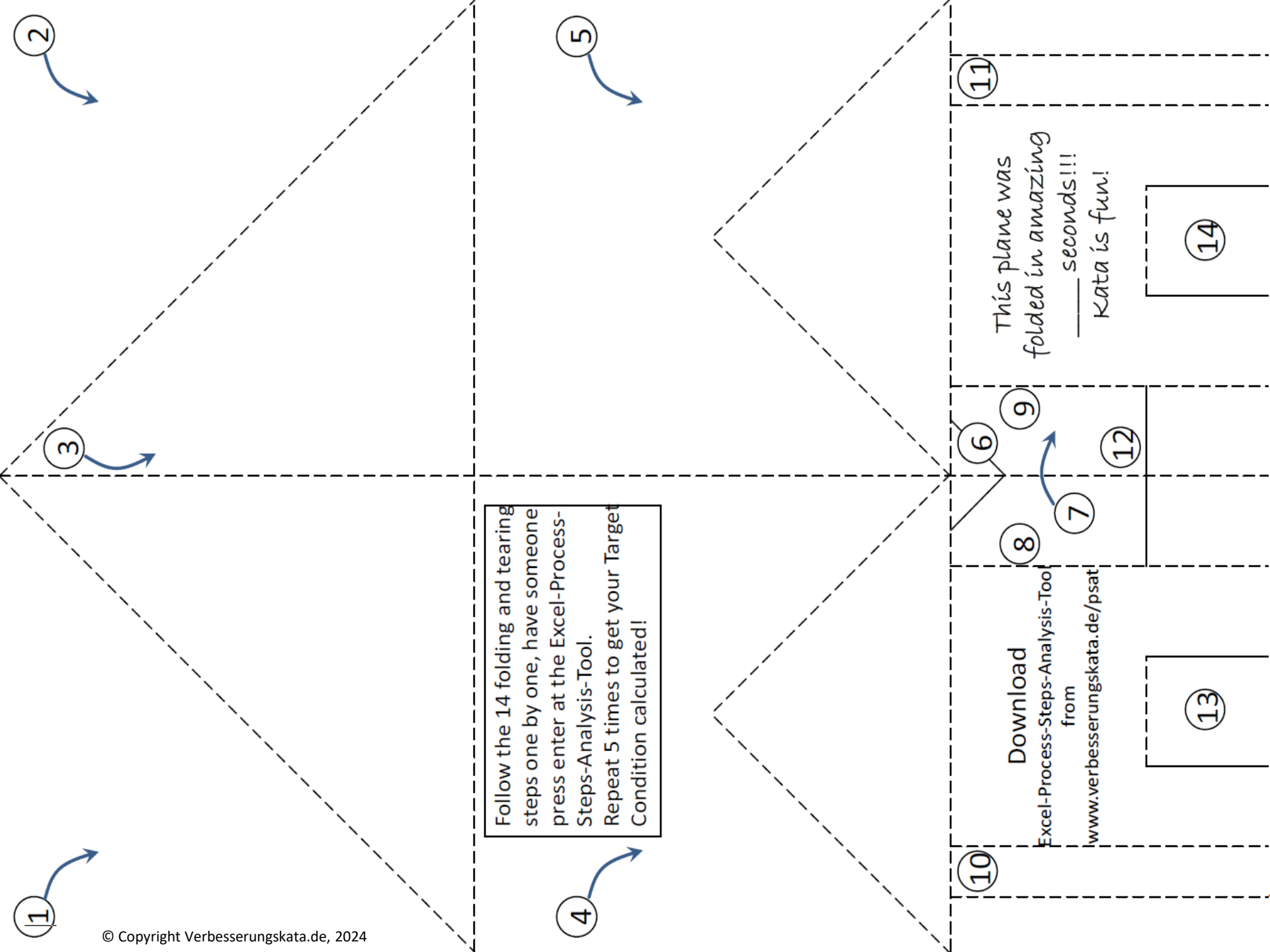
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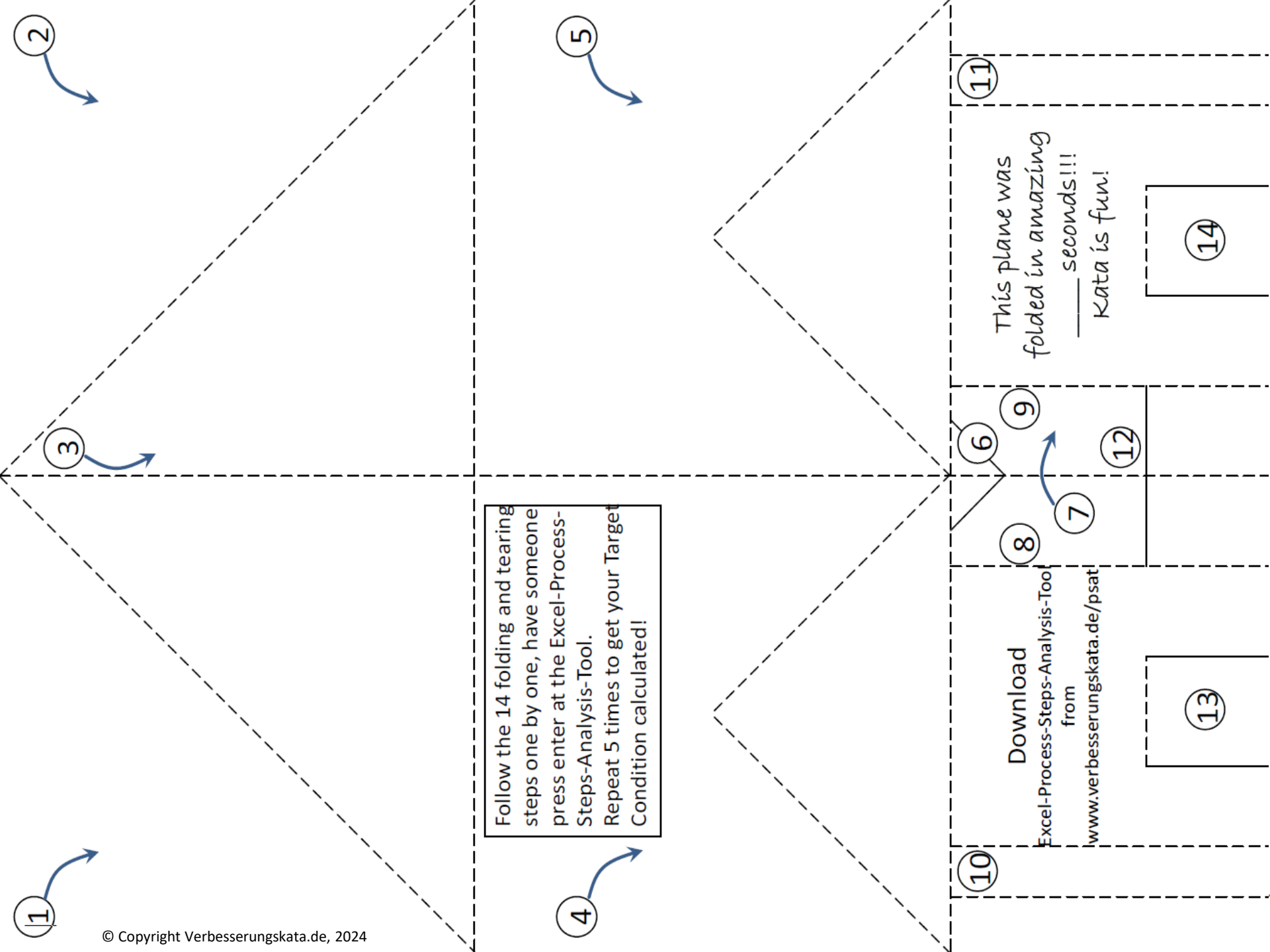
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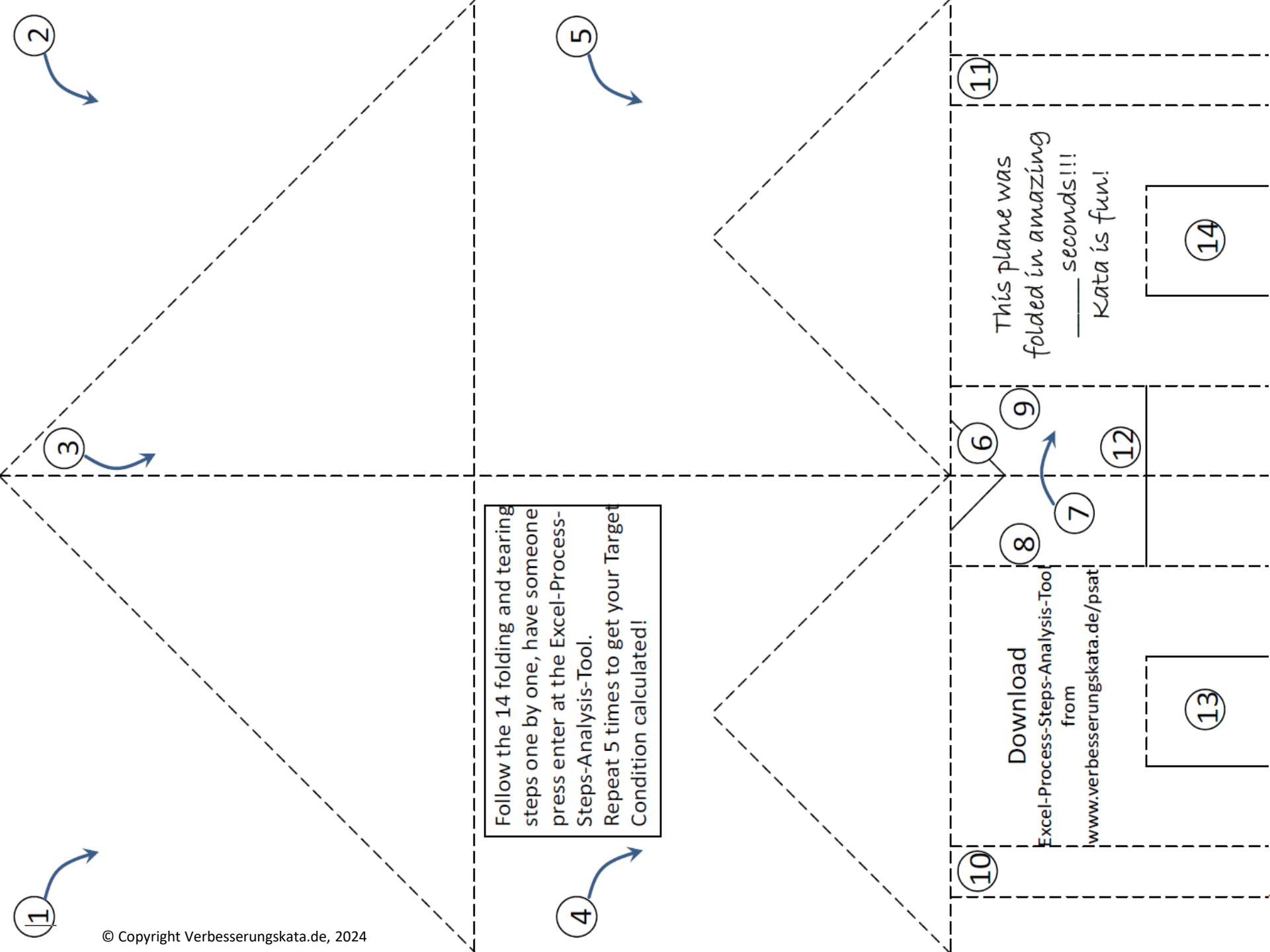
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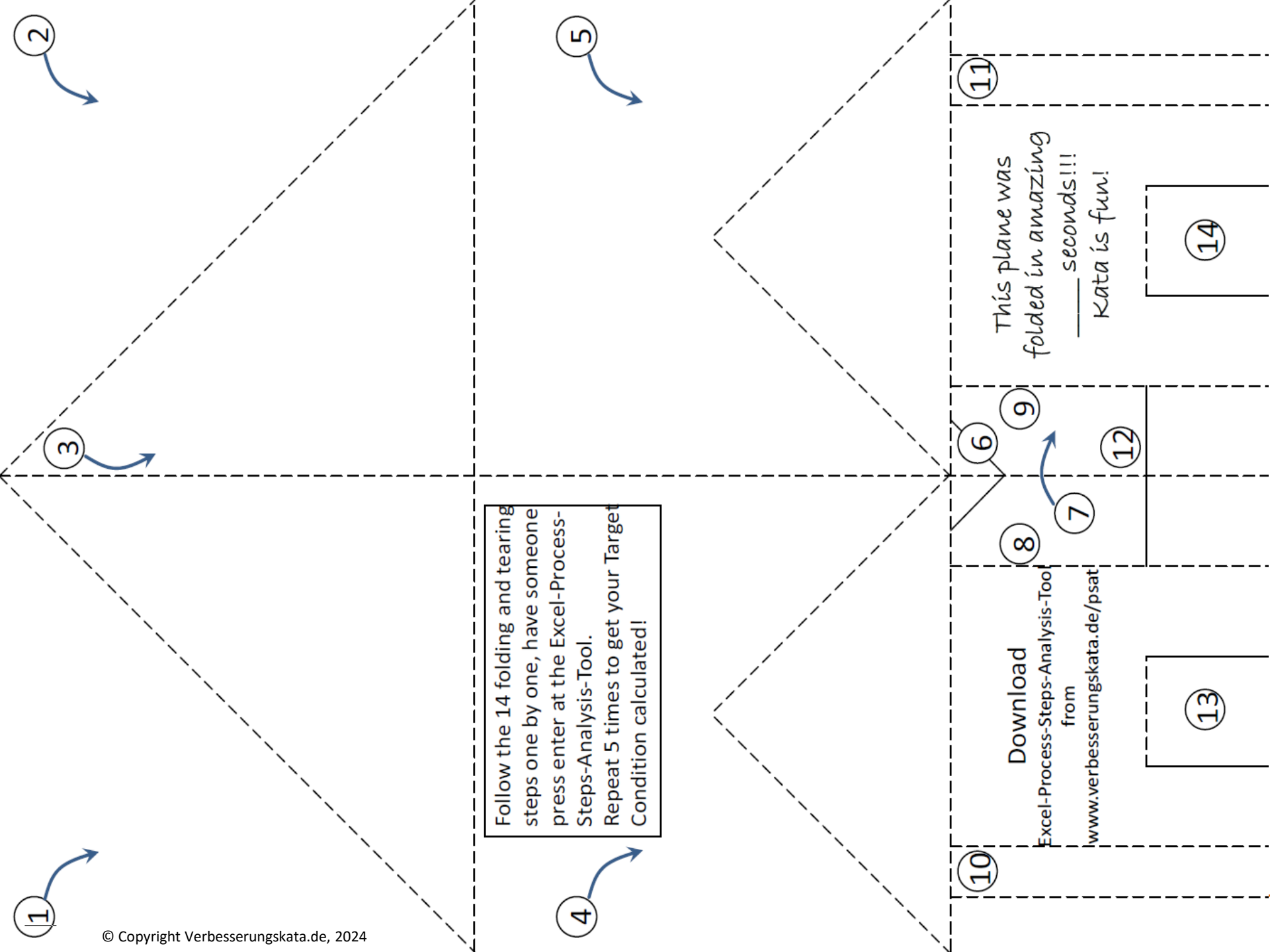
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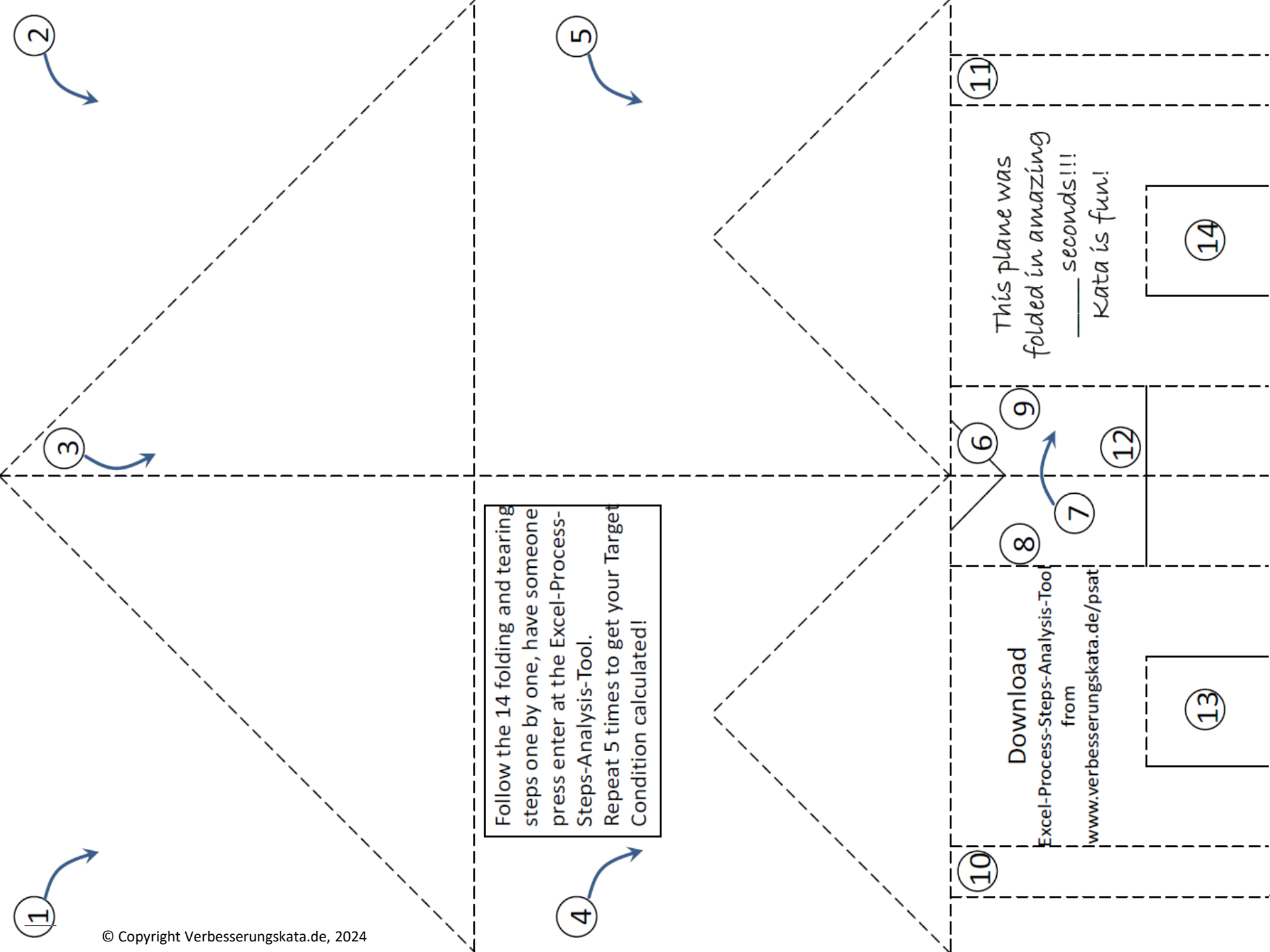
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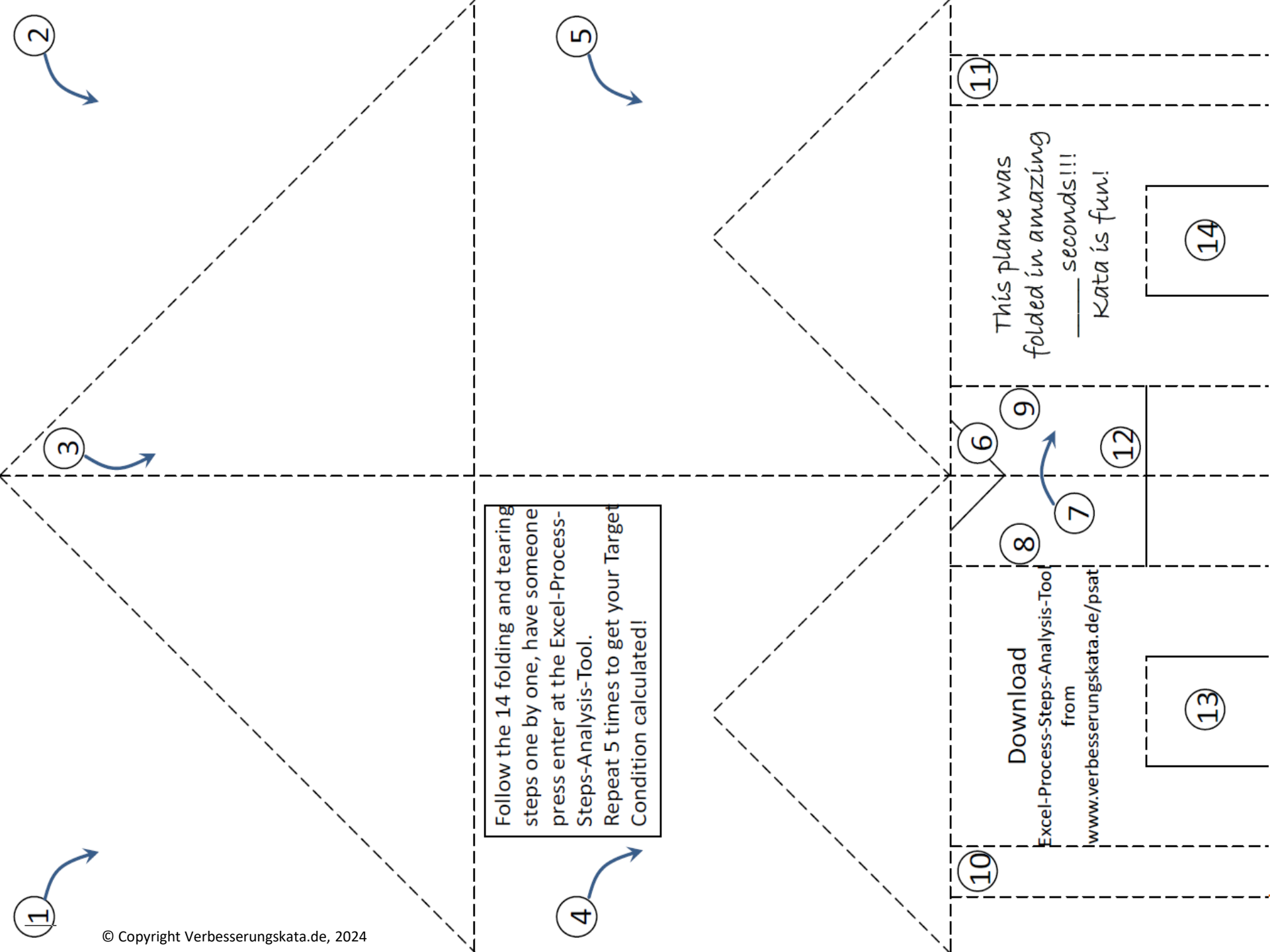
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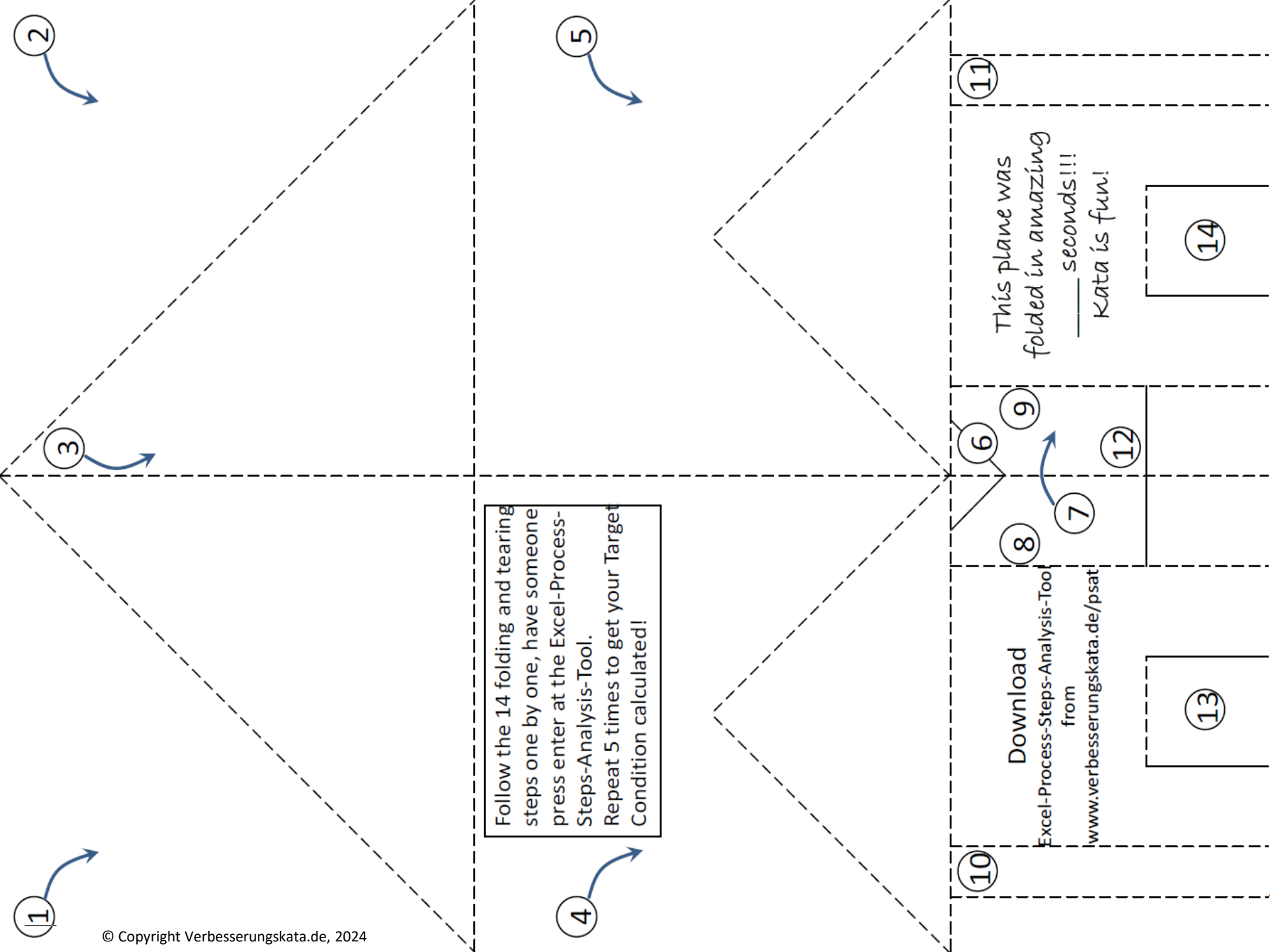
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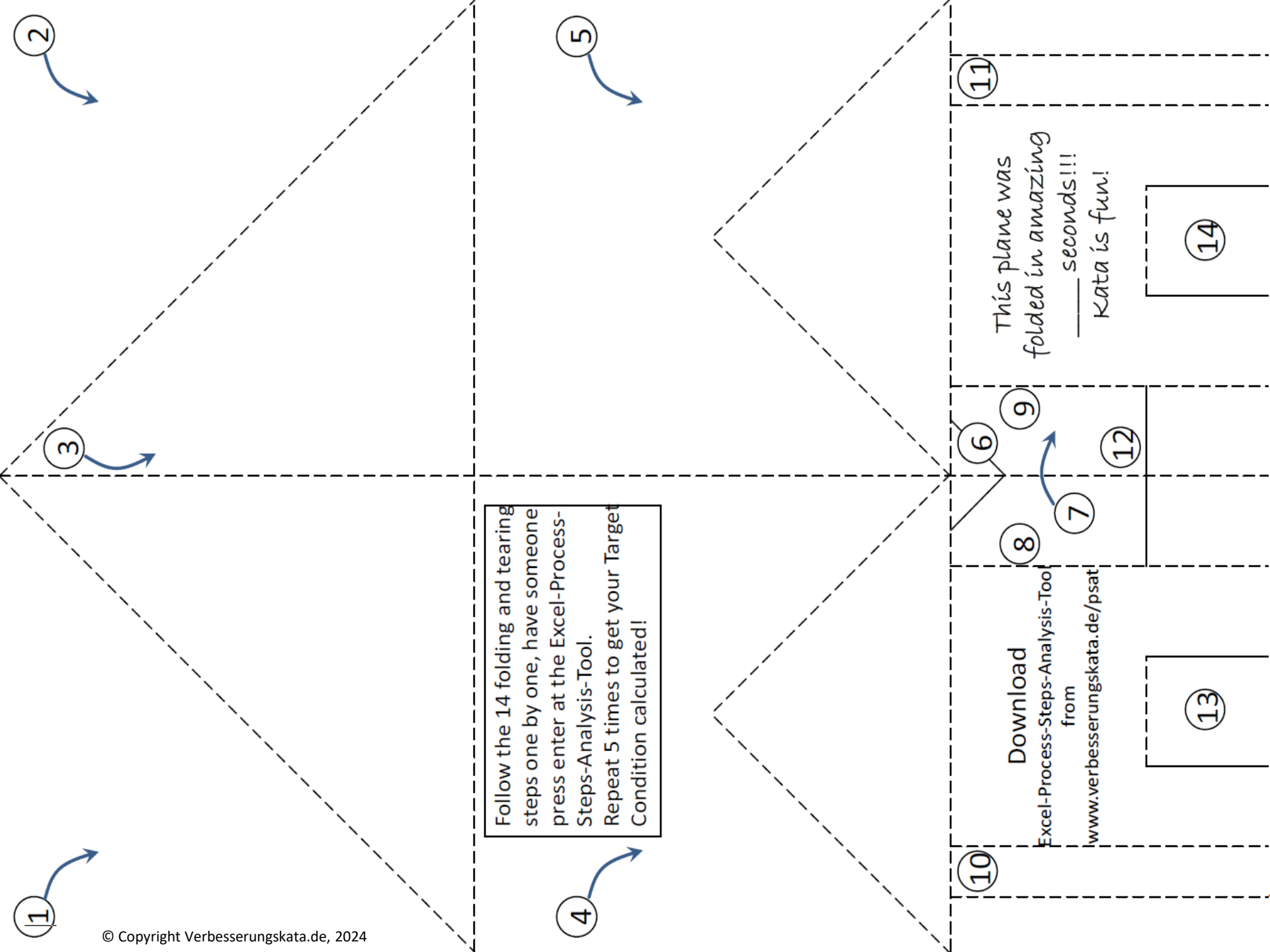
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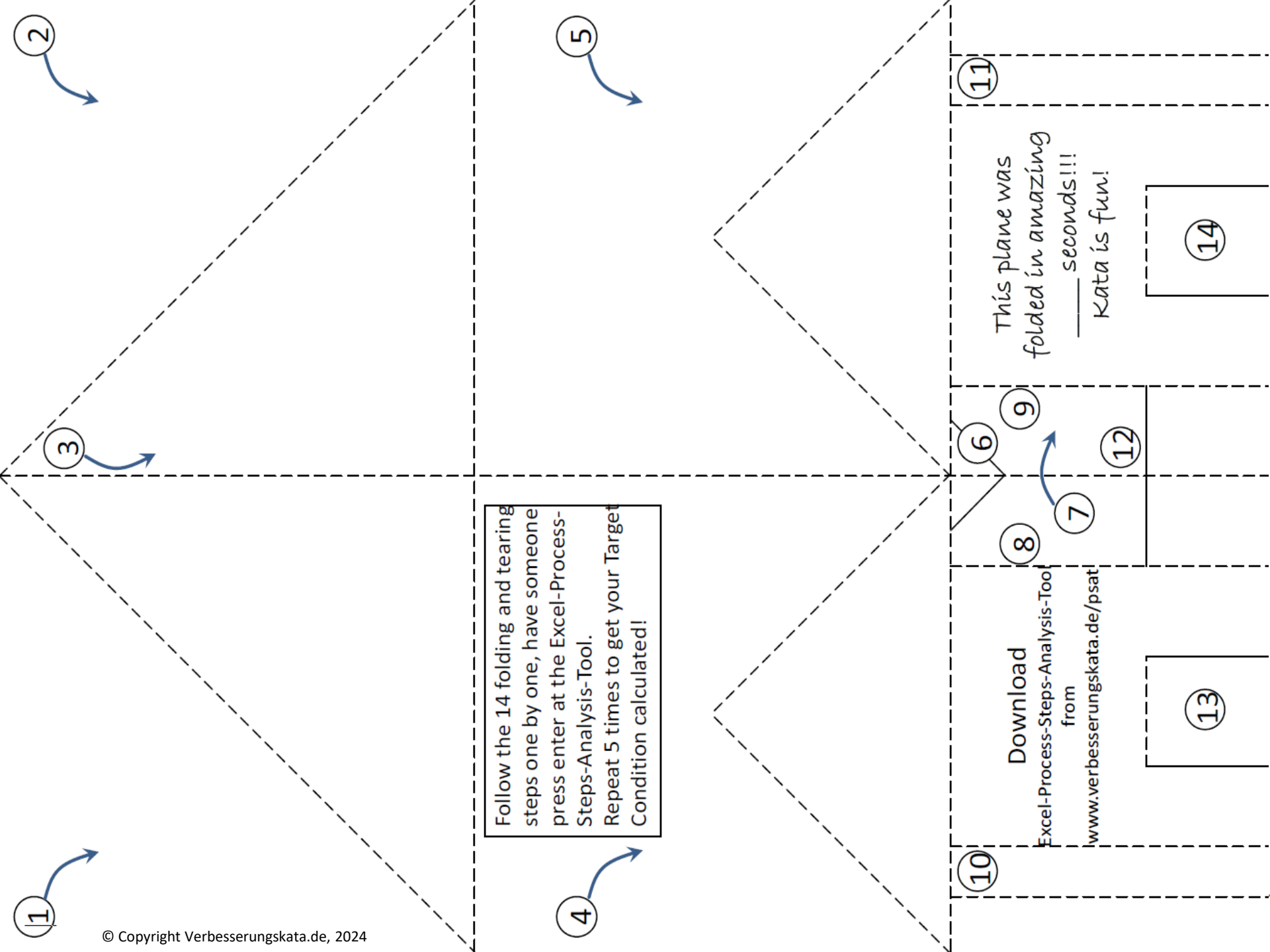
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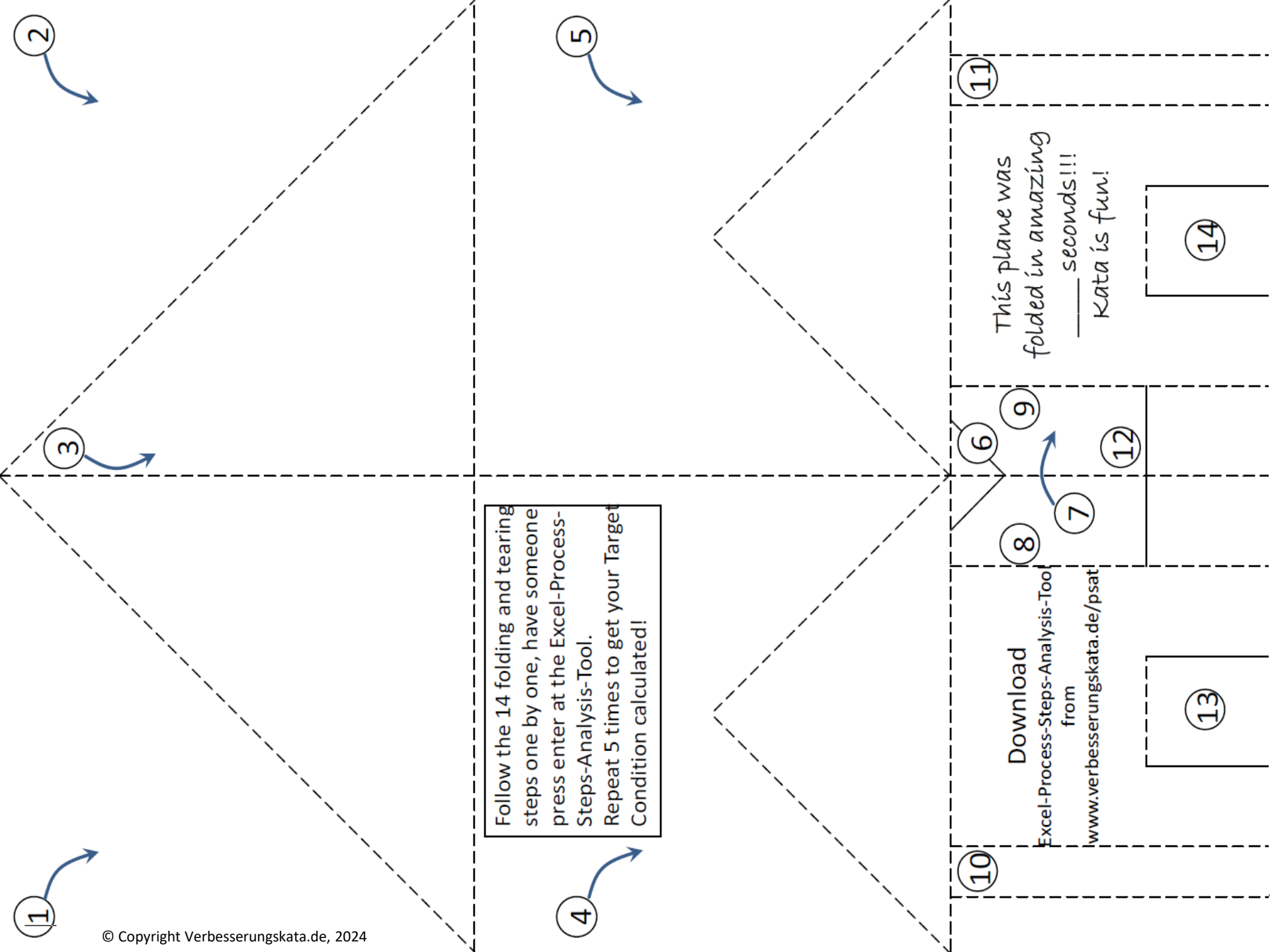
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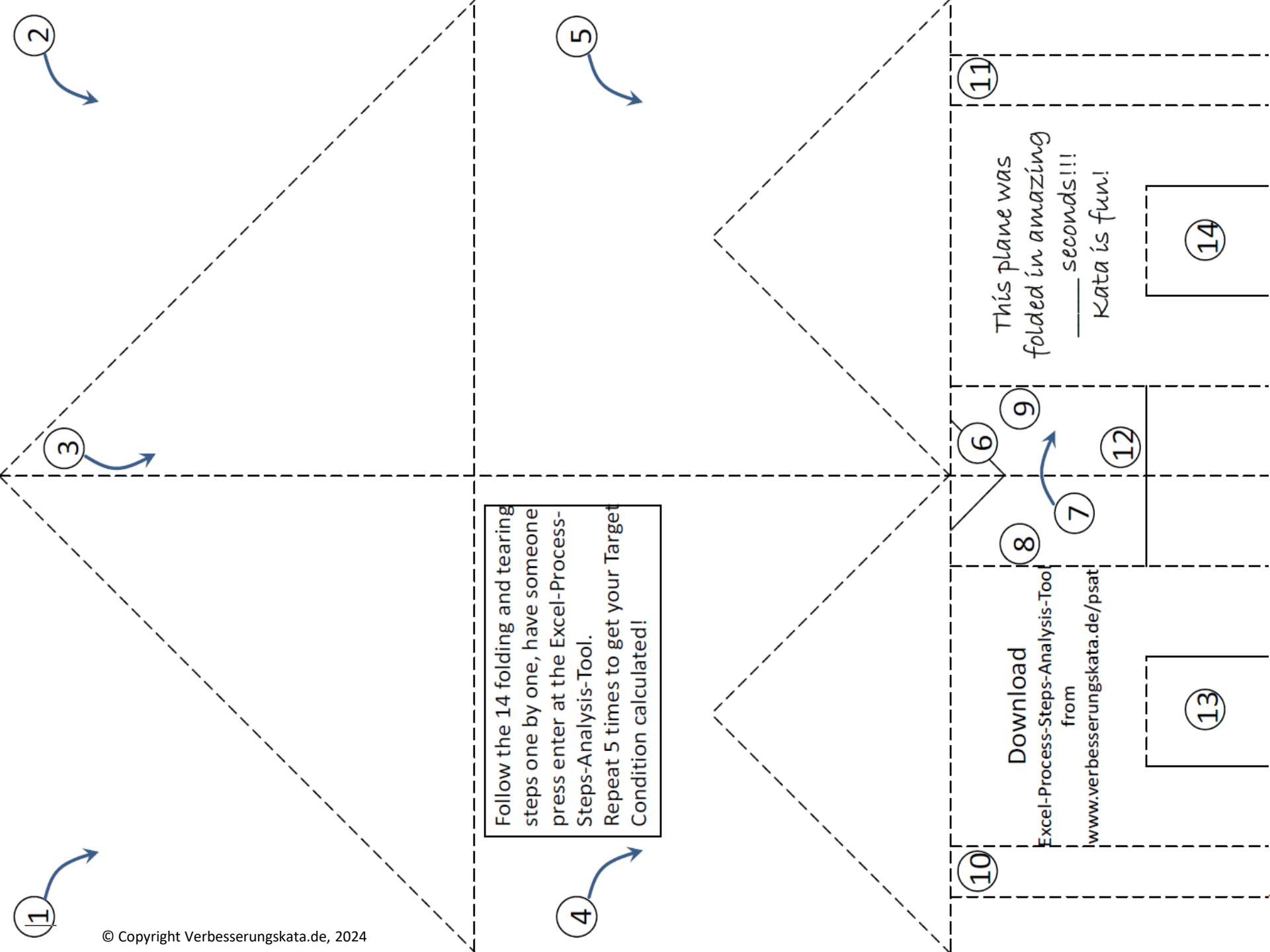
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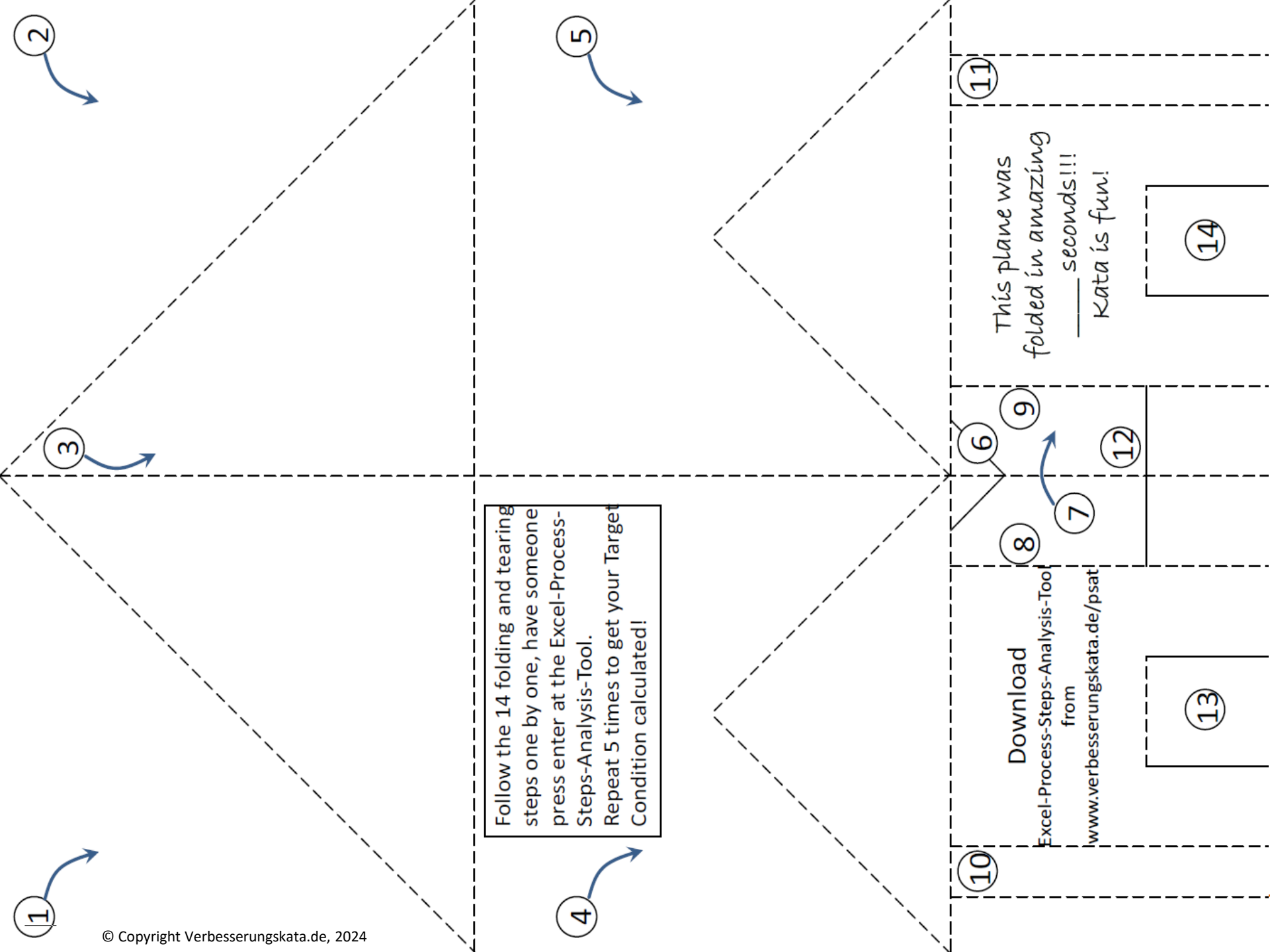
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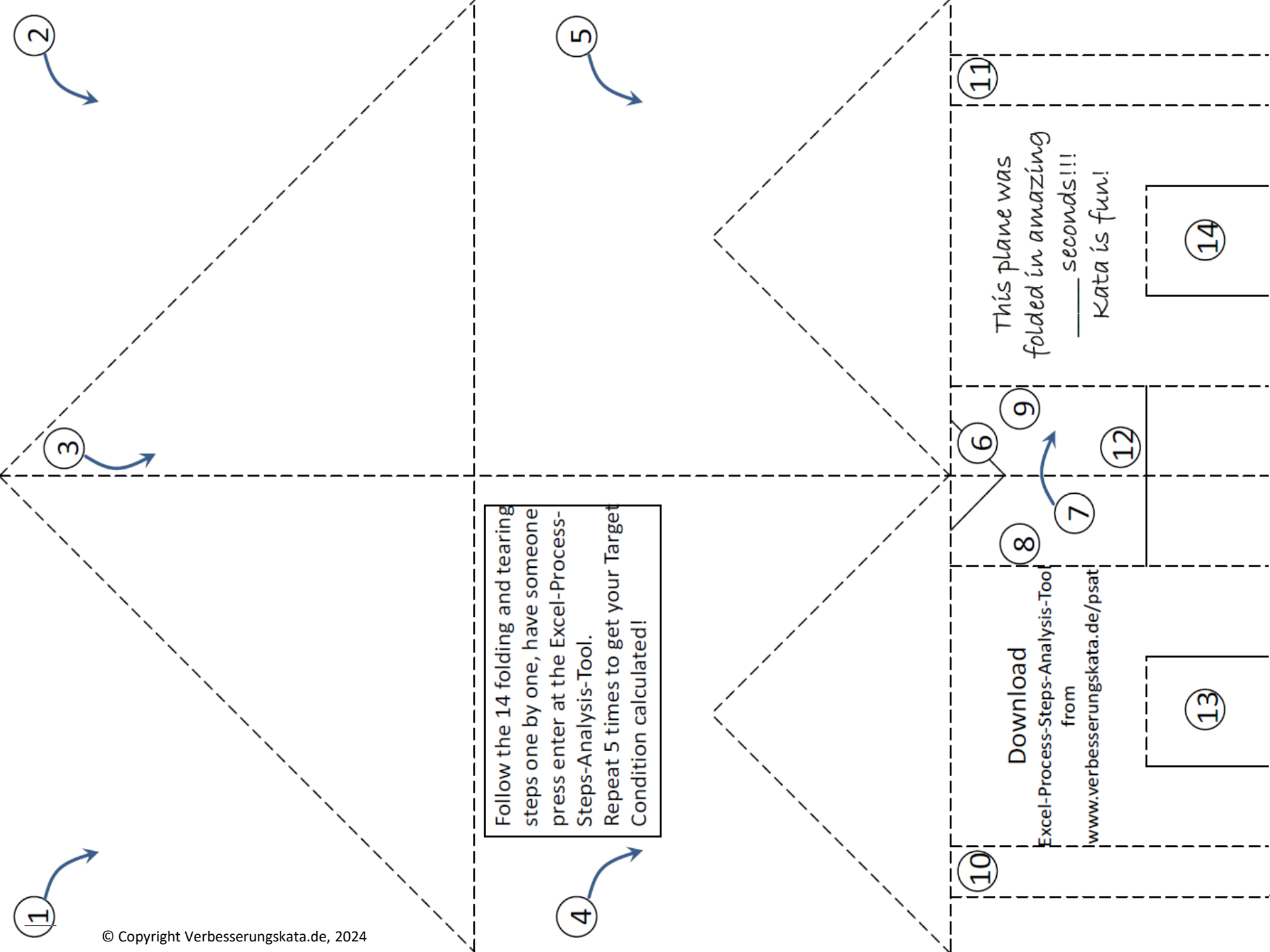
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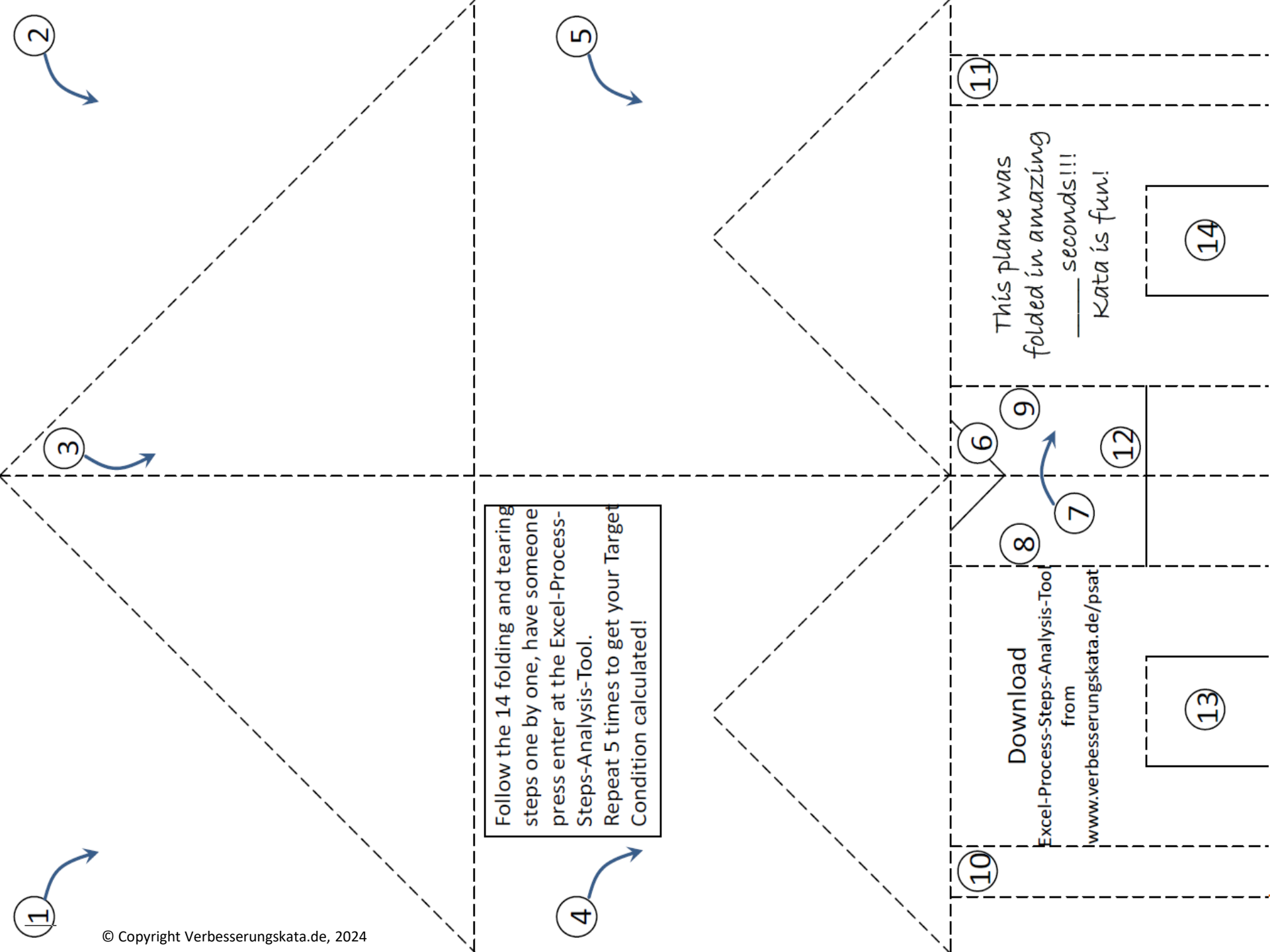
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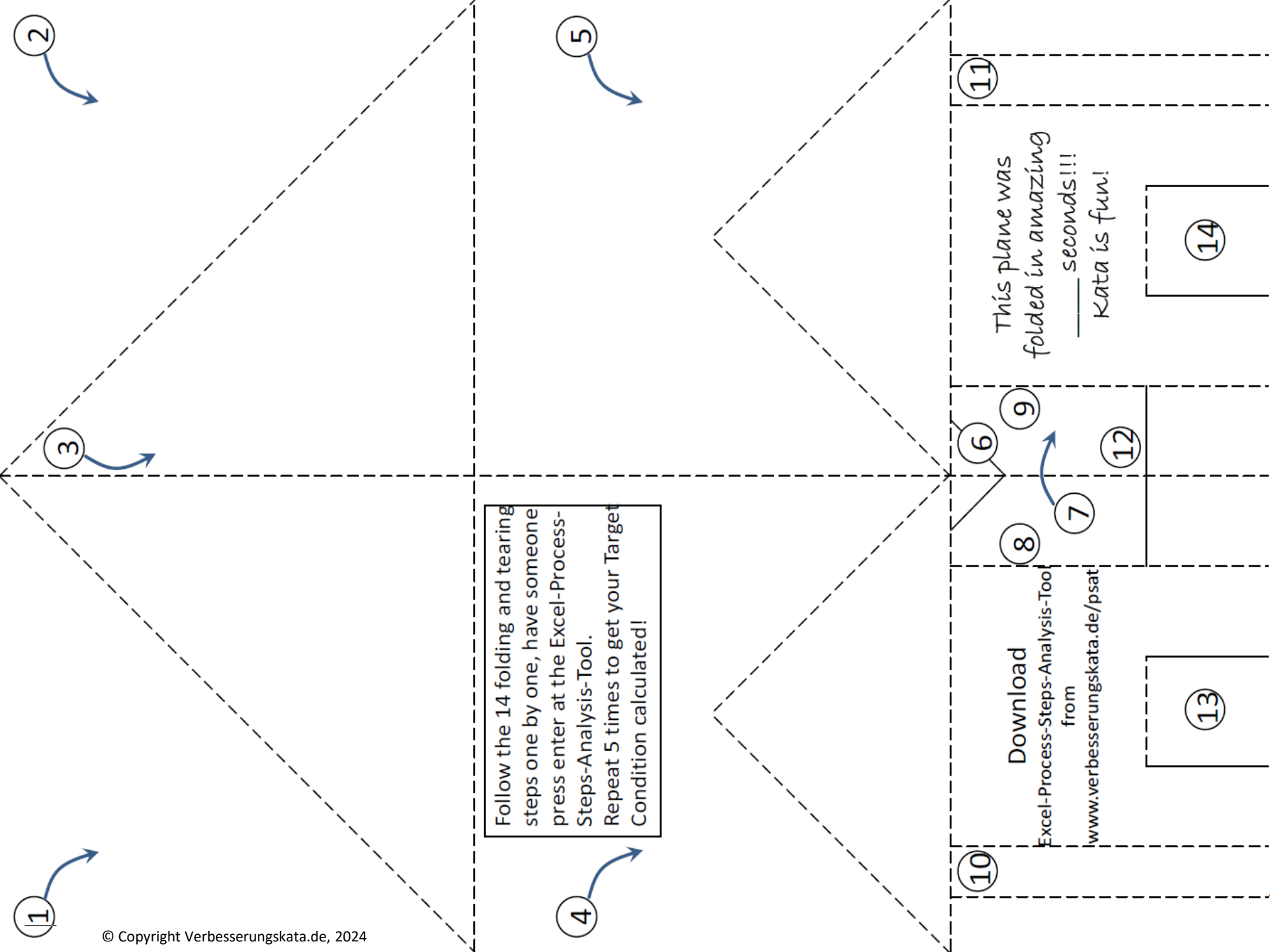
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Excel-Process-Steps-Analysis-Tool  
from  
[www.verbesserungskata.de/psat/](http://www.verbesserungskata.de/psat/)

This plane was  
folded in amazing  
\_\_\_\_\_ seconds!!!  
Kata is fun!



1

5

11

14

3

9

12

13

1

4

10

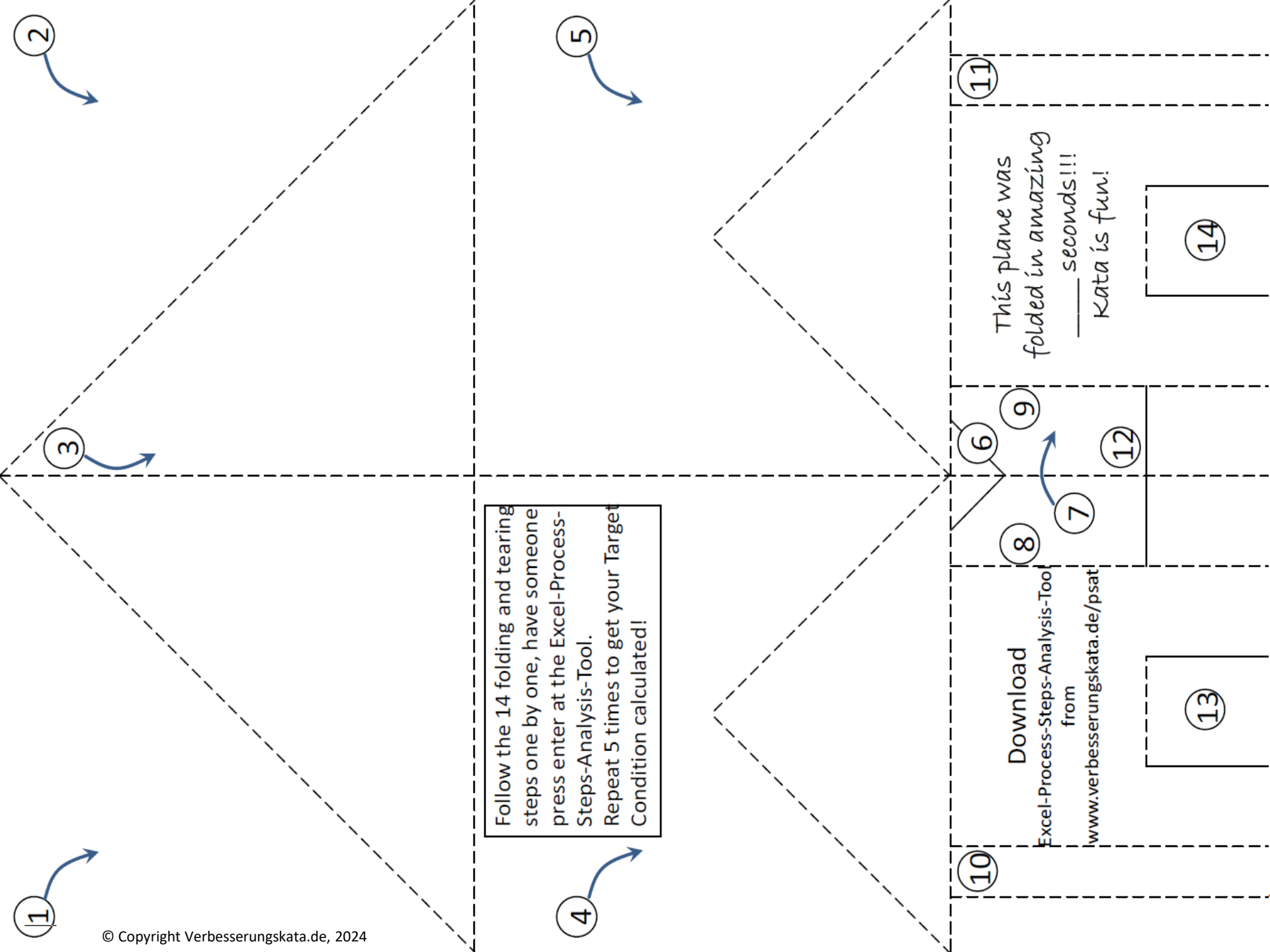
8

7

This plane was  
folded in amazing  
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Follow the 14 folding and tearing  
steps one by one, have someone  
press enter at the Excel-Process-  
Steps-Analysis-Tool.  
Repeat 5 times to get your Target  
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1

5

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14

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1

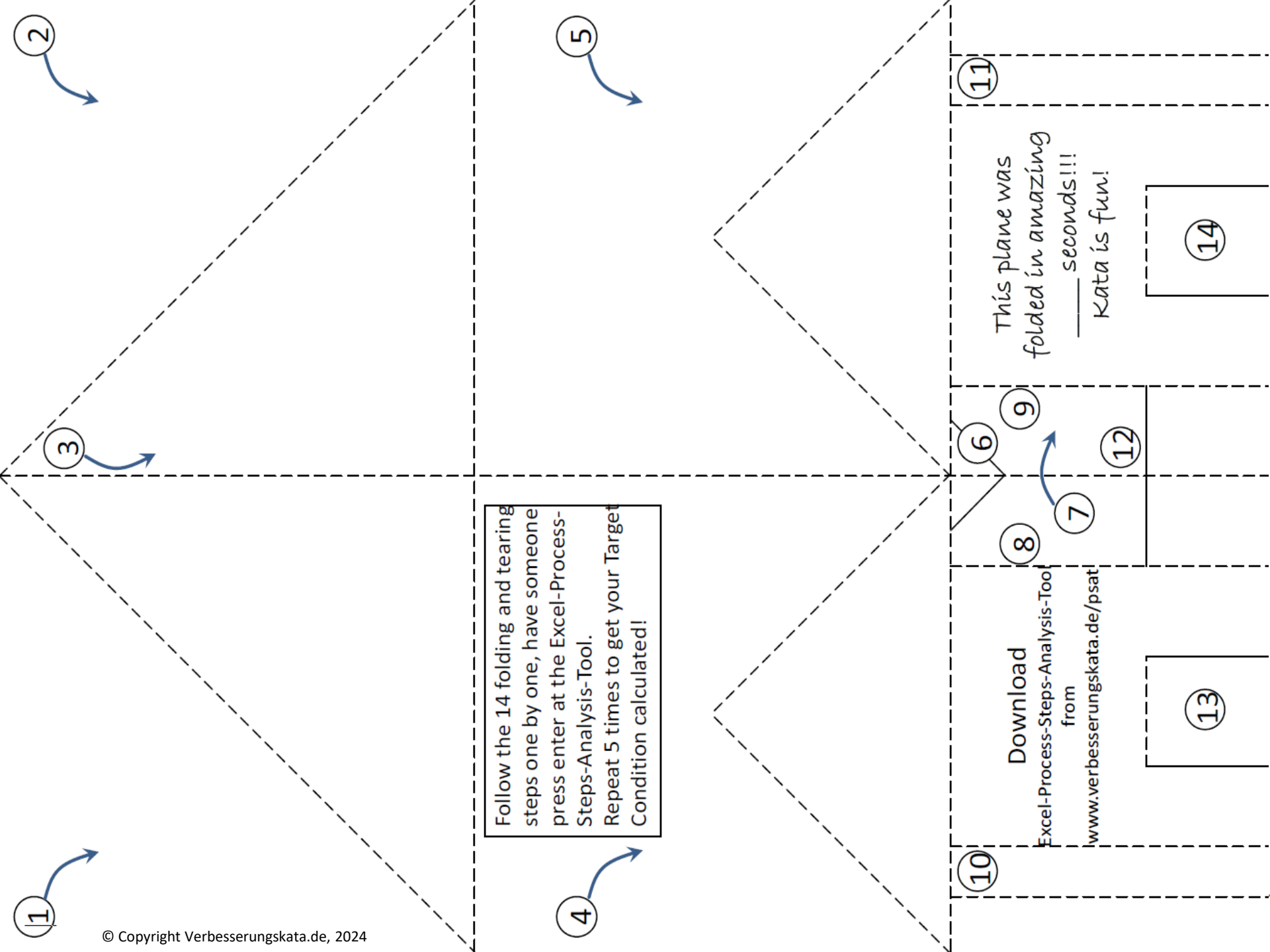
4

10

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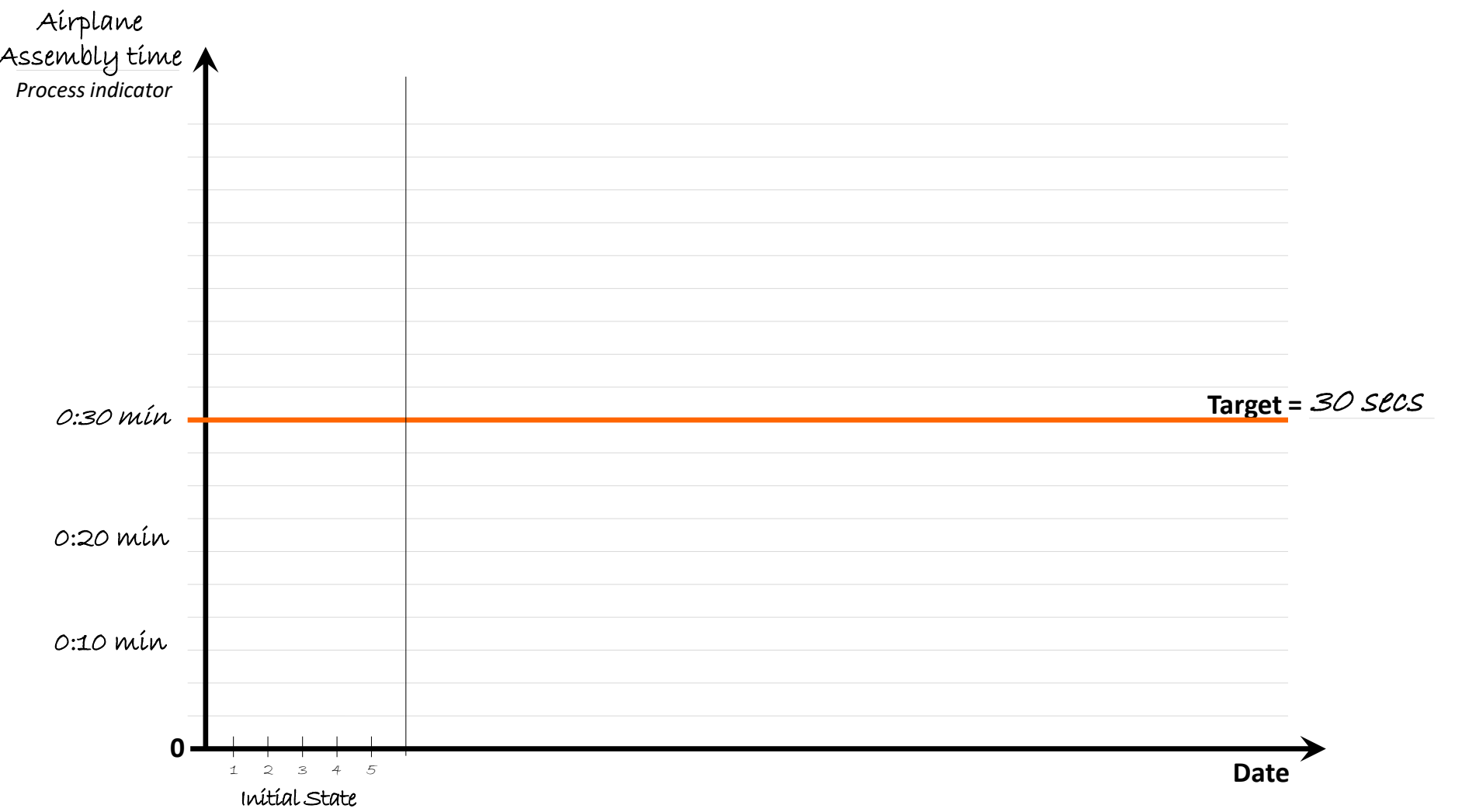
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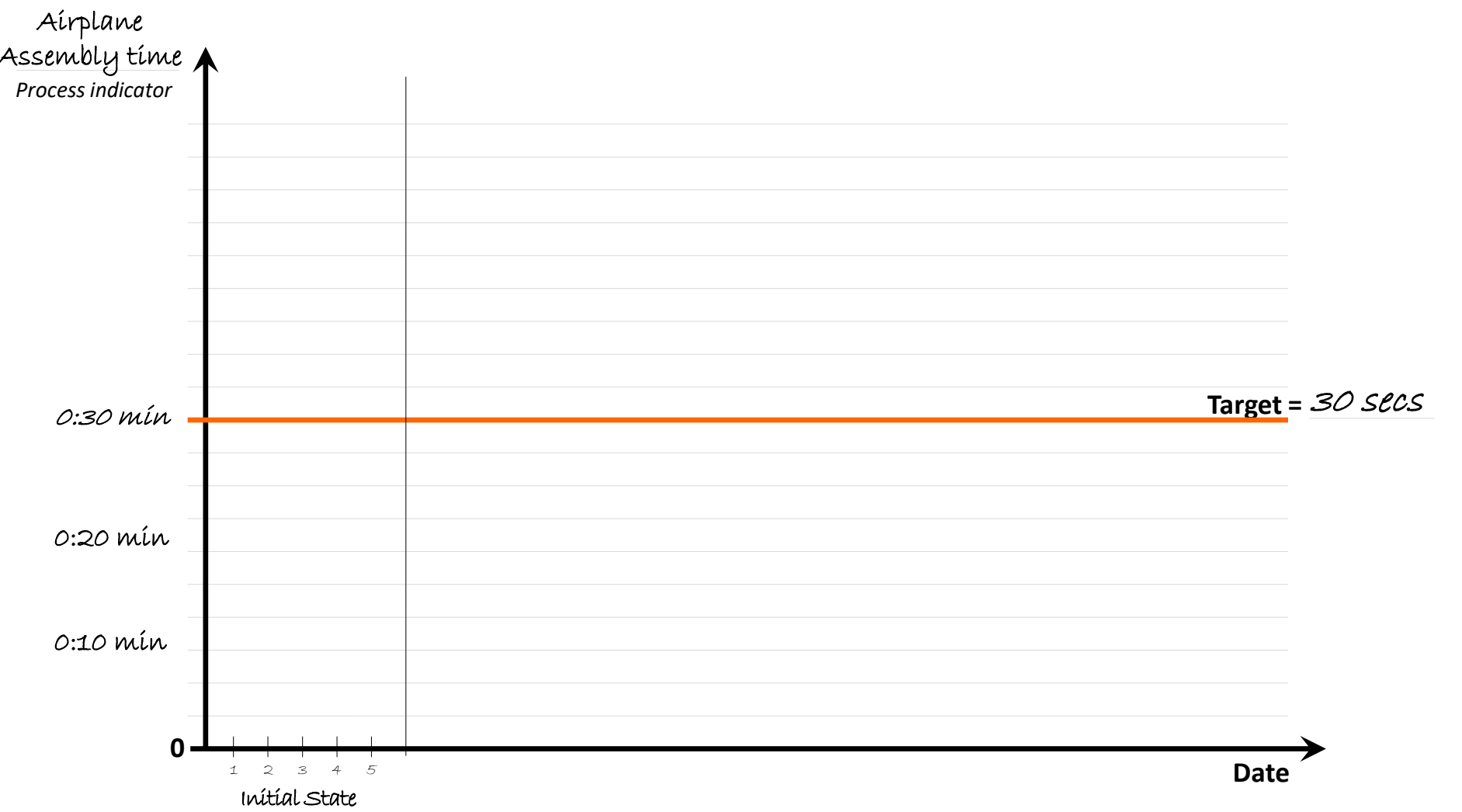
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<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*  
Output and Process Indicators

<sup>2</sup> Current condition Output and Process indicator		<sup>2.3</sup> Learned from last step? Was the last hypothesis refuted or confirmed?	<sup>3.8</sup> Only one obstacle at a time Has root cause been described and quantified?	<sup>4.0</sup> Next stept and what you expect A refutable hypothesis with an expected, numerical effect		<sup>5.0</sup> Date/Place Synchronized with step?
<div></div>	<div></div>	1-				
		2-				
		3-				

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<div></div>	<div></div>	1-				
		2-				
		3-				

PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
1	Start: remove sheet of paper from stack		0:00	0:00	0:00	0:00
2	Fold top left corner					
3	Fold top right corner					
4	Fold the tip down to the marking					
5	Fold top left corner					
6	Fold top right corner					
7	Fold the tip down to the marking					
8	Fold vertically along the central axis					
9	Fold wing to the left at the marking					
10	Fold wing to the right at the marking					
11	Fold left winglets twice					
12	Fold right winglets twice					
13	Cut in rudder, fold out					
14	Cut left elevator and fold up					
15	Cut right elevator and fold up					
16	Grab aircraft by fuselage and take off!					
17						
18						
19						
Total time:					30 secs	

PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
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17						
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19						
Total time:					30 secs	

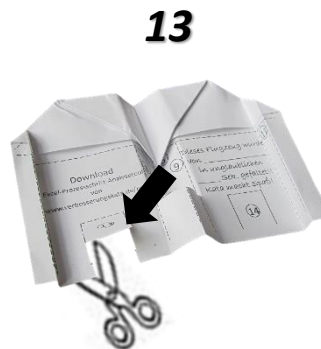
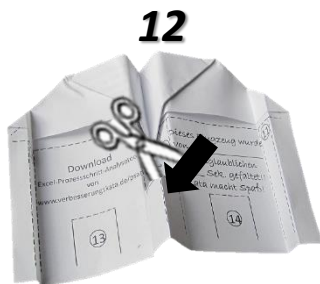
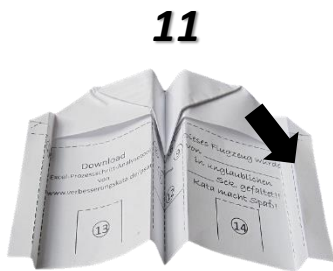
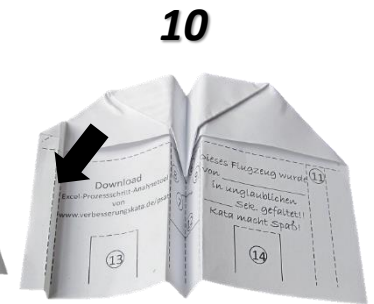
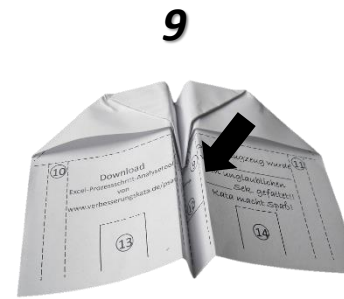
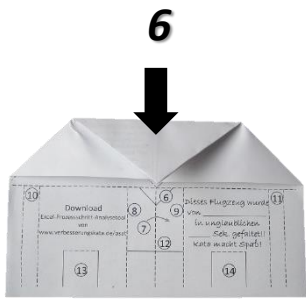
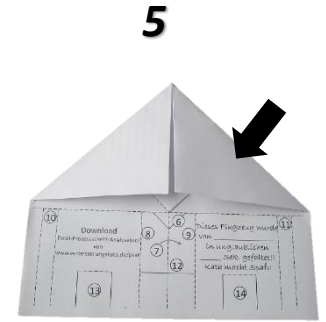
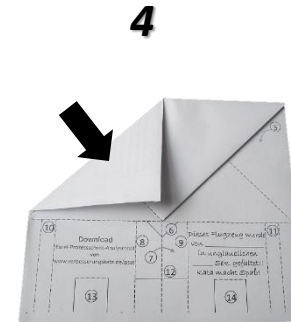
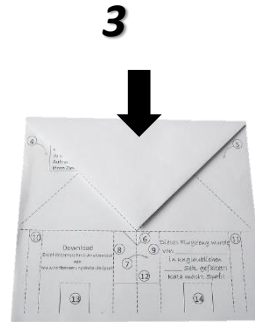
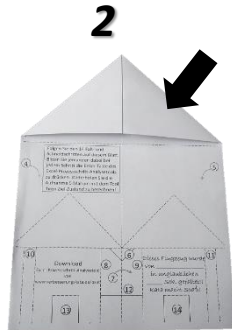
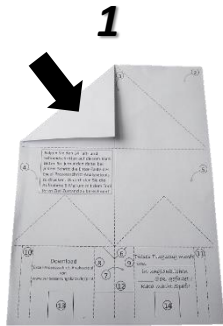
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Version 6.0

78

# Assembly Instructions in 15 Steps

Steps correspond Excel Process Steps Analysis Tool. Printed paper should not be pre-folded nor pre-cut.

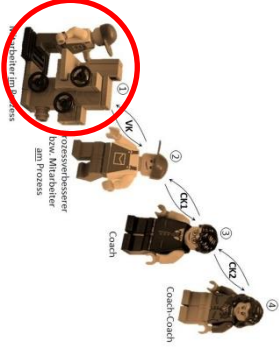


Demonstrate flight stability  
by 4 meter long flight!

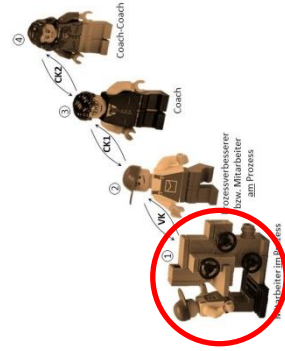
Assembly  
Paper Plane



# 1 Employee in process



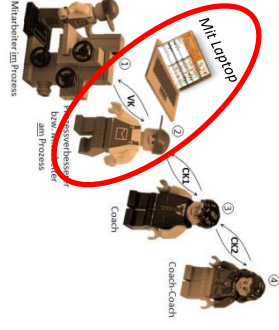
# 1 Employee in process



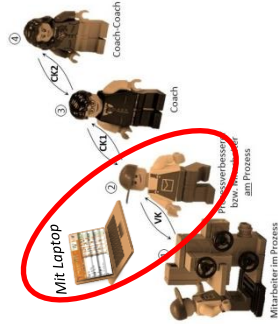
Assembly  
Paper Plane

# 2 Process improver

Assembly  
Paper Plane



# 2 Process improver



Assembly  
Paper Plane

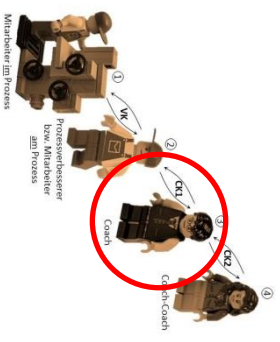
1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you



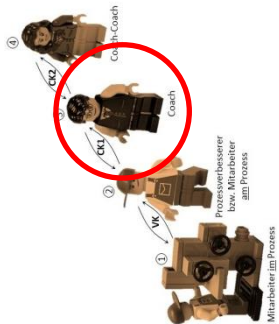
## Assembly Paper Plane



1 Coach



1 Coach



## Assembly Paper Plane

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you





# Preparing the **Kata Coaching** Exercise

## 1- Planning Phase

- 1- Divide participants in groups of 3 per table: who will have which of the 3 roles?
- 2- Fill out and fold name tags, place on table
- 3- Employee in process: get familiarized with the assembly of the airplane

- fold 2 planes, understand the assembly sequence, speed is irrelevant at this point

#### 4- Process improver: get familiarized with Excel-Process-Step-Analysis-Tool

- Read instructions sheet (2nd sheet on Excel Tool)
- write step numbers 1 to 15 in column „Process step“
- Complete the processes name in the white field top right
- With button **Activate (delete everything)** activate stopwatch
- Use ENTER to test tool and practice some time stopping



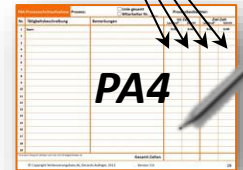
#### 5- Repeat assembly processes five times, time each repetition with the Excel-Tool:

- Employee in process says „Start“ and after every single step „one ready!“, „two ready!“ etc.
- Don't forget to save your times on your computer!
- Do not improve the process during these 5 cycles

#### 6- Current Condition with PA4-Sheet: Copy TC from green column to PA4, use a pencil

Copy values from Target columns „step“ and „running“ from Excel-Tool with pencil to the left to columns of the PA4-sheet

Fill out these 4 columns!



#### 7- Total Target Assembly Time in PA4: defining a **challenging Target Condition** is very important for your learning success. Your target is 30 seconds, write this value at the bottom of the Target Column of the PA4-Form

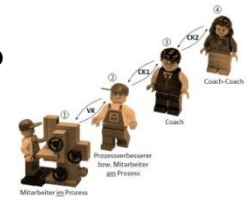
#### 8- Correct Target Step Times with Excel Tool: press the green button **AUTO**, write „30 secs“ when asked. Copy the automatically calculated numbers to column 3, 4.

#### 9- Prepare coaching boards (one pinboard per group):

- pin PA4 left, note target on Form 5 and draw 5 columns with the 5 times you stopped
- add three obstacles which you think you should tackle next



**The Coaching Board is ready! The Coaching Cycles can begin!**



# Instructions Prozess Steps Analysis-Tool 5.0

With these three buttons you can optimize the size of the sheet on your computer display.

The stopwatch must be ACTIVE in order to be able to stop your step and cycle times.

The stopwatch must be INACTIVE in order to edit text areas.

Here you can write the name of your process.

Here you can see if the watch is running and the time elapsed.

Reduce, expand screen

Zoom +1%

Zoom -1%

Process Step Analysis-Tool

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Activate stopwatch (delete all)

Activate stopwatch (no delete)

Deactivate stopwatch (no delete)

Process:

Case assembly example

00:23,0

Status: Stopwatch is ACTIVE! Text sections CAN NOT be edited now.

Hancho/Trainer: Michael Müller

Operator: Hans Fischer

Date: 13.8.24 17:32

Nr 4 process steps

Adjust sheet length to 3 free rows

Expand to 150 rows

Current condition (max. 5 time recordings)

Ziel-Zeiten

Auto

	Total time:		Cumulated		Step		Cumulated		Step		Cumulated		Step		Cumulated		Step		Cumulated		Step		Correction	
	00:21,6		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:17,5		00:00,0		00:00,0	
0 Take plastic case from bin			00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0		00:00,0	
1 Take plastic case out from package, place in fixture			00:04,1		00:04,1		00:07,1		00:07,1										00:04,1		00:04,1			
2 Place harness on PCB and connect plugs			00:09,5		00:05,4		00:12,0		00:04,8										00:08,9		00:04,8			
3 Place PCB in housing, take lid, close lid, place and tighten 6 screws			00:13,5		00:04,0		00:18,4		00:06,4										00:12,9		00:04,0			
4 Put housing in bag, put bag and instructions into box, place box on pa			00:21,6		00:08,1		00:22,9		00:04,6										00:17,5		00:04,6			
5																								
6																								
7																								

Processes can be broken down in as many as 150 single steps.

The length of the sheet can be adjusted anytime just by clicking these buttons.

The five time measurements consist of cumulated, step and total times.

The shortest step time is marked in darker orange...

...and taken over as Target-Step-Time. That's why the Total Target Time is always shorter than the five measured times.

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# The 5 Questions\*

1 - What is the Target Condition of this process?

2 - What is the Current Condition now?

Go to the process, Turn Card to Reflect on the Last Step



3 - What Obstacles do you think are preventing you from reaching the Target Condition?

3b - Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle



4 - What is therefore your Next Step and what do you expect to Learn from it?

Turn Card to Detail the Next Step



5 - When can we go and see what you have Learned from taking that step?

\* The 5 Questions on the front side of this Card and Question 2.1 on the rear side must be asked every time and always with the same wording as written here.

0.1- Hello [Name]! We had agreed on doing a Coaching Cycle now. Is it OK with you?

## Reflect on the Learnings of the Last Step Taken

2.1- What did you Plan as your Last Step and what did you learn from it?

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2.5- What Value(s) have you measured?

2.6- Is there anything else you learned beyond what you already told me?

2.9- [Don't forget to praise!] Thank you! Please, let us (return to the board and) write down what we have learned so far, so that we do not forget anything.

## Be very specific when describing the One Obstacle to tackle next

A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!

3.1- What exactly is the problem with/why...[mkw]? Can you show me, please?

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## Be specific when describing the Hypothesis und Experiment

Because in our Next Step we should always be testing refutable hypothesis!

4.1- How exactly will you...[mkw]? Can you show me, please?

4.2- How exactly will you take that Next Step?

4.3- And what do you expect to learn from it?

4.4- How exactly will you measure/test your expected result?

4.5- How exactly will you document your measurement(s)?

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## Always take just One Step at a time

5.1- What of that next step do you think you could do today/until...[propose time]?

mkw:= try to use the mentee's key words from the last answer he gave you in your next detailing question. He will appreciate that you are actively listening to him!

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4.1- How exactly will you...[mkw]? Can you show me, please?

4.2- How exactly will you take that Next Step?

4.3- And what do you expect to learn from it?

4.4- How exactly will you measure/test your expected result?

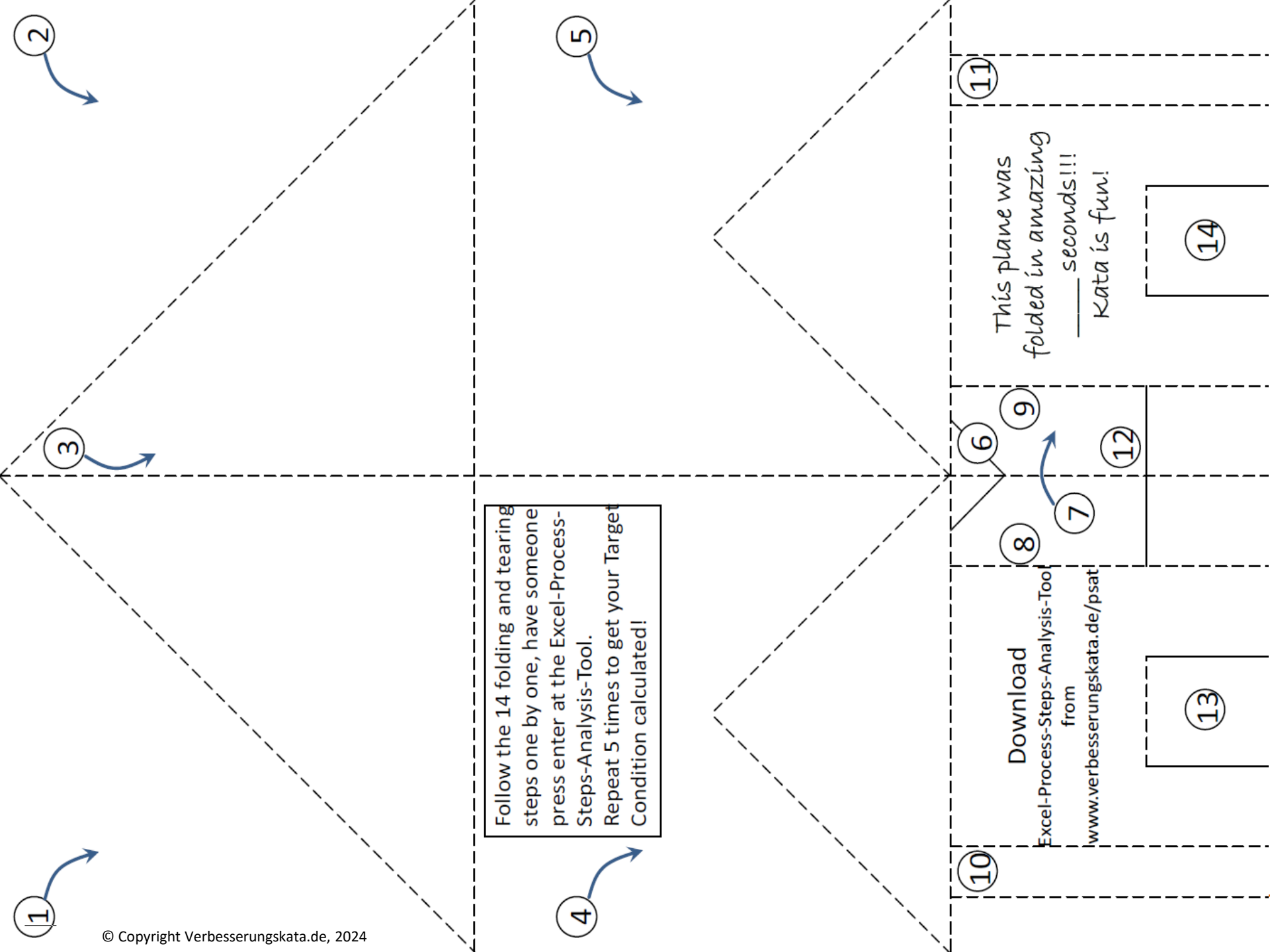
4.5- How exactly will you document your measurement(s)?

4.9- Thank you! Please, let us (return to the board and) write down what you have said so far, so that we do not forget anything.

## Always take just One Step at a time

5.1- What of that next step do you think you could do today/until...[propose time]?

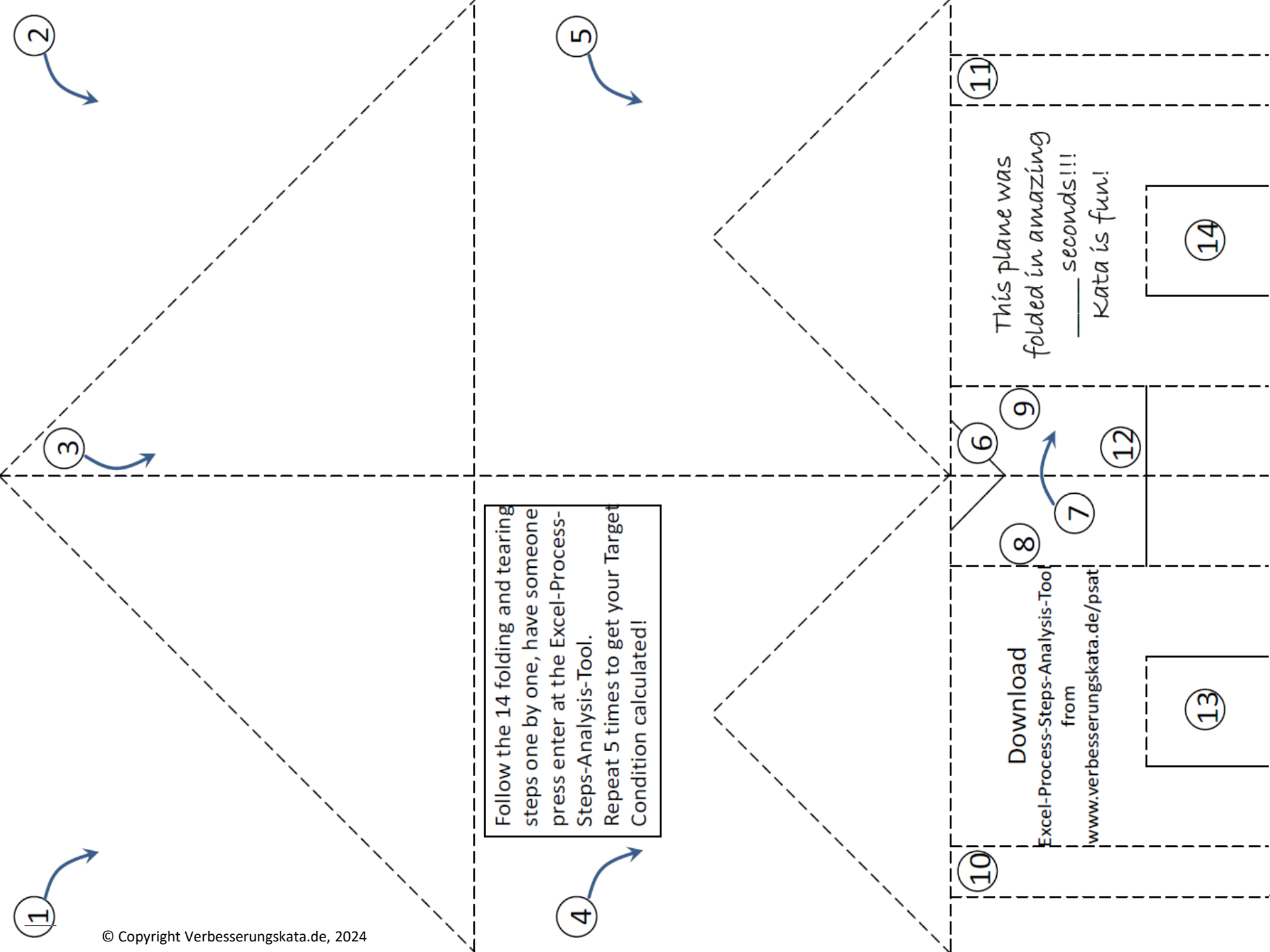
mkw:= try to use the mentee's key words from the last answer he gave you in your next detailing question. He will appreciate that you are actively listening to him!



Follow the 14 folding and tearing steps one by one, have someone press enter at the Excel-Process-Steps-Analysis-Tool.  
Repeat 5 times to get your Target Condition calculated!

Download  
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This plane was  
folded in amazing  
\_\_\_\_\_ seconds!!!  
Kata is fun!



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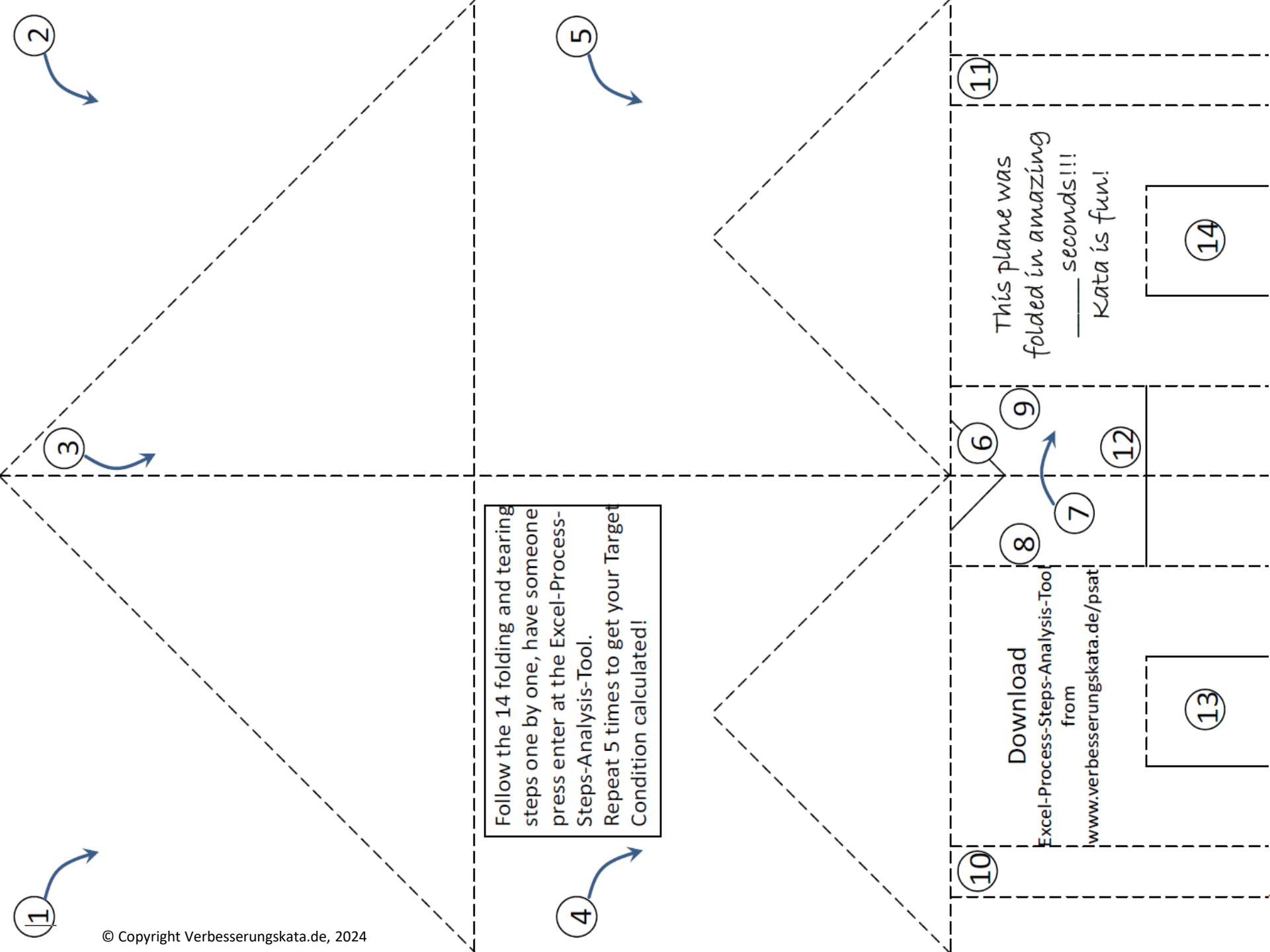
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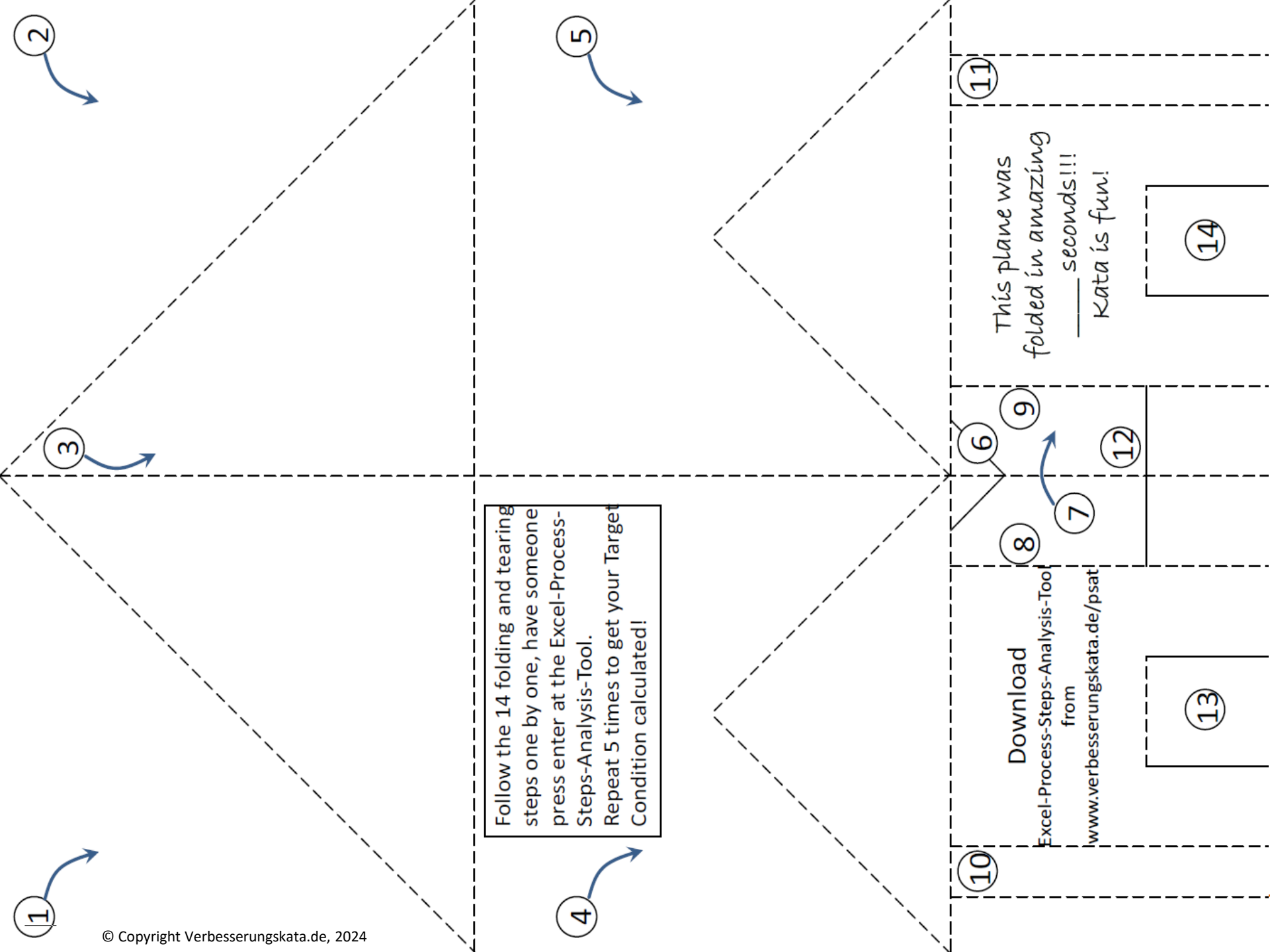
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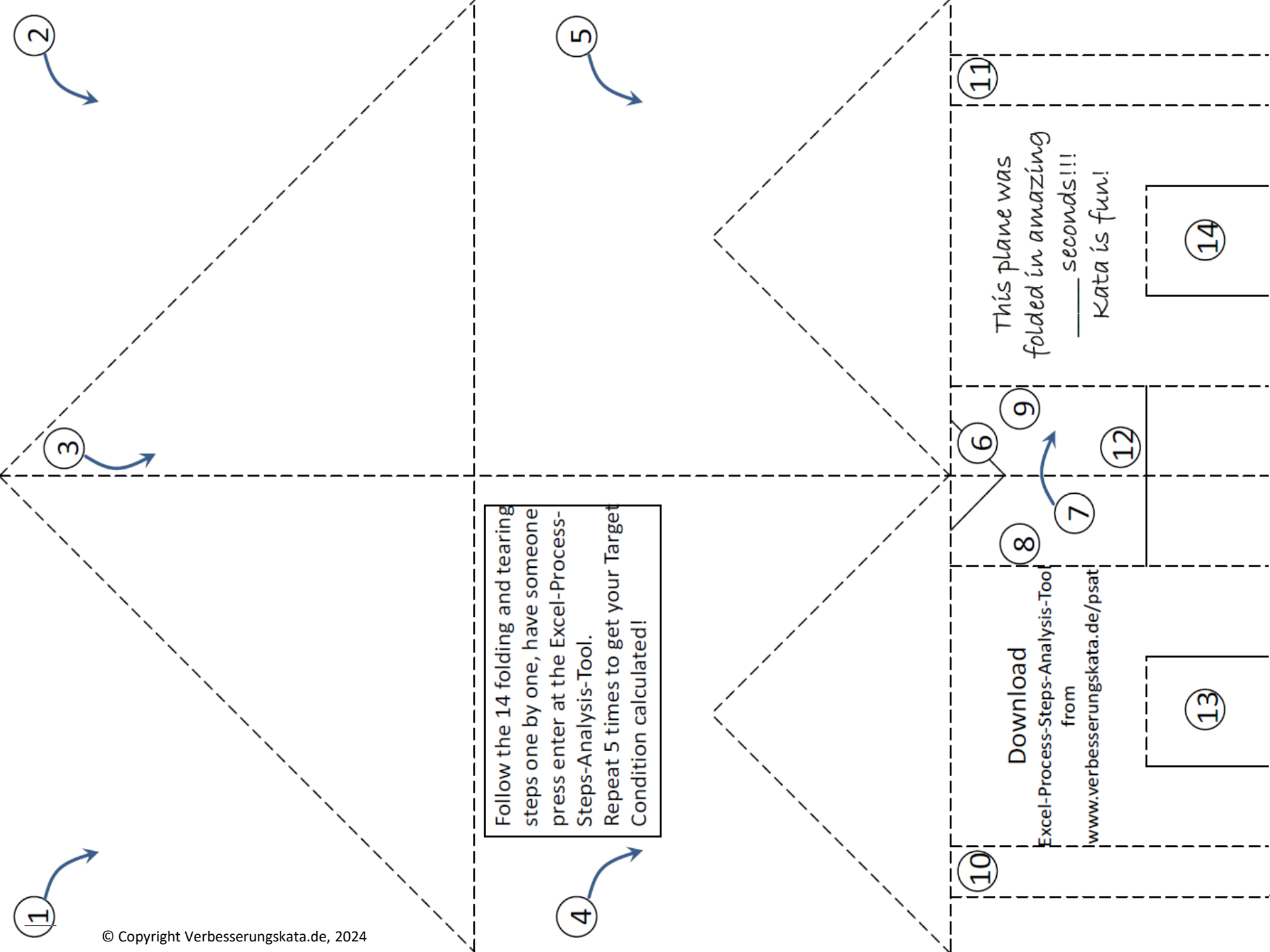
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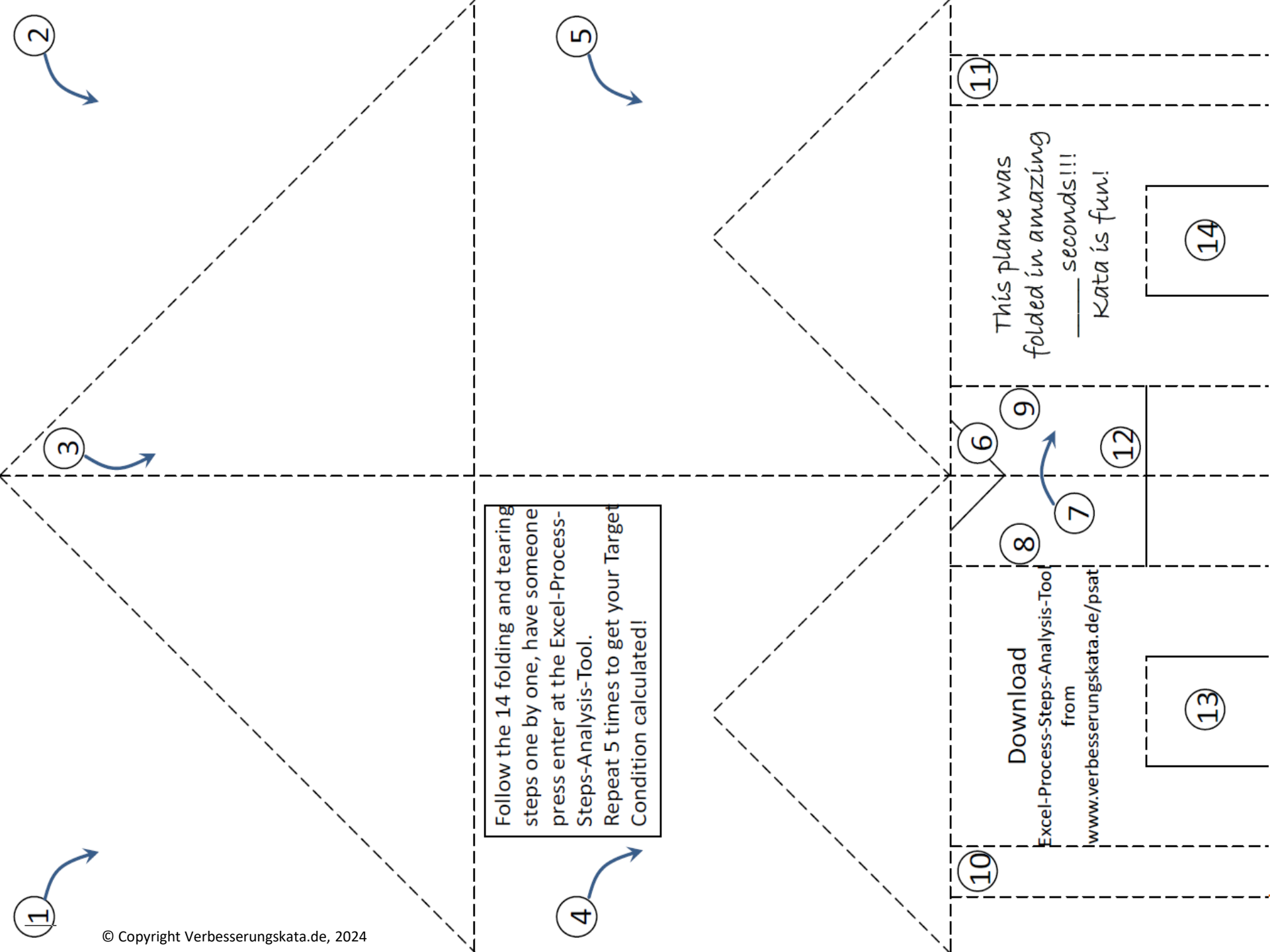
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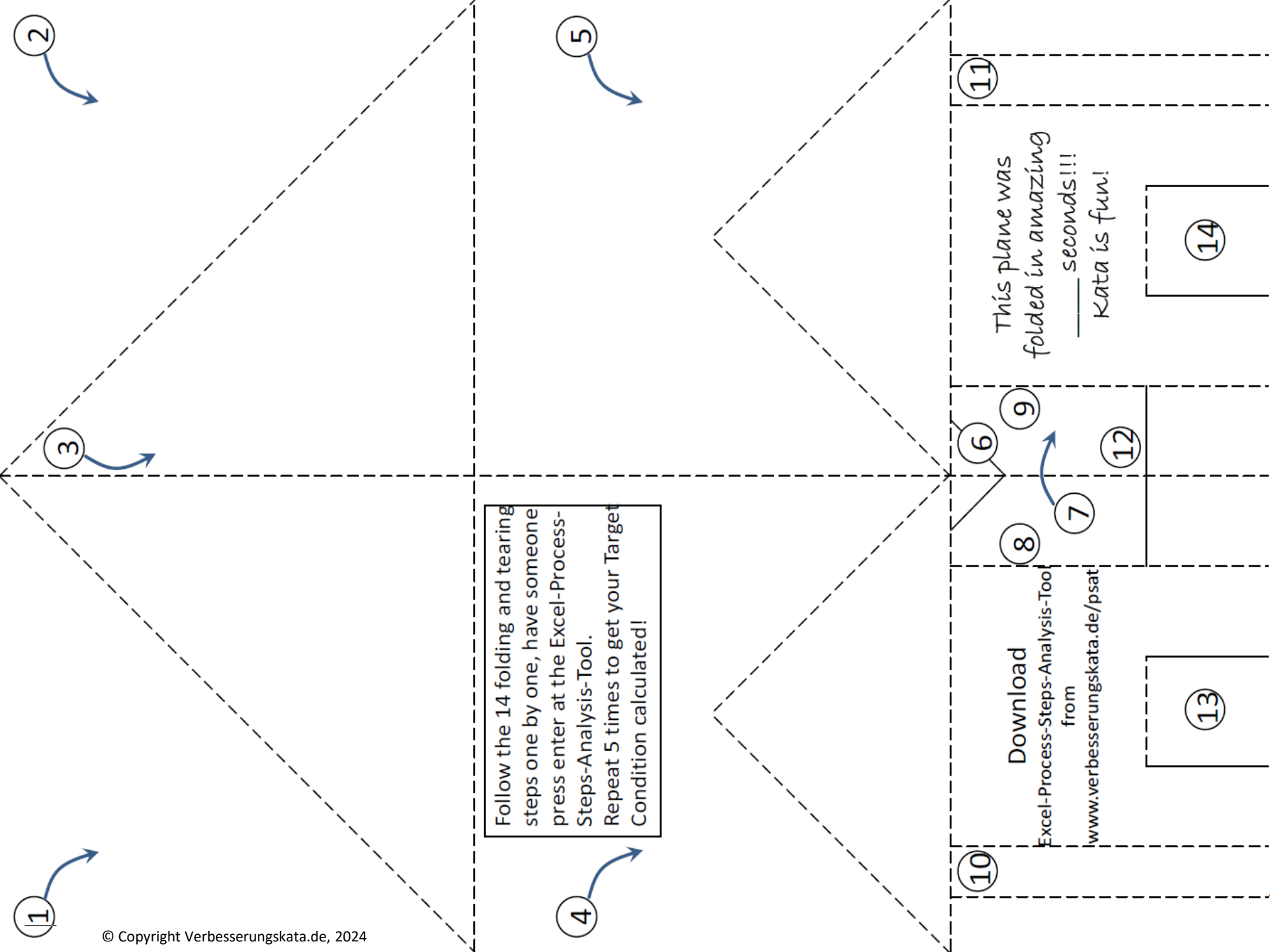
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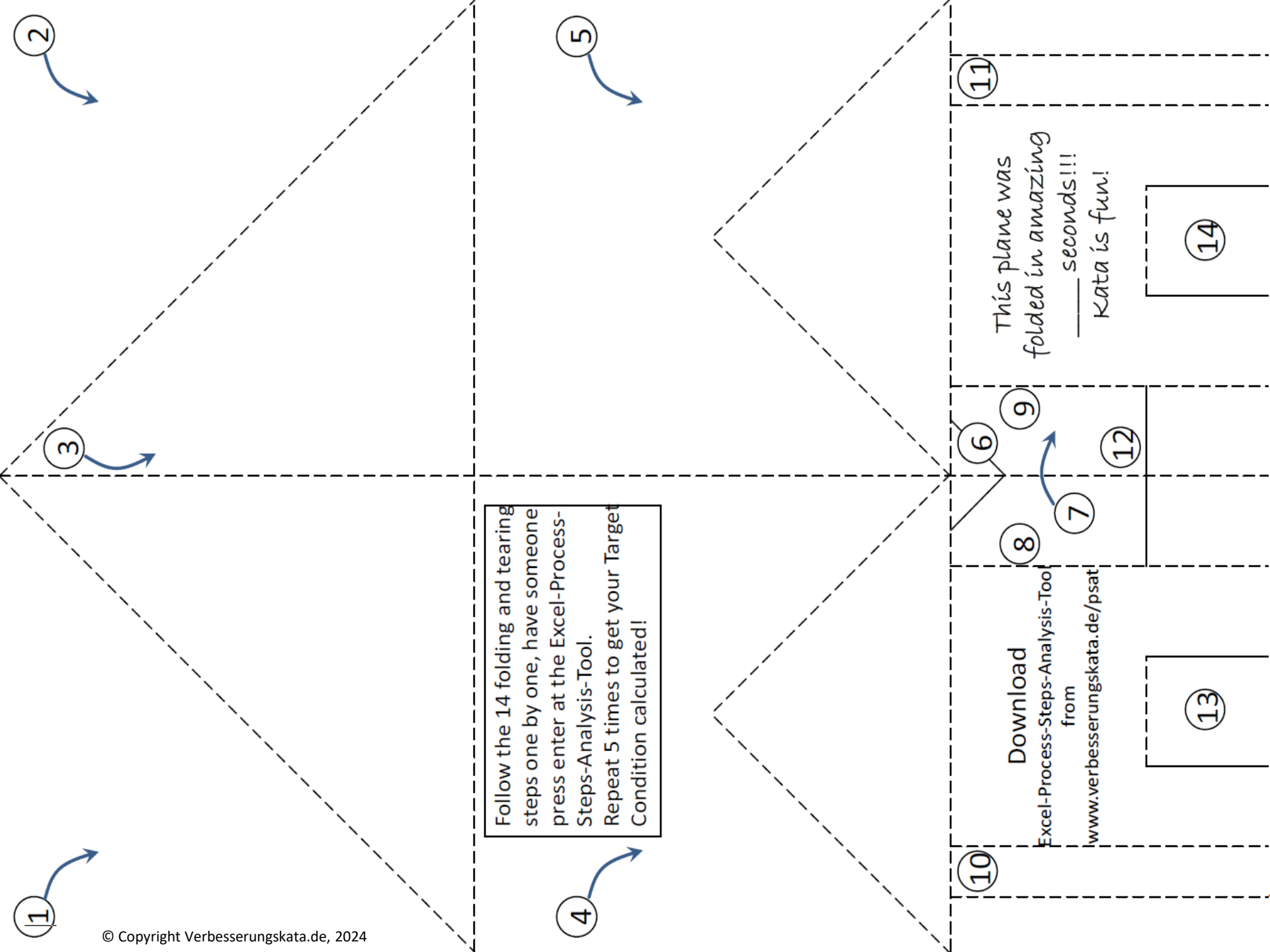
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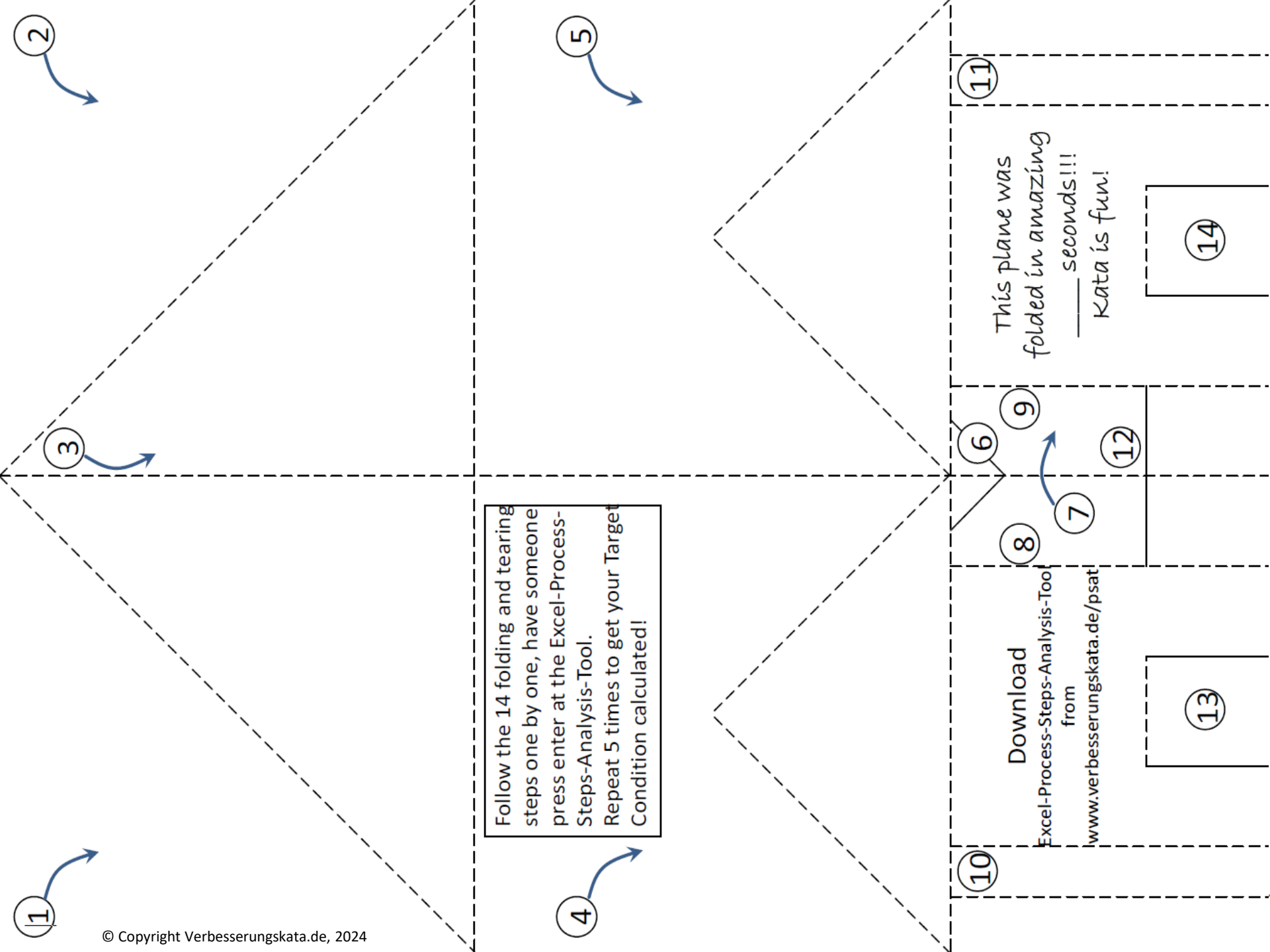
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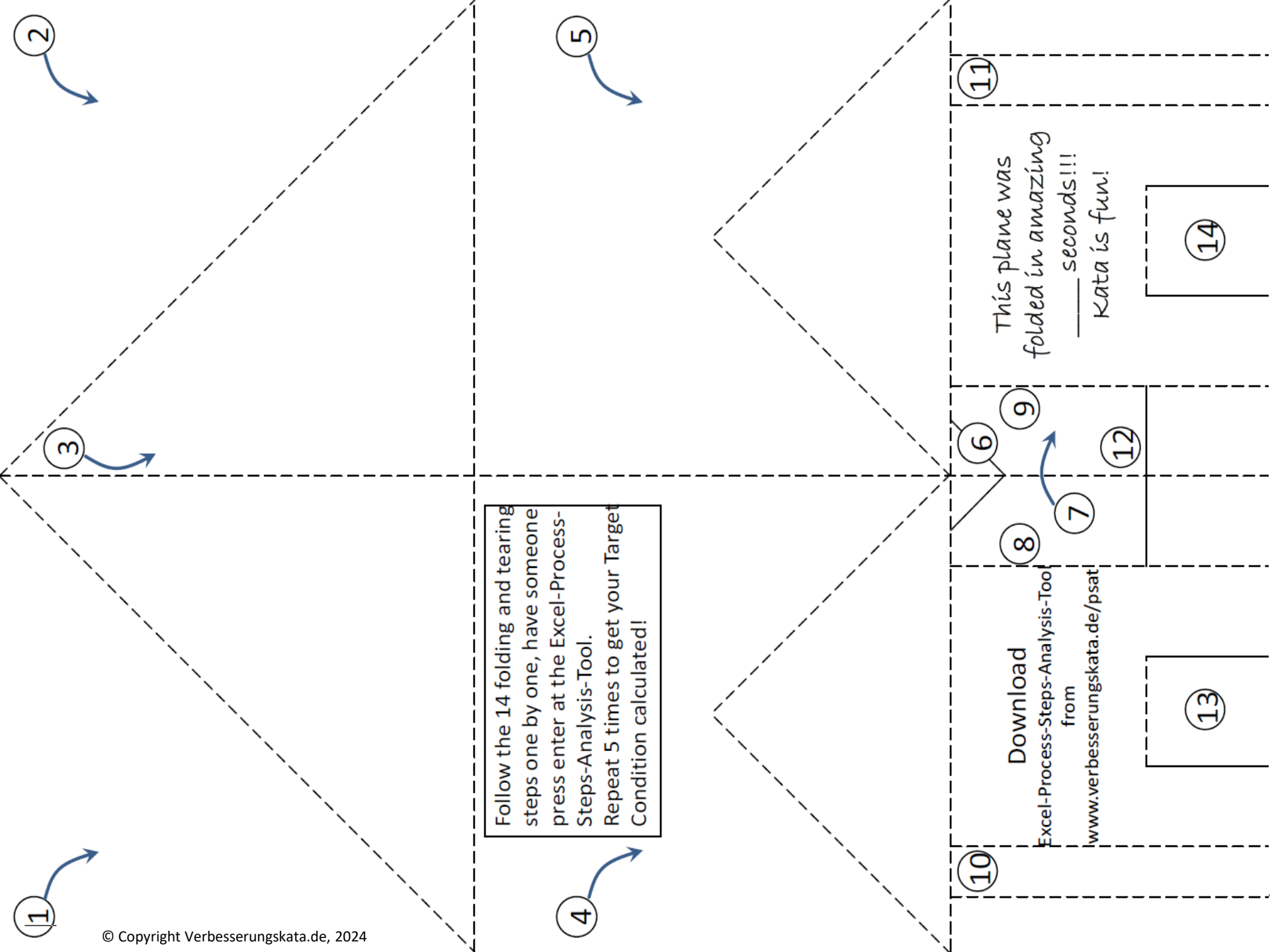
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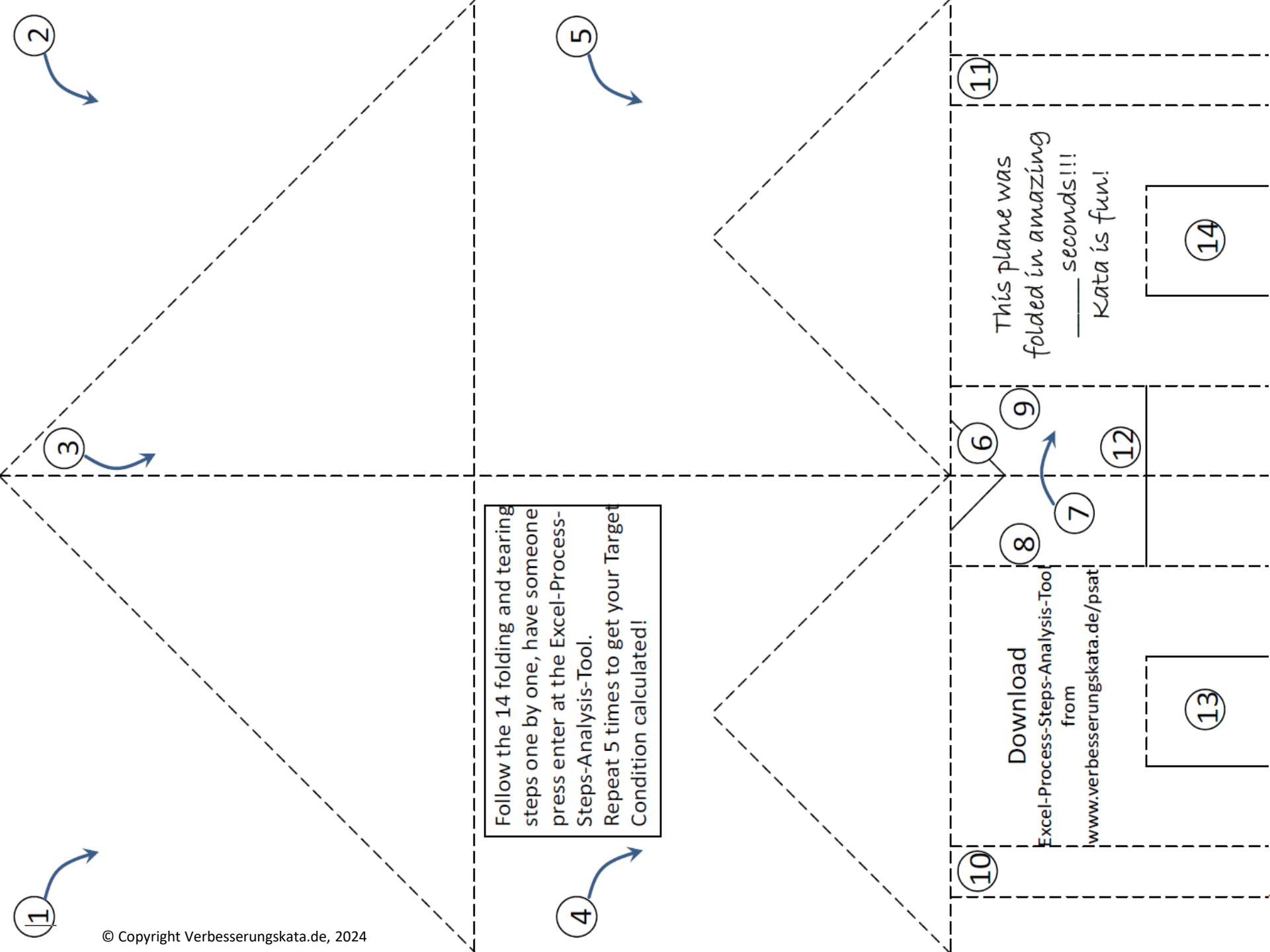
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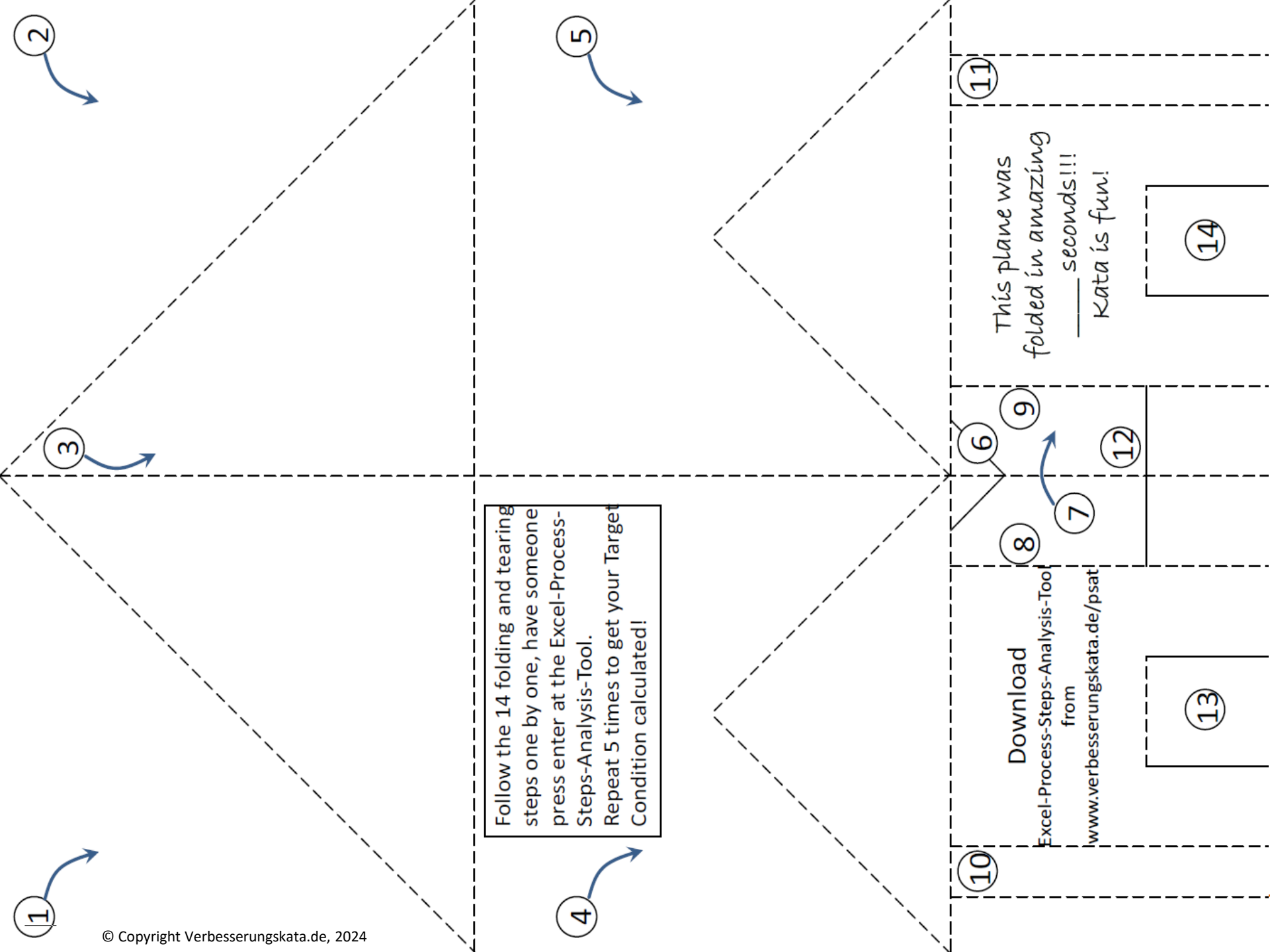
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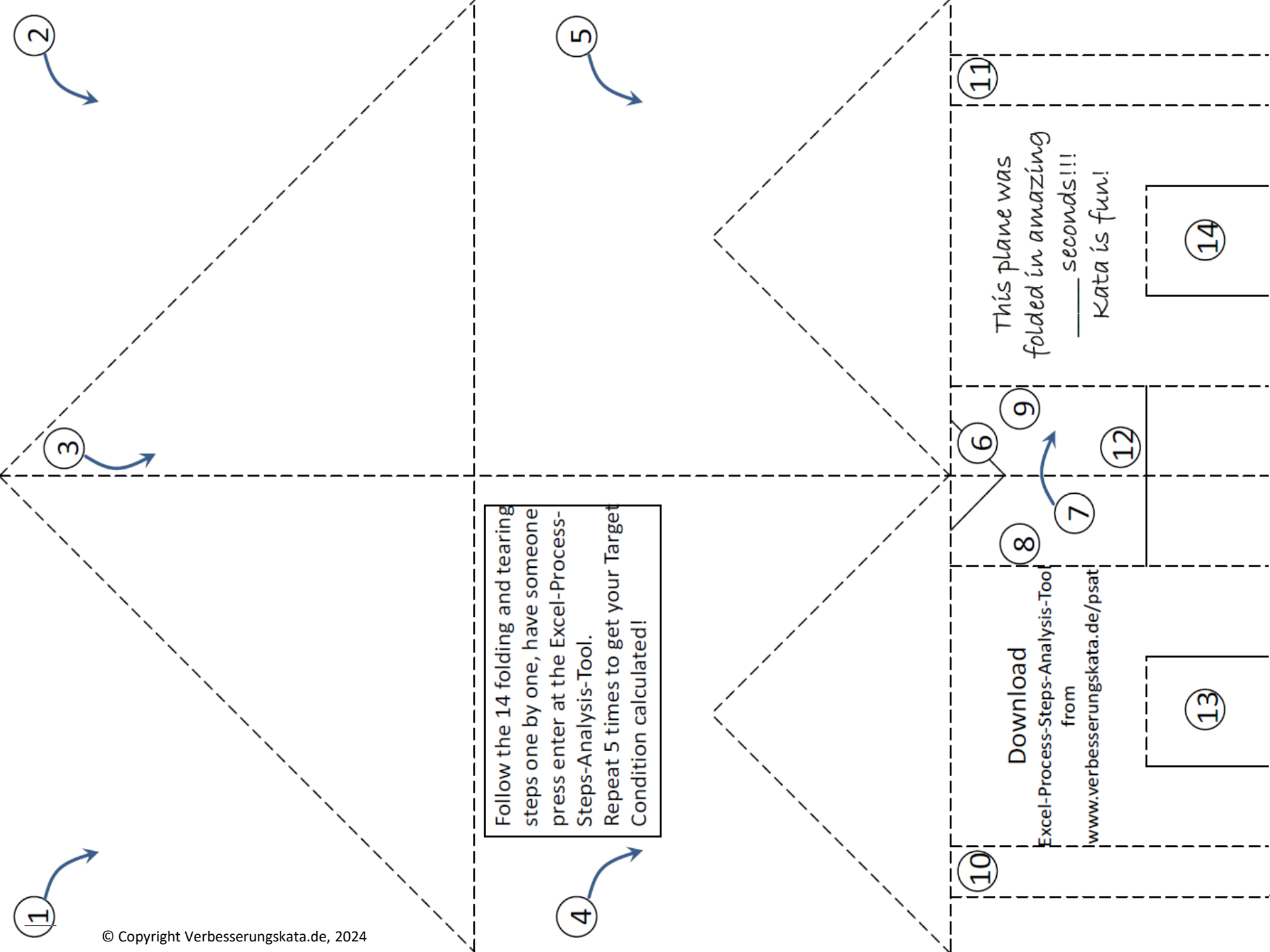
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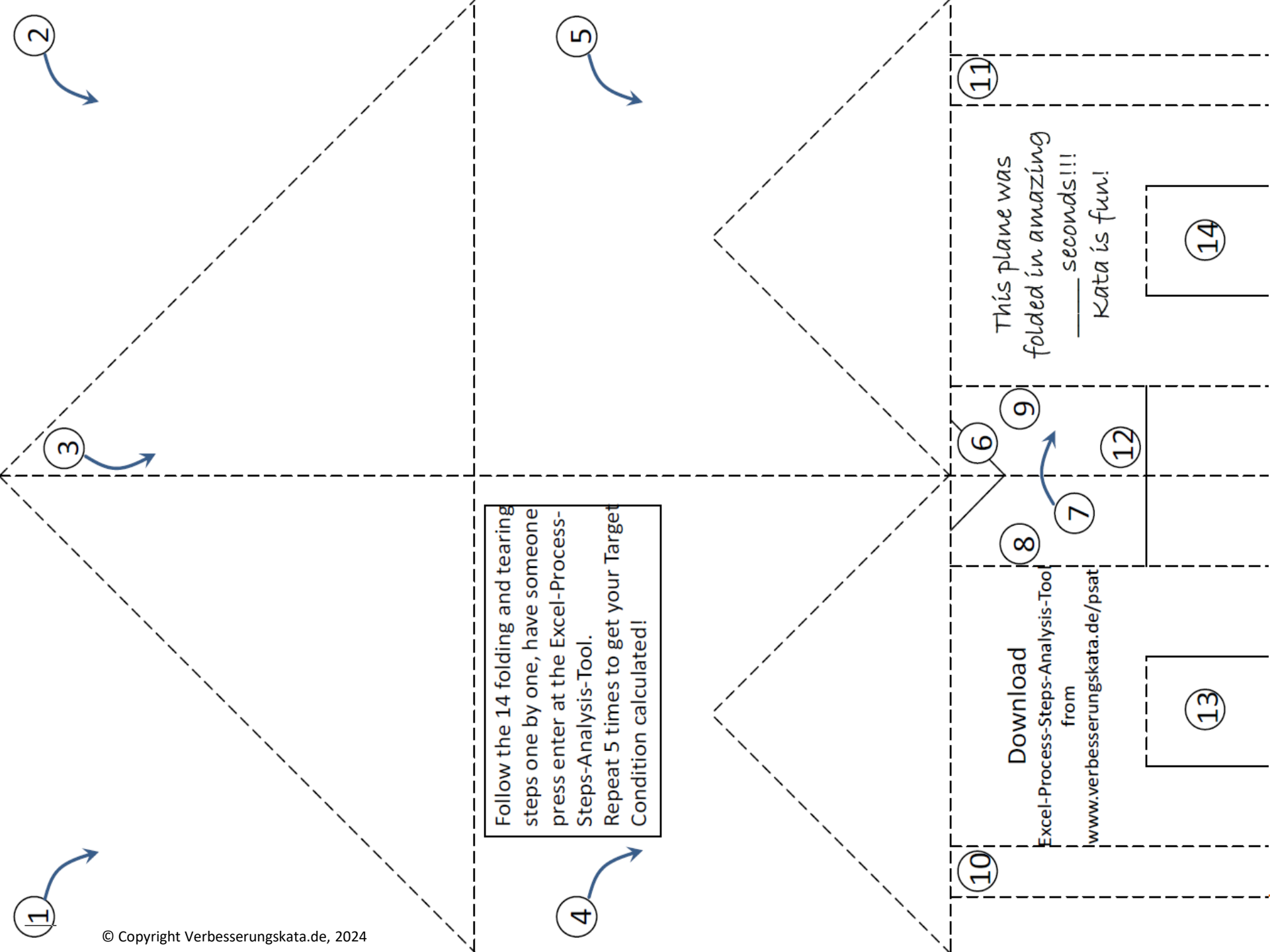
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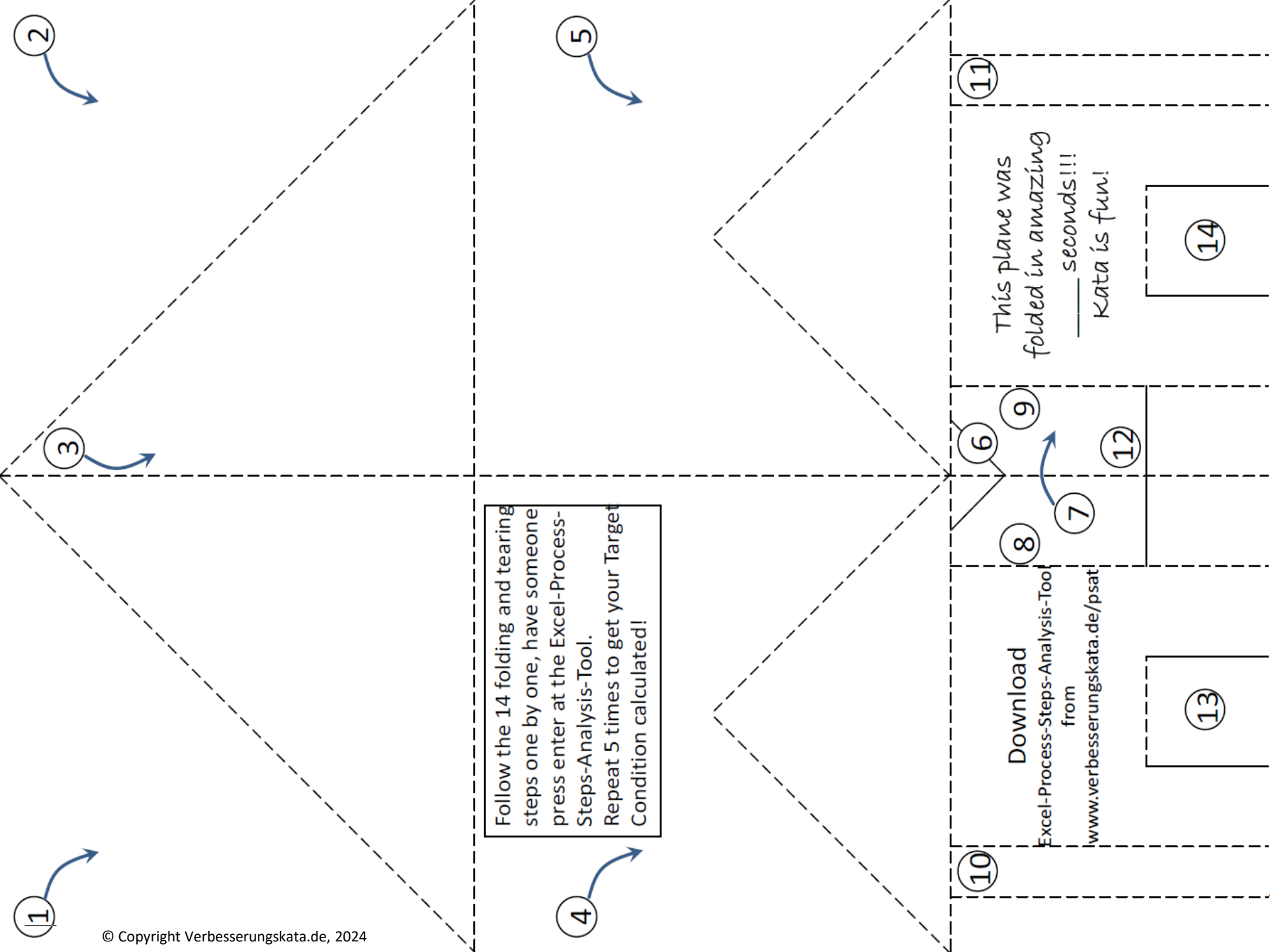
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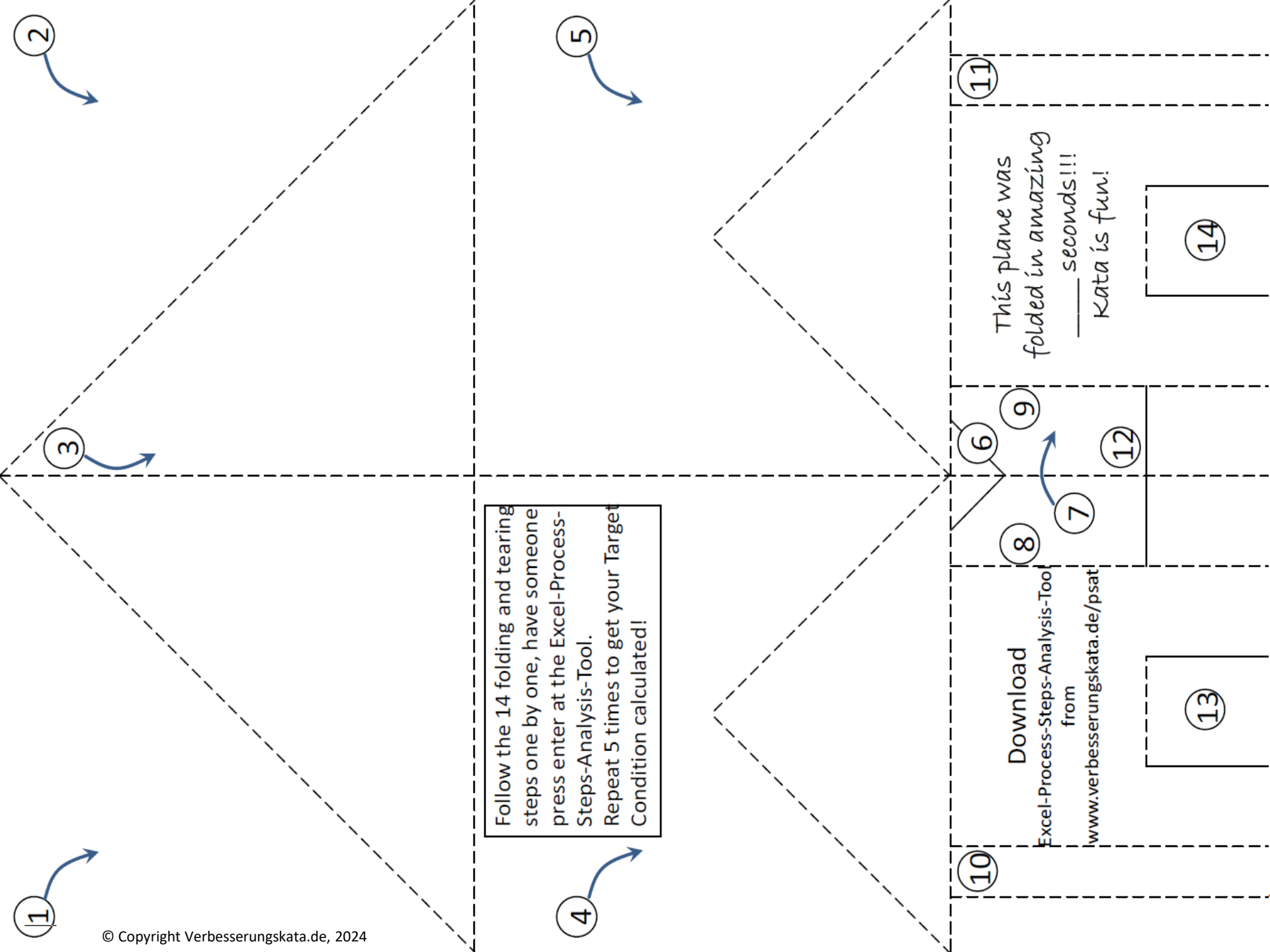
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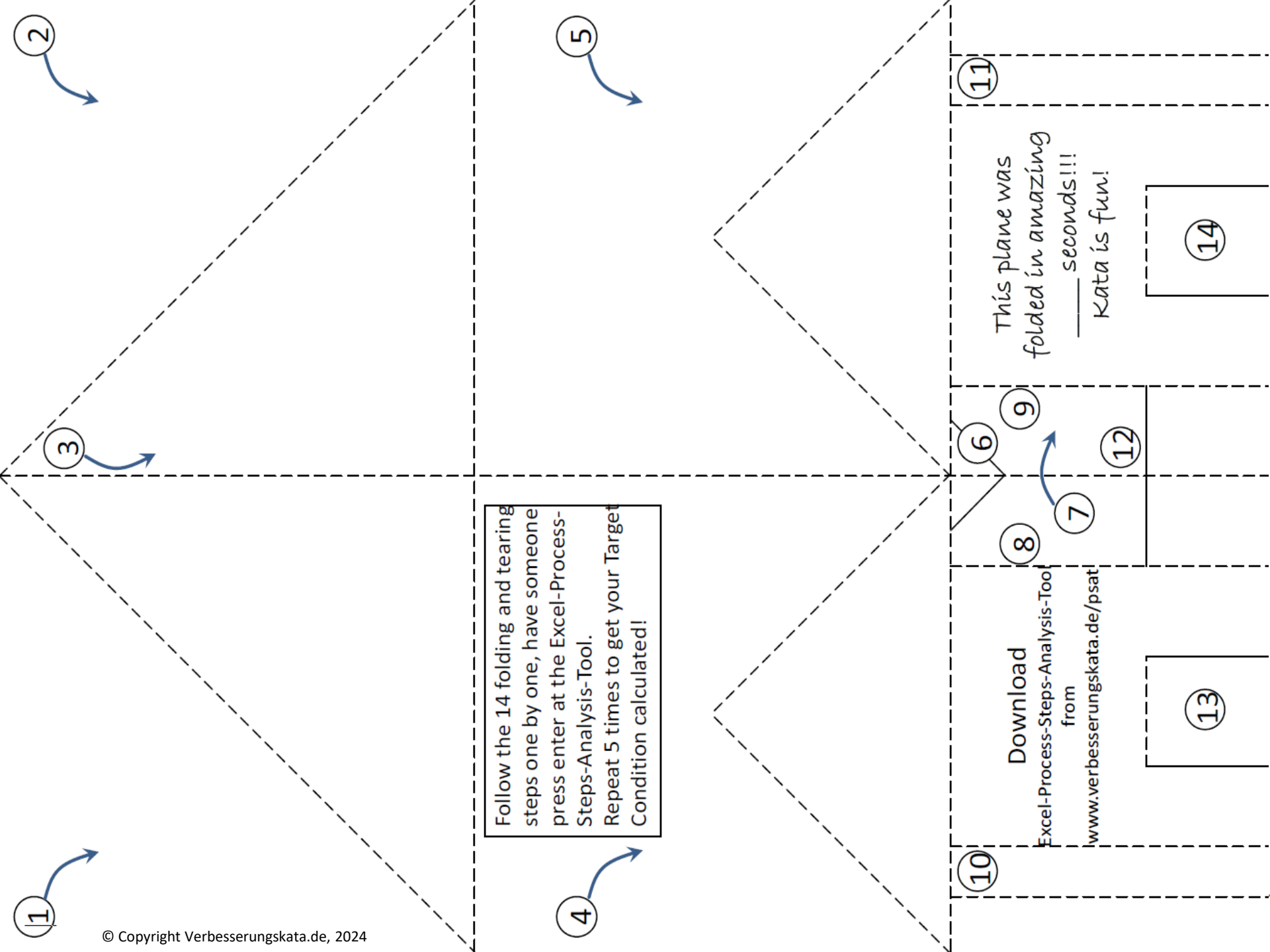
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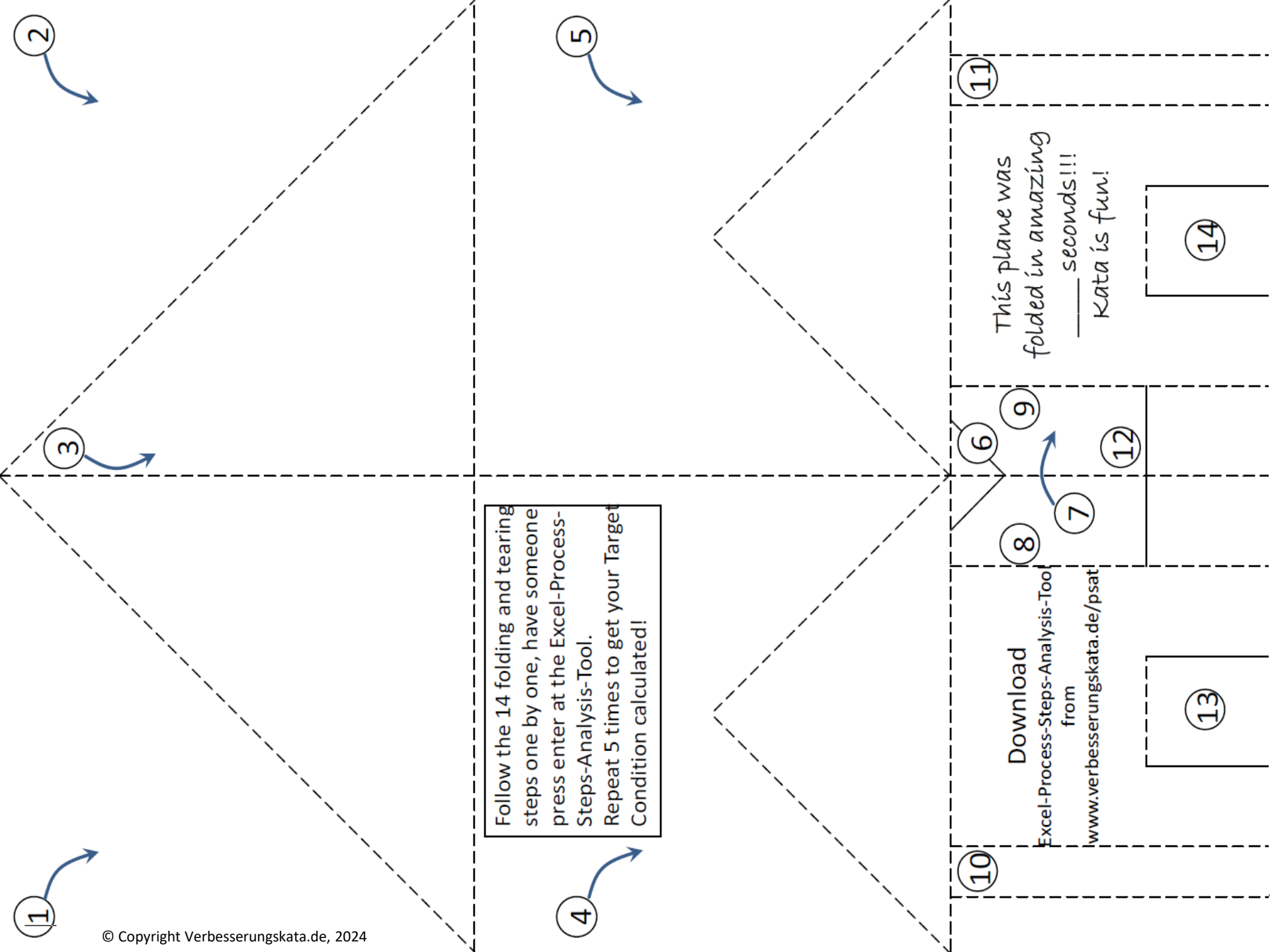
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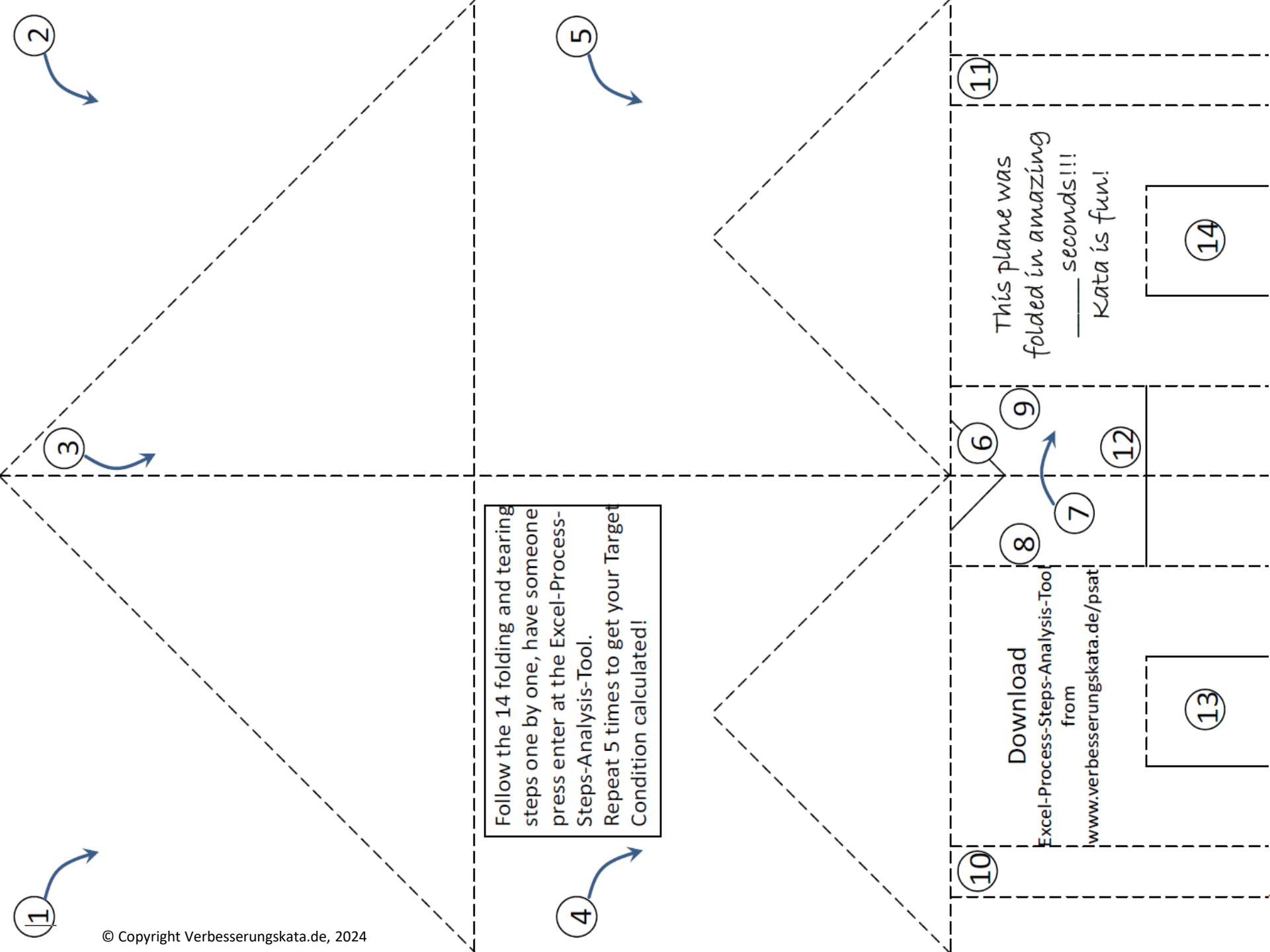
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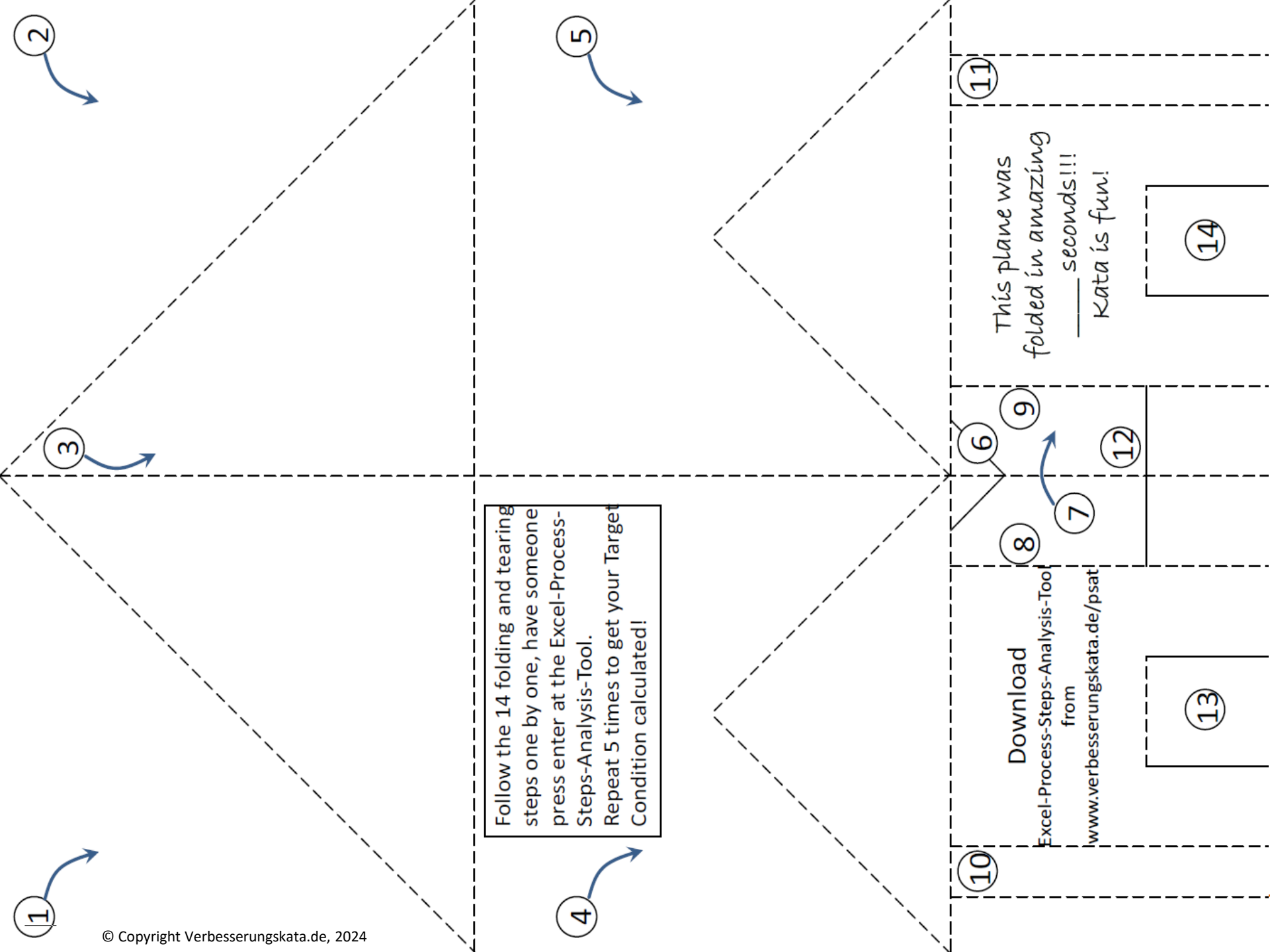




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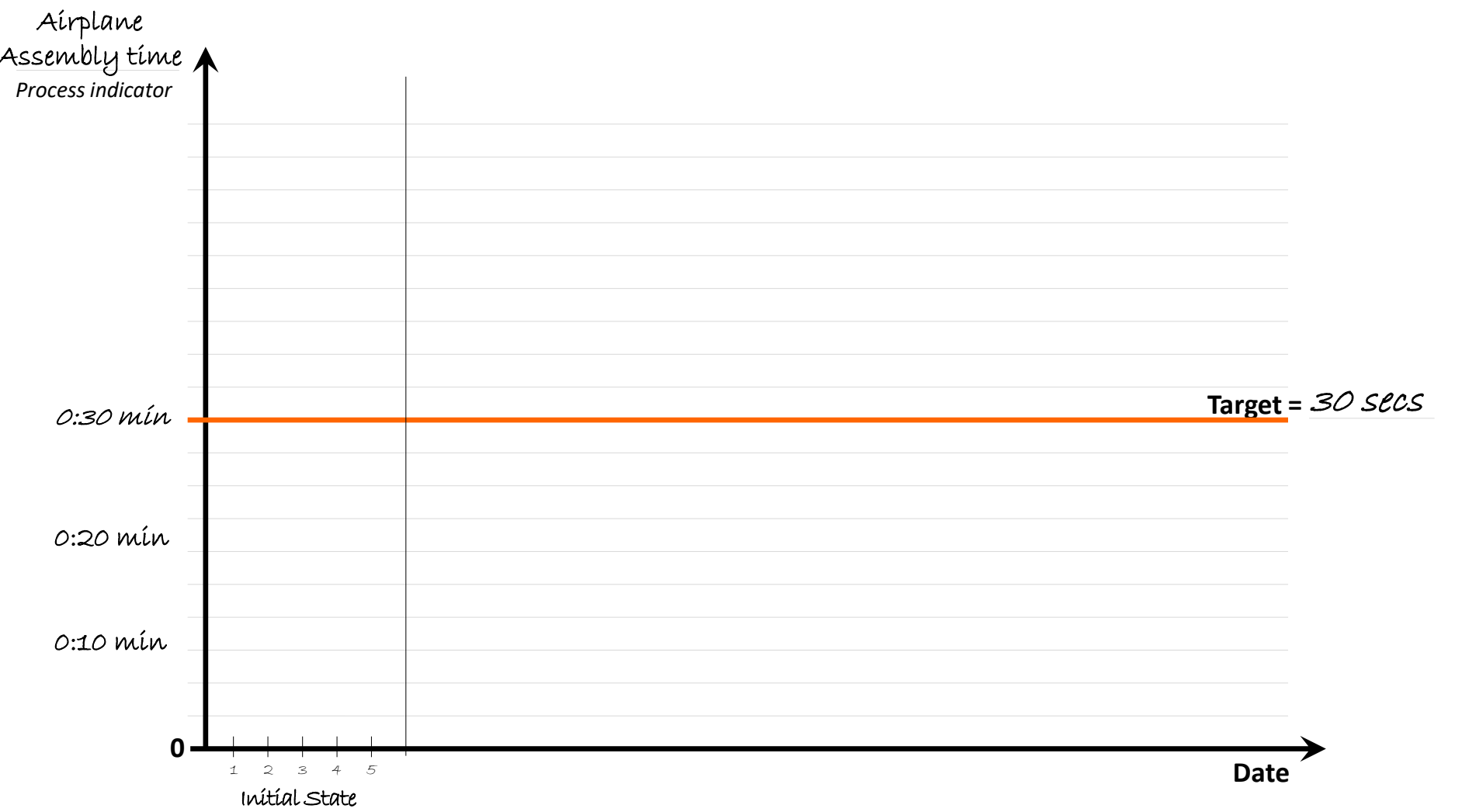
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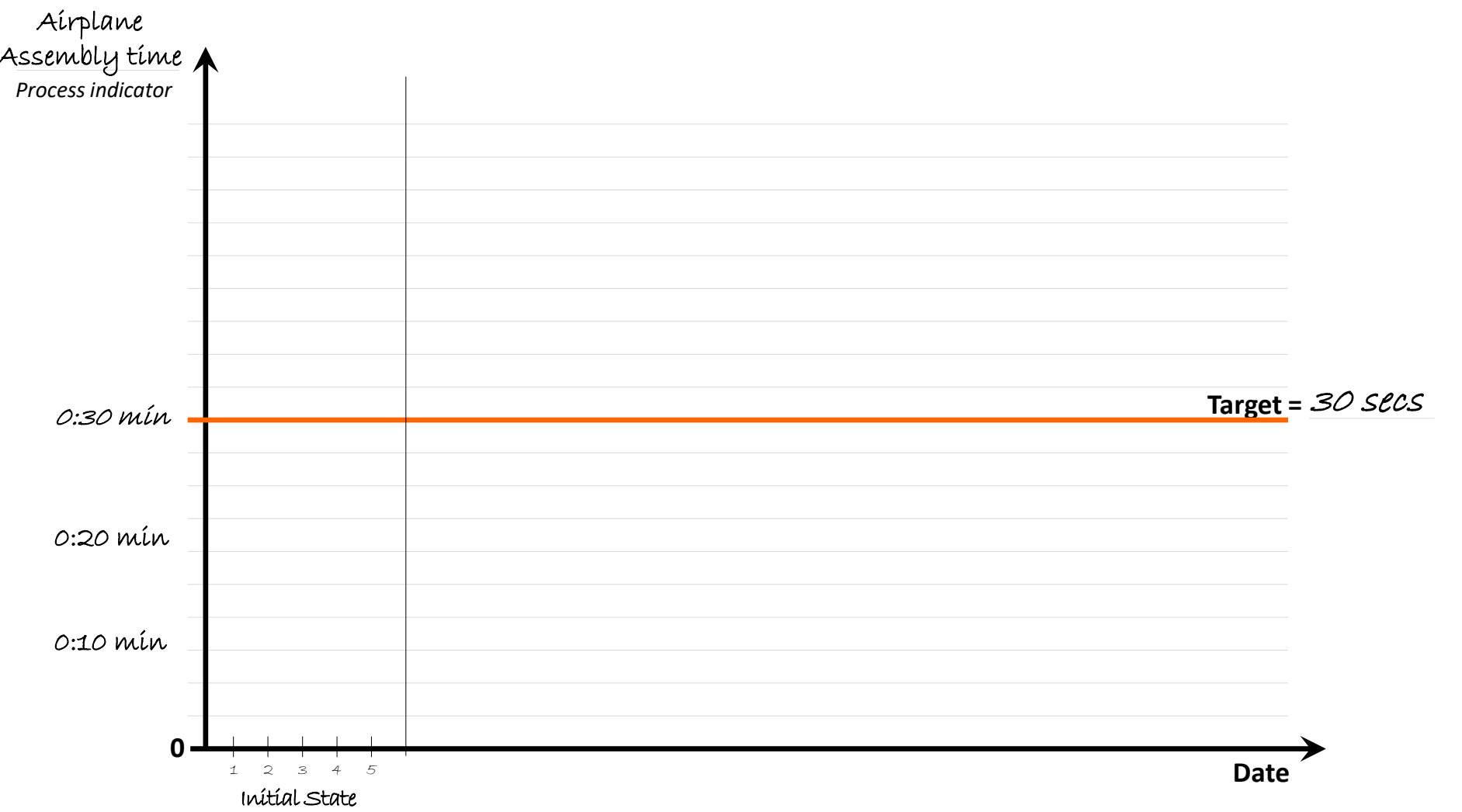
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<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*

Output and Process Indicators

<sup>2</sup>Current condition

Output and Process indicator

<sup>2.3</sup> Learned from last step?

Was the last hypothesis refuted or confirmed?

<sup>3.8</sup> Only one obstacle at a time

Has root cause been described and quantified?

<sup>4.0</sup> Next stept and what you expect

A refutable hypothesis with an expected, numerical effect

<sup>5.0</sup> Date/Place

Synchronized with step?

1-  
2-  
3-

<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*  
Output and Process Indicators

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<div></div>	<div></div>	1-			
		2-			
		3-			

PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
1	Start: remove sheet of paper from stack		0:00	0:00	0:00	0:00
2	Fold top left corner					
3	Fold top right corner					
4	Fold the tip down to the marking					
5	Fold top left corner					
6	Fold top right corner					
7	Fold the tip down to the marking					
8	Fold vertically along the central axis					
9	Fold wing to the left at the marking					
10	Fold wing to the right at the marking					
11	Fold left winglets twice					
12	Fold right winglets twice					
13	Cut in rudder, fold out					
14	Cut left elevator and fold up					
15	Cut right elevator and fold up					
16	Grab aircraft by fuselage and take off!					
17						
18						
19						
Total time:					30 secs	

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Version 6.0

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PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
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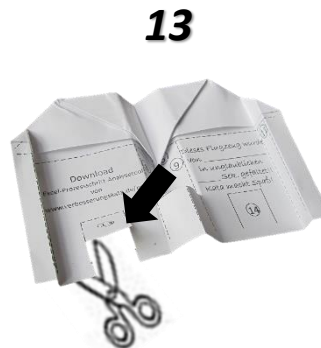
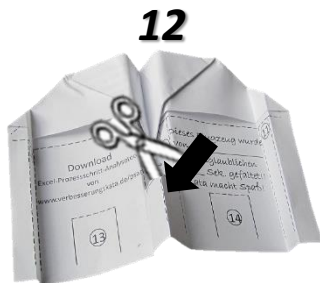
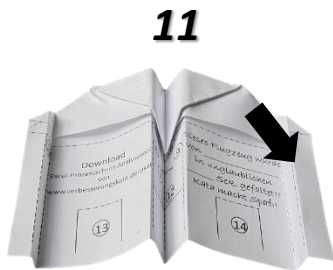
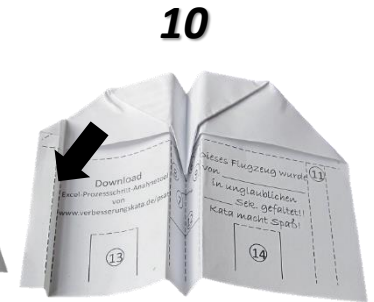
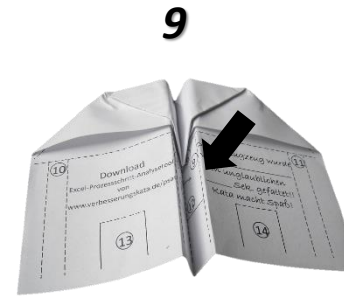
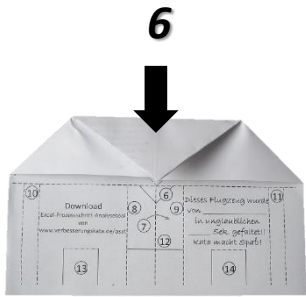
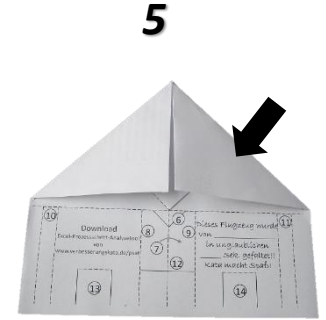
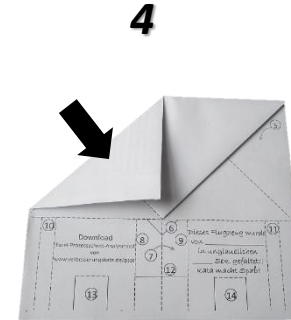
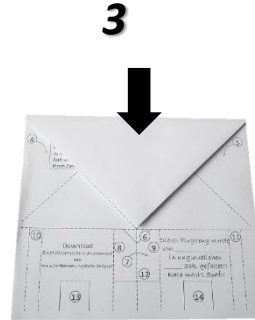
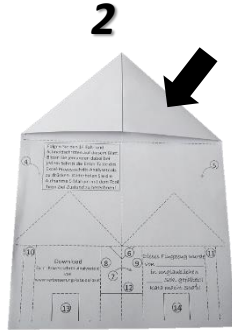
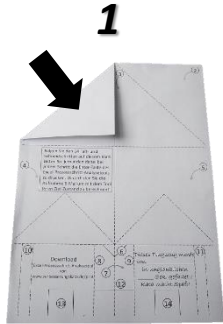
Version 6.0

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# Assembly Instructions in 15 Steps

Steps correspond Excel Process Steps Analysis Tool. Printed paper should not be pre-folded nor pre-cut.

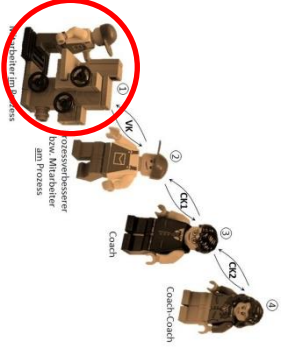


Demonstrate flight stability  
by 4 meter long flight!

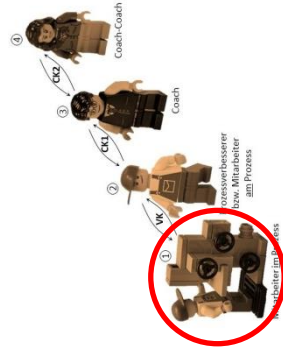
Assembly  
Paper Plane



# 1 Employee in process



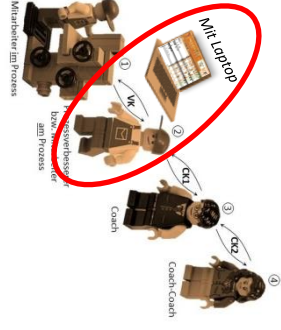
# 1 Employee in process



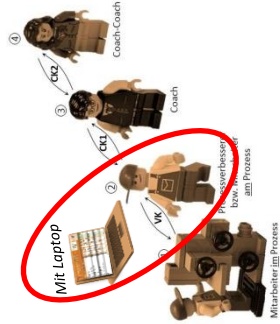
Assembly  
Paper Plane

# 2 Process improver

Assembly  
Paper Plane



# 2 Process improver



Assembly  
Paper Plane

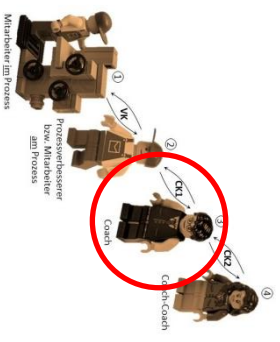
1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you



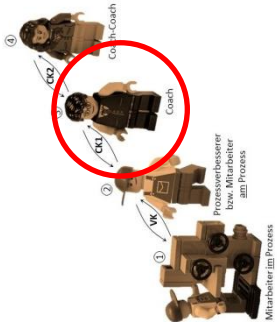
## Assembly Paper Plane



1 Coach



1 Coach



## Assembly Paper Plane

1. Cut out name tags



2. Complete your name using a black marker



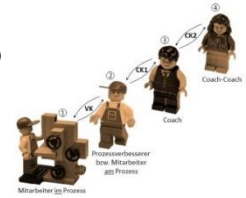
3. Fold name tag and place it in front of you

# Preparing the **Kata Coaching** Exercise

## 1- Planning Phase

- 1- Divide participants in groups of 3 per table: who will have which of the 3 roles?
- 2- Fill out and fold name tags, place on table
- 3- Employee in process: get familiarized with the assembly of the airplane

- fold 2 planes, understand the assembly sequence, speed is irrelevant at this point



### 4- Process improver: get familiarized with Excel-Process-Step-Analysis-Tool

- Read instructions sheet (2nd sheet on Excel Tool)
- write step numbers 1 to 15 in column „Process step“
- Complete the processes name in the white field top right
- With button **Activate (delete everything)** activate stopwatch
- Use ENTER to test tool and practice some time stopping



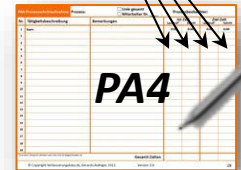
### 5- Repeat assembly processes five times, time each repetition with the Excel-Tool:

- Employee in process says „Start“ and after every single step „one ready!“, „two ready!“ etc.
- Don't forget to save your times on your computer!
- Do not improve the process during these 5 cycles

### 6- Current Condition with PA4-Sheet: Copy TC from green column to PA4, use a pencil

Copy values from Target columns „step“ and „running“ from Excel-Tool with pencil to the left to columns of the PA4-sheet

Fill out these 4 columns!



### 7- Total Target Assembly Time in PA4: defining a **challenging Target Condition** is very important for your learning success. Your target is 30 seconds, write this value at the bottom of the Target Column of the PA4-Form

### 8- Correct Target Step Times with Excel Tool: press the green button **AUTO**, write „30 secs“ when asked. Copy the automatically calculated numbers to column 3, 4.

### 9- Prepare coaching boards (one pinboard per group):

- pin PA4 left, note target on Form 5 and draw 5 columns with the 5 times you stopped
- add three obstacles which you think you should tackle next



**The Coaching Board is ready! The Coaching Cycles can begin!**

# Instructions Prozess Steps Analysis-Tool 5.0

With these three buttons you can optimize the size of the sheet on your computer display.

The stopwatch must be ACTIVE in order to be able to stop your step and cycle times.

The stopwatch must be INACTIVE in order to edit text areas.

Here you can write the name of your process.

Here you can see if the watch is running and the time elapsed.

With the AUTO function you can automatically calculate the needed step times necessary to achieve your target time.

Target-times can be corrected by hand to define the target condition to achieve.

Processes can be broken down in as many as 150 single steps.

The length of the sheet can be adjusted anytime just by clicking these buttons.

The five time measurements consist of cumulated, step and total times.

The shortest step time is marked in darker orange...

...and taken over as Target-Step-Time. That's why the Total Target Time is always shorter than the five measured times.

Reduce, expand screen

Zoom +1%

Zoom -1%

## Process Step Analysis-Tool

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Activate stopwatch (delete all)

Activate stopwatch (no delete)

Deactivate stopwatch (no delete)

Process:

Case assembly example

00:23,0

Status: Stopwatch is ACTIVE! Text sections CAN NOT be edited now.

Hancho/Trainer: Michael Müller

Operator: Hans Fischer

Date: 13.8.24 17:32

Nr 4 process steps

Adjust sheet length to 3 free rows

Expand to 150 rows

Total time: 00:21,6 00:22,9 00:00,0 00:00,0 00:00,0 00:17,5

	Current condition (max. 5 time recordings)										Ziel-Zeiten		Auto
	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Cumulated	Step	Correction
0 Take plastic case from bin	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0	00:00,0
1 Take plastic case out from package, place in fixture	00:04,1	00:04,1	00:07,1	00:07,1							00:04,1	00:04,1	
2 Place harness on PCB and connect plugs	00:09,5	00:05,4	00:12,0	00:04,8							00:08,9	00:04,8	
3 Place PCB in housing, take lid, close lid, place and tighten 6 screws	00:13,5	00:04,0	00:18,4	00:06,4							00:12,9	00:04,0	
4 Put housing in bag, put bag and instructions into box, place box on pa	00:21,6	00:08,1	00:22,9	00:04,6							00:17,5	00:04,6	
5													
6													
7													





# The 5 Questions\*

1 - What is the Target Condition of this process?

2 - What is the Current Condition now?

Go to the process, Turn Card to Reflect on the Last Step



3 - What Obstacles do you think are preventing you from reaching the Target Condition?

3b - Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle



4 - What is therefore your Next Step and what do you expect to Learn from it?

Turn Card to Detail the Next Step



5 - When can we go and see what you have Learned from taking that step?

\* The 5 Questions on the front side of this Card and Question 2.1 on the rear side must be asked every time and always with the same wording as written here.

0.1- Hello [Name]! We had agreed on doing a Coaching Cycle now. Is it OK with you?

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2.6- Is there anything else you learned beyond what you already told me?

2.9- [Don't forget to praise!] Thank you! Please, let us (return to the board and) write down what we have learned so far, so that we do not forget anything.

## Be very specific when describing the One Obstacle to tackle next

A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!

3.1- What exactly is the problem with/why...[mkw]? Can you show me, please?

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Because in our Next Step we should always be testing refutable hypothesis!

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## Always take just One Step at a time

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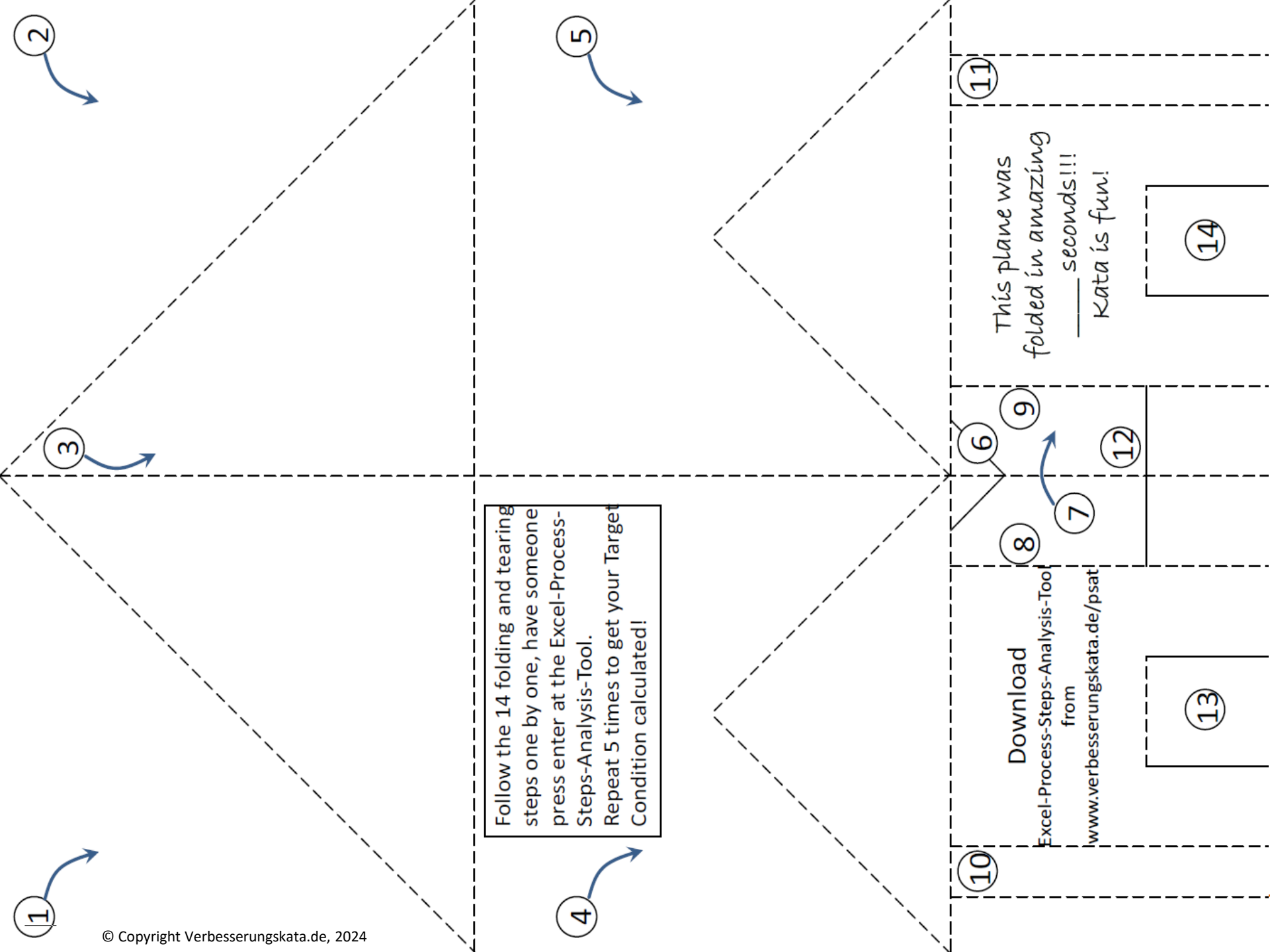
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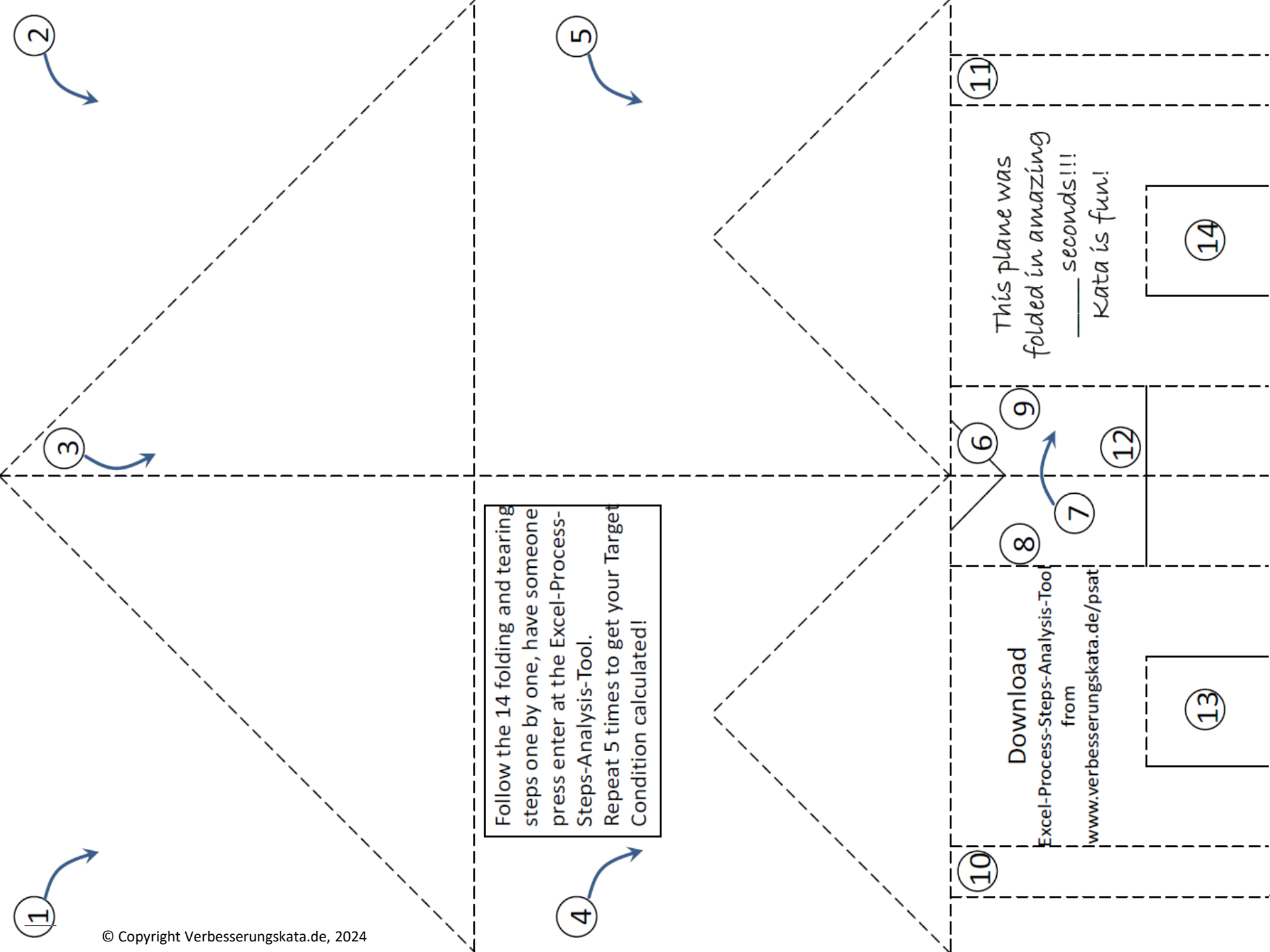
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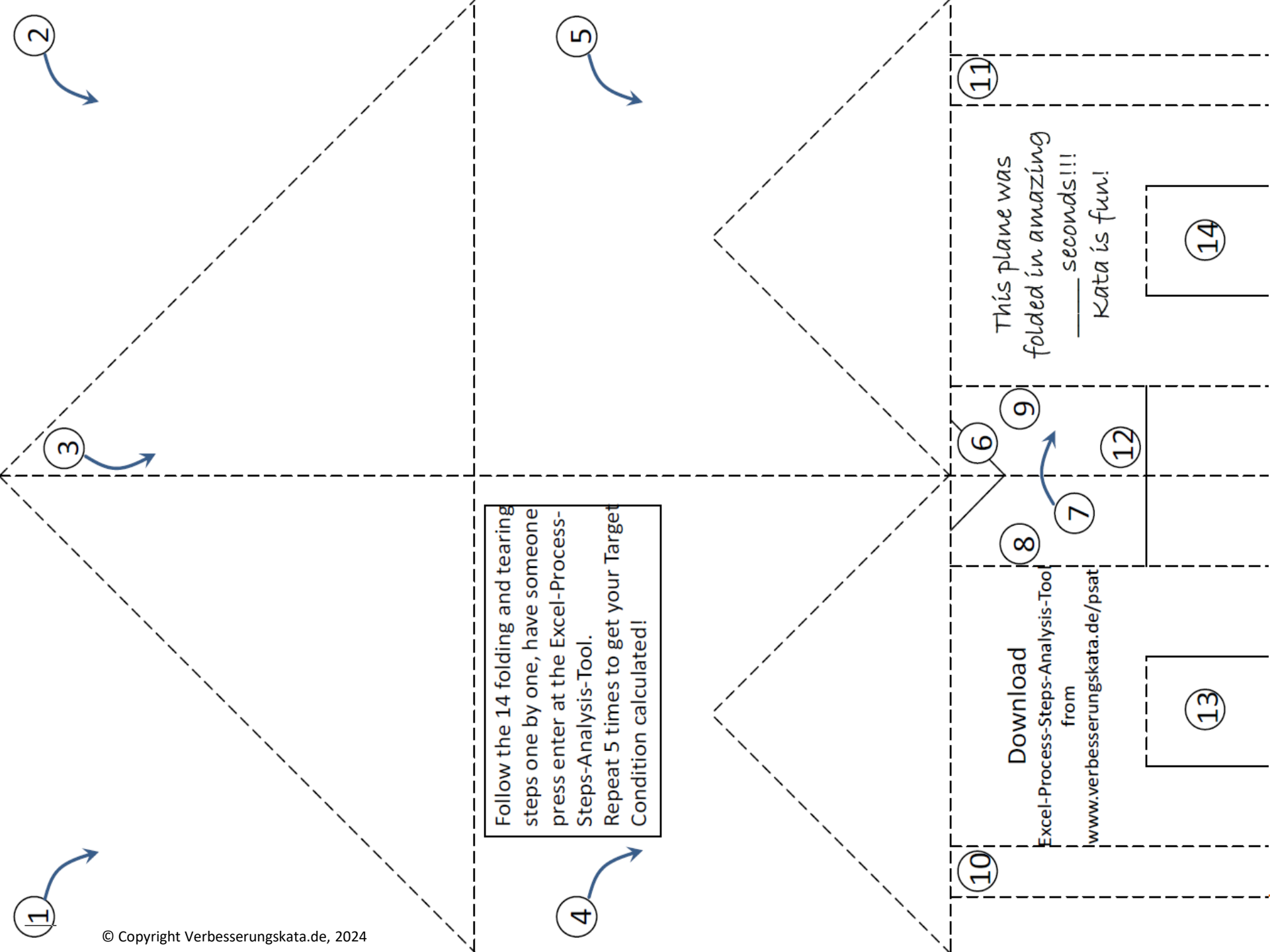




Follow the 14 folding and tearing steps one by one, have someone press enter at the Excel-Process-Steps-Analysis-Tool.  
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This plane was  
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Kata is fun!



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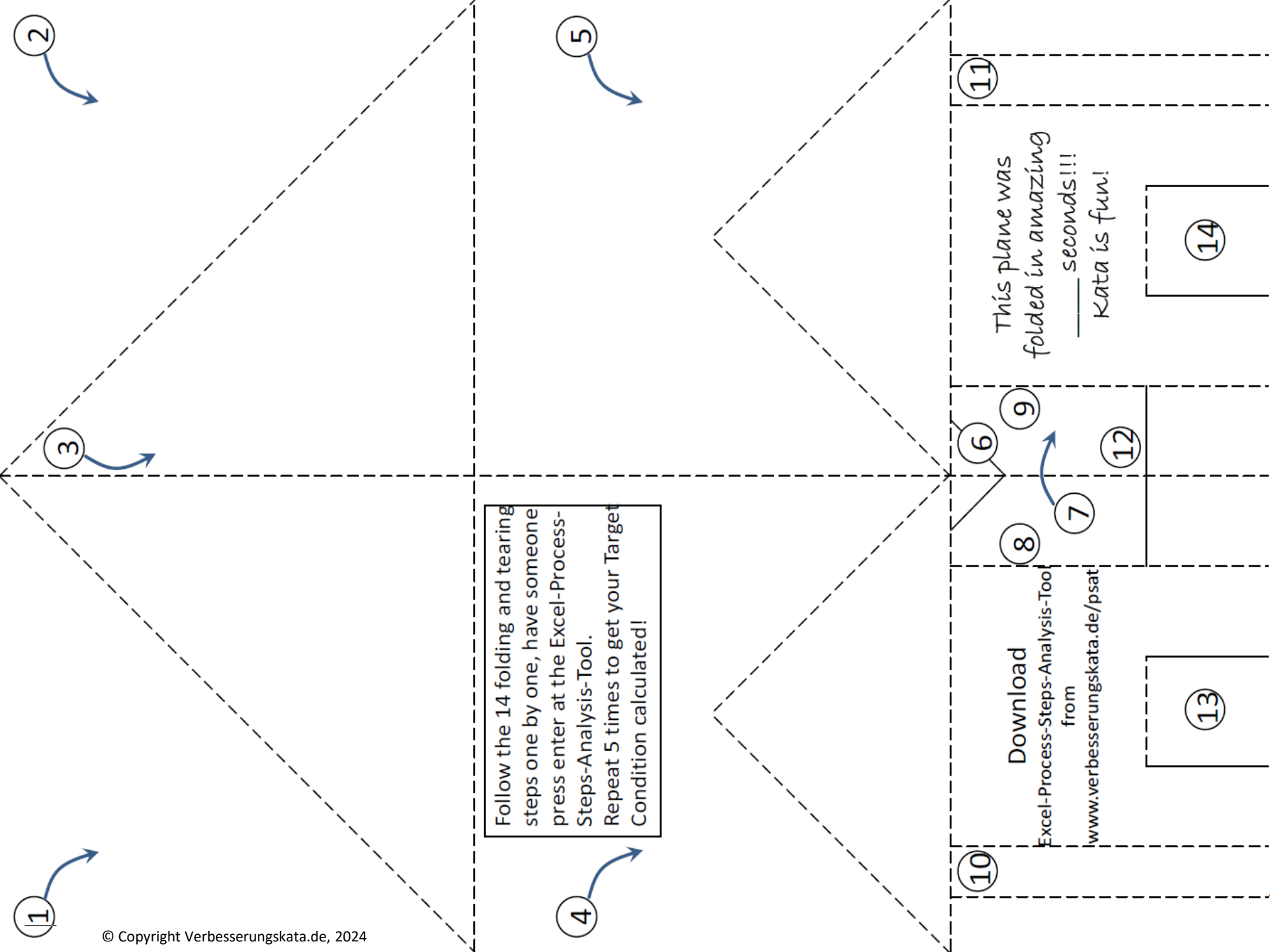
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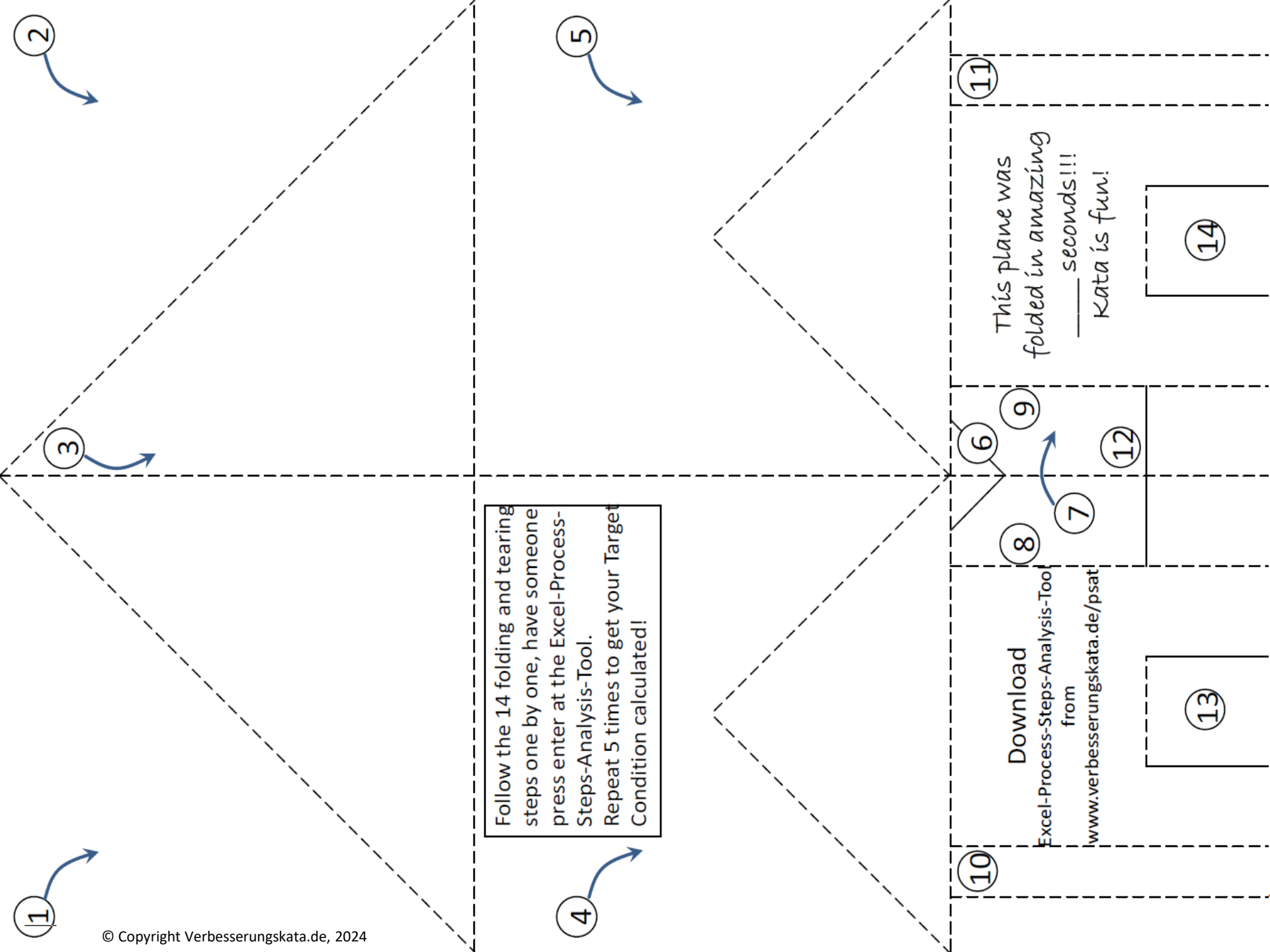
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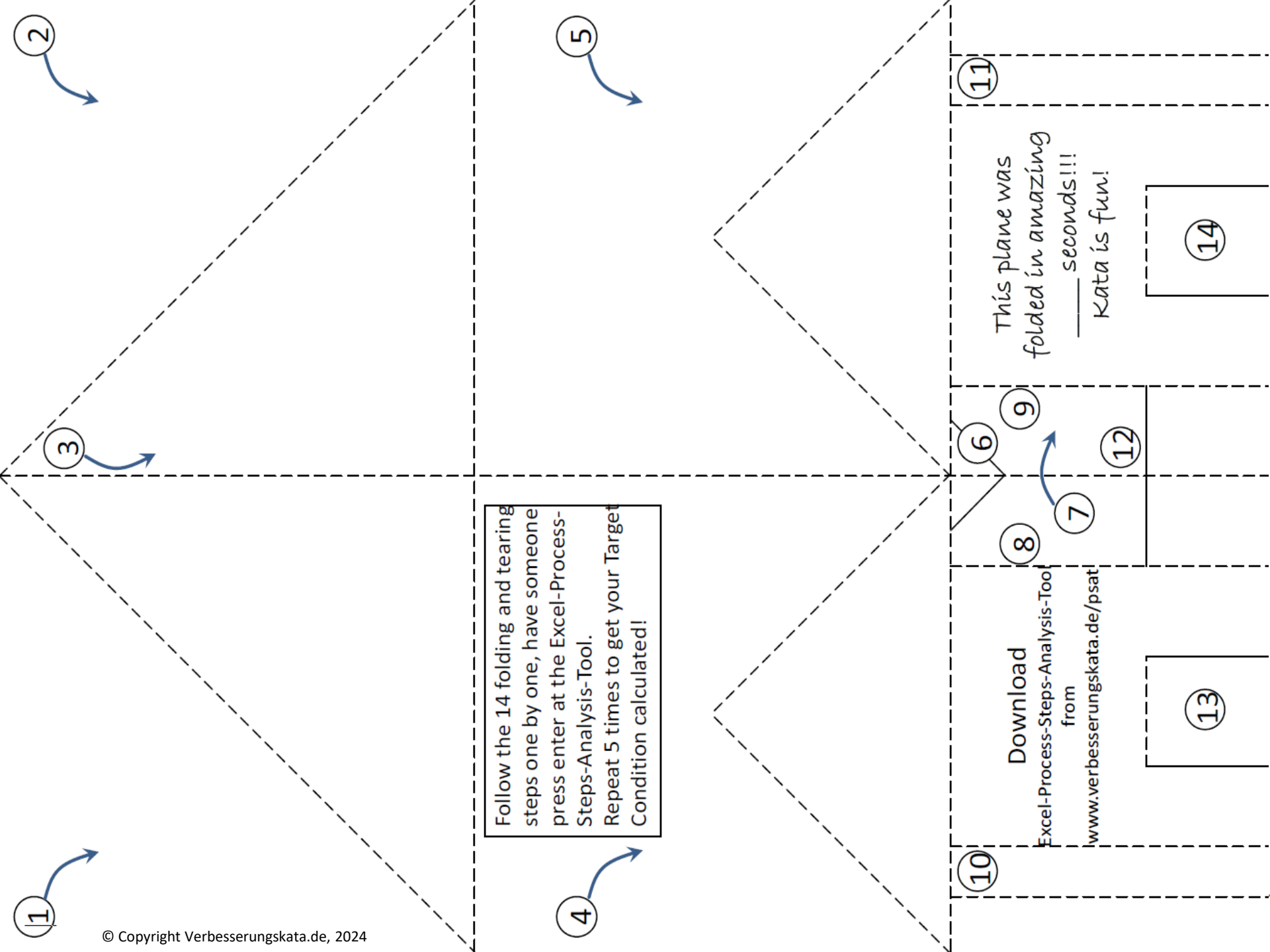
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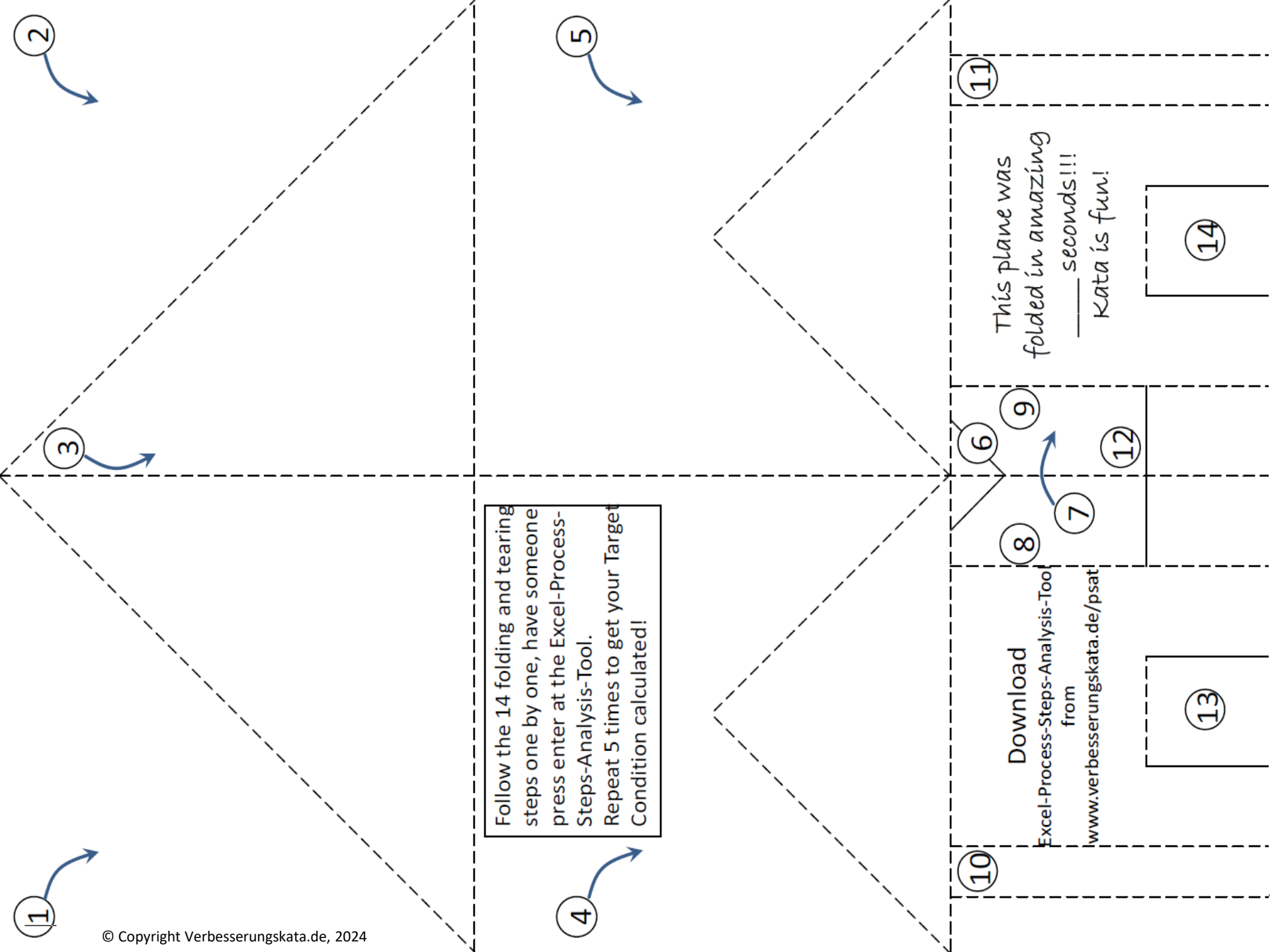
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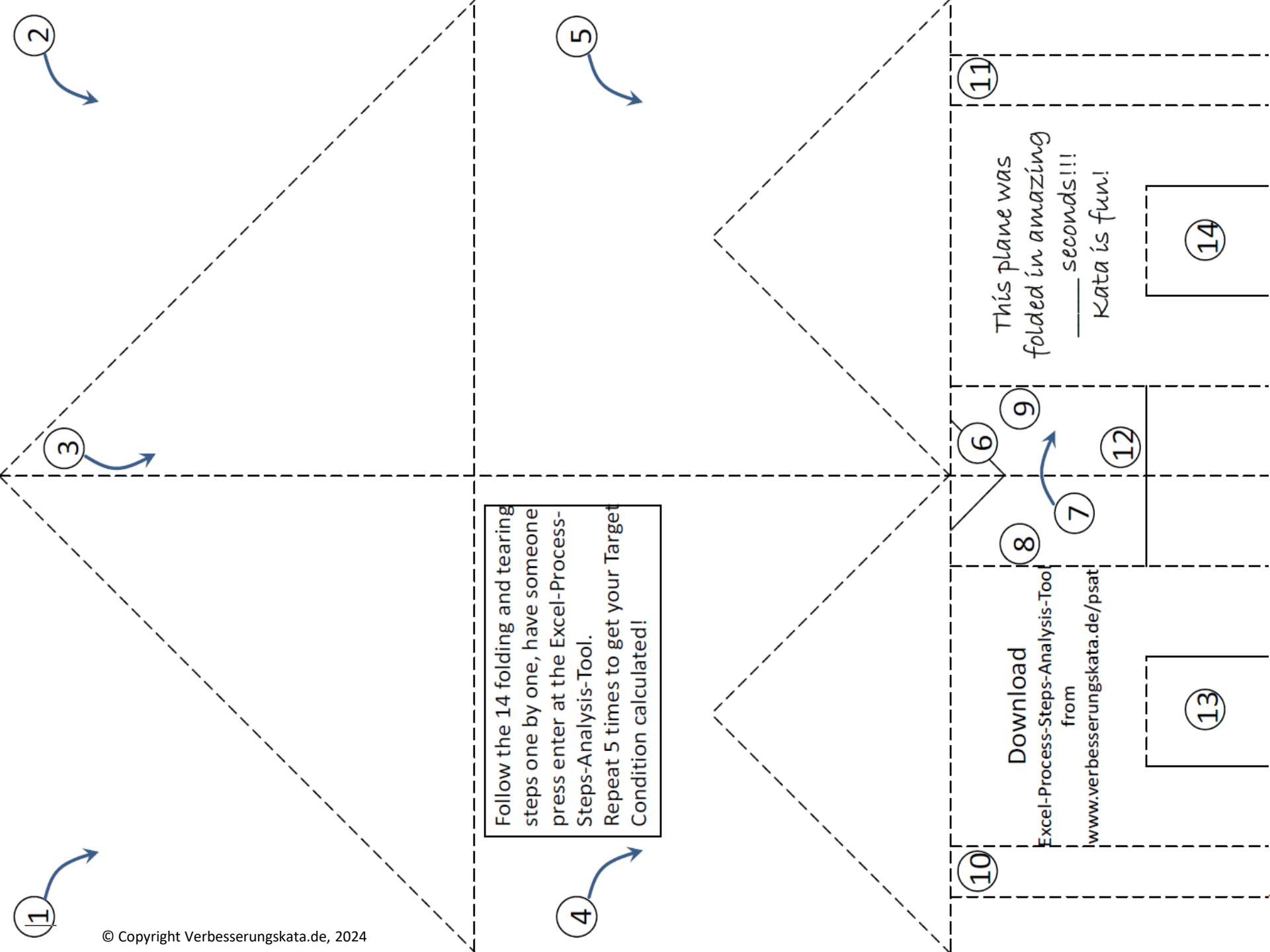
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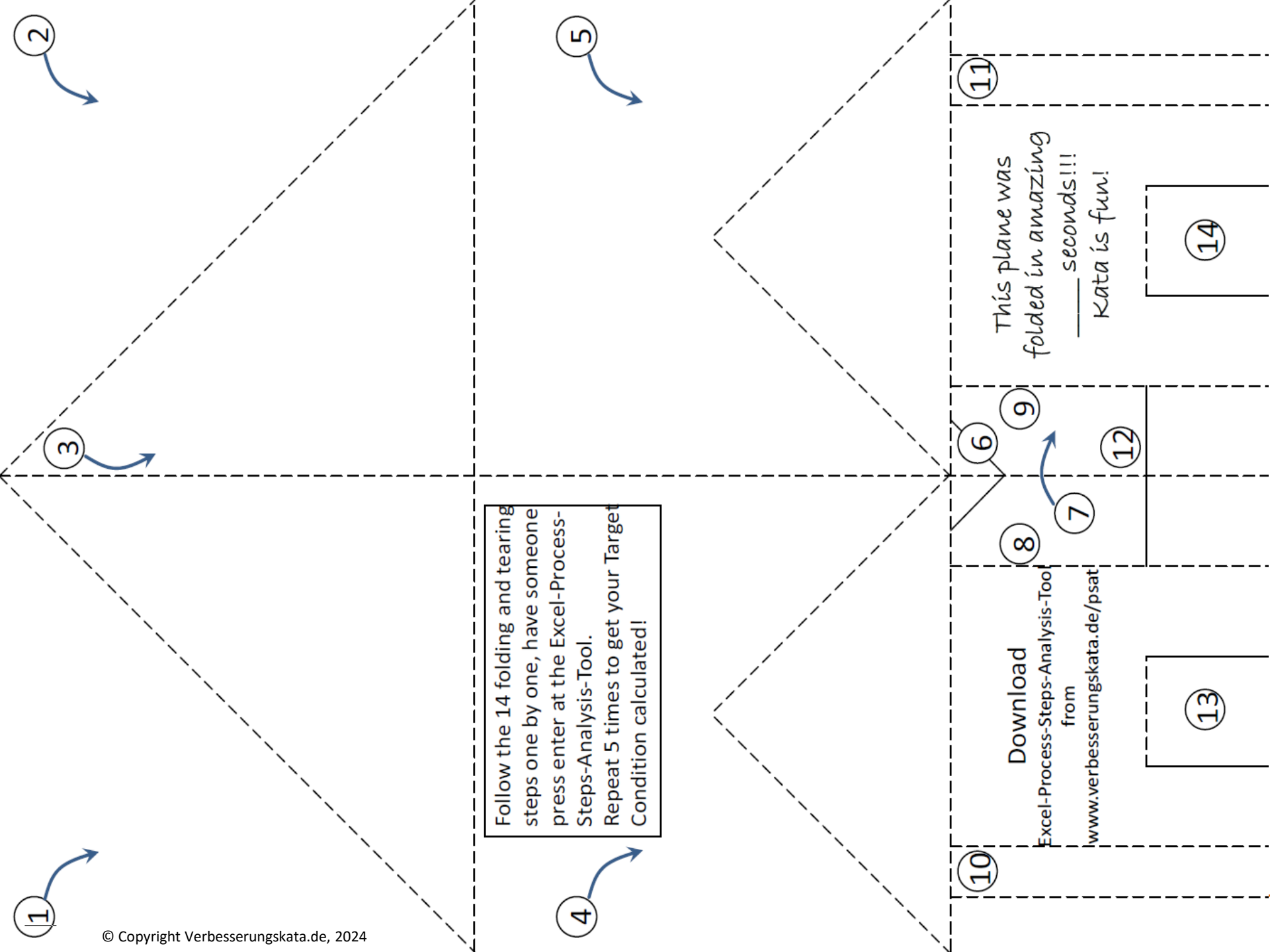




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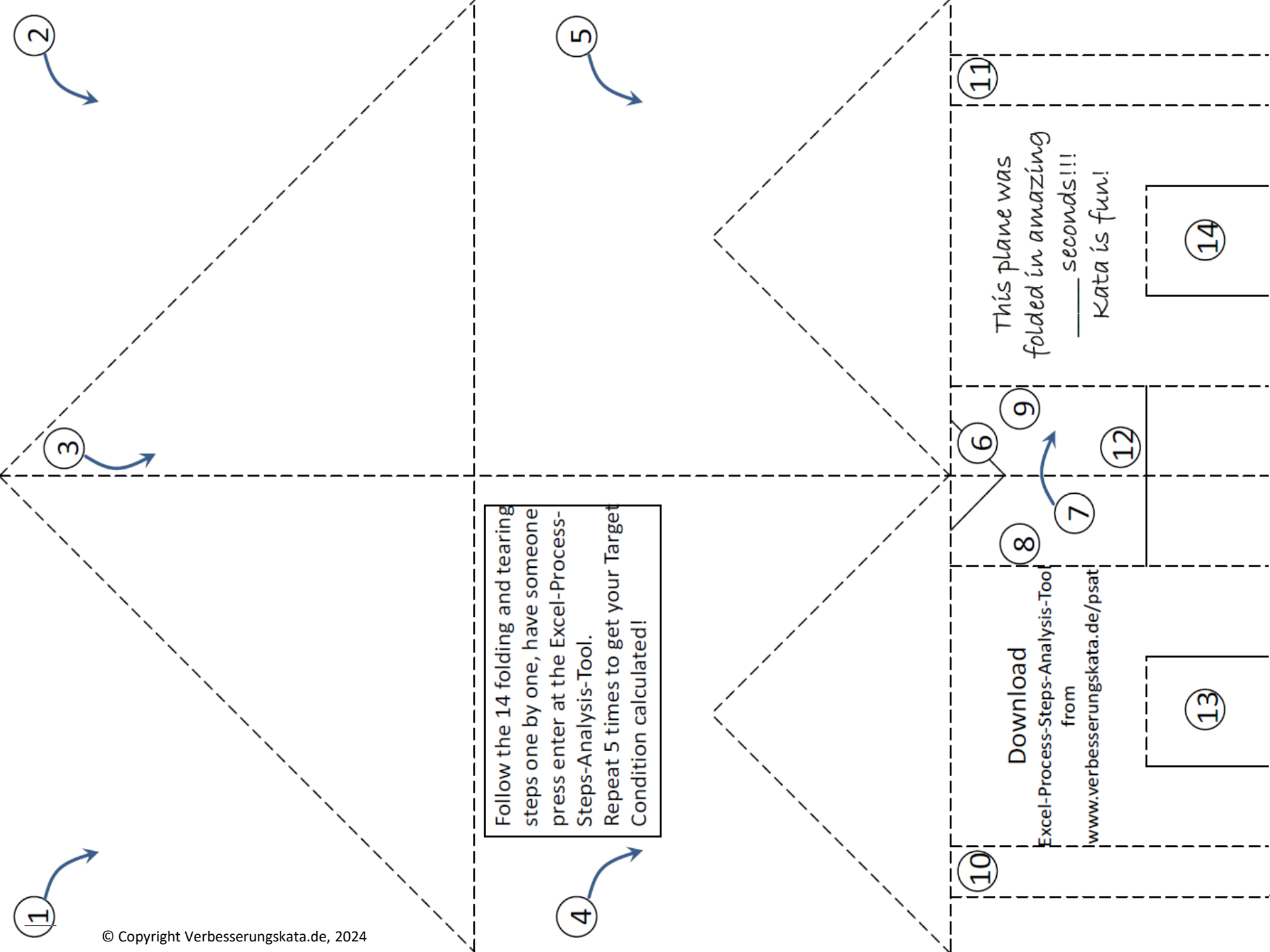
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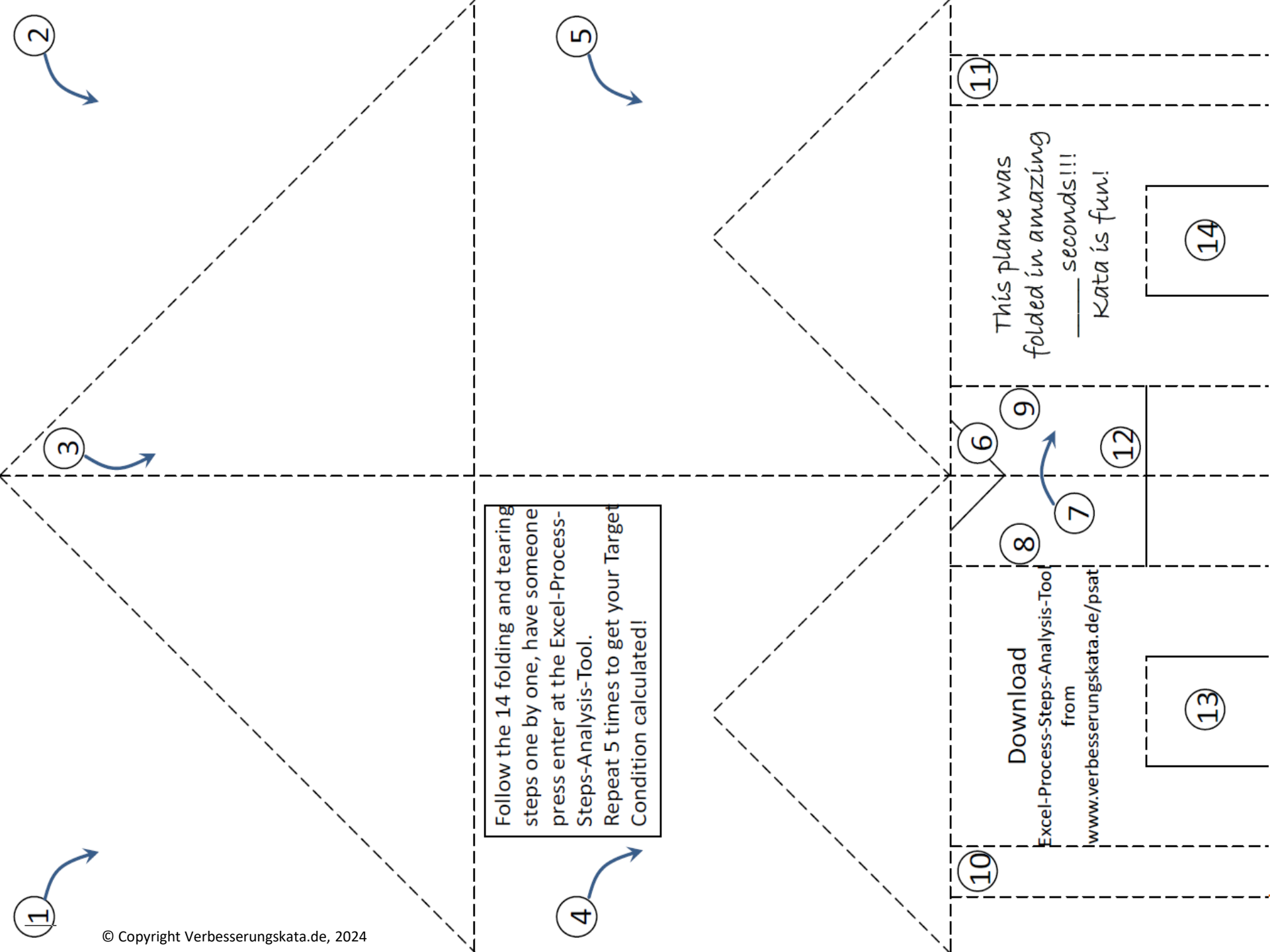
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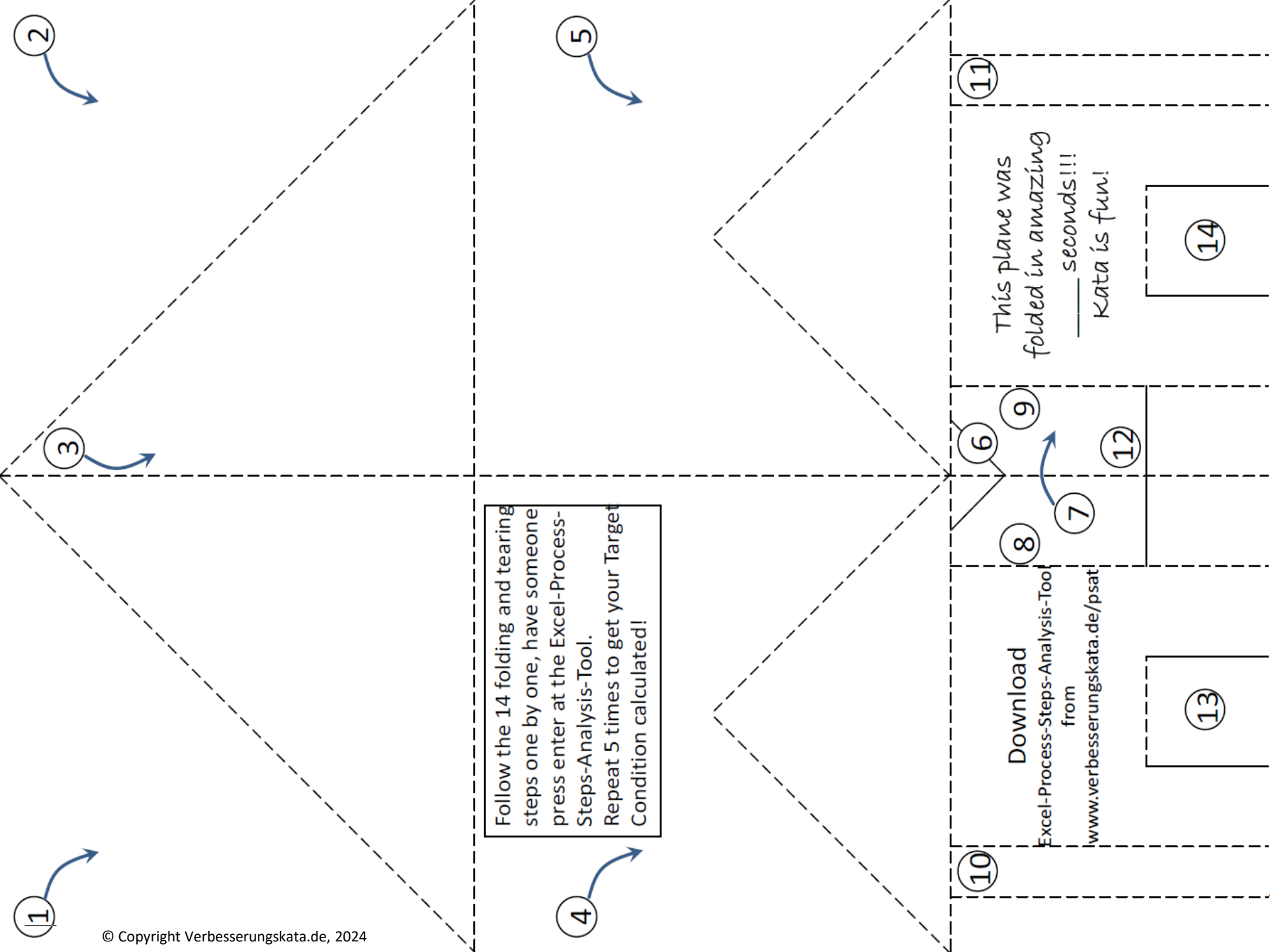
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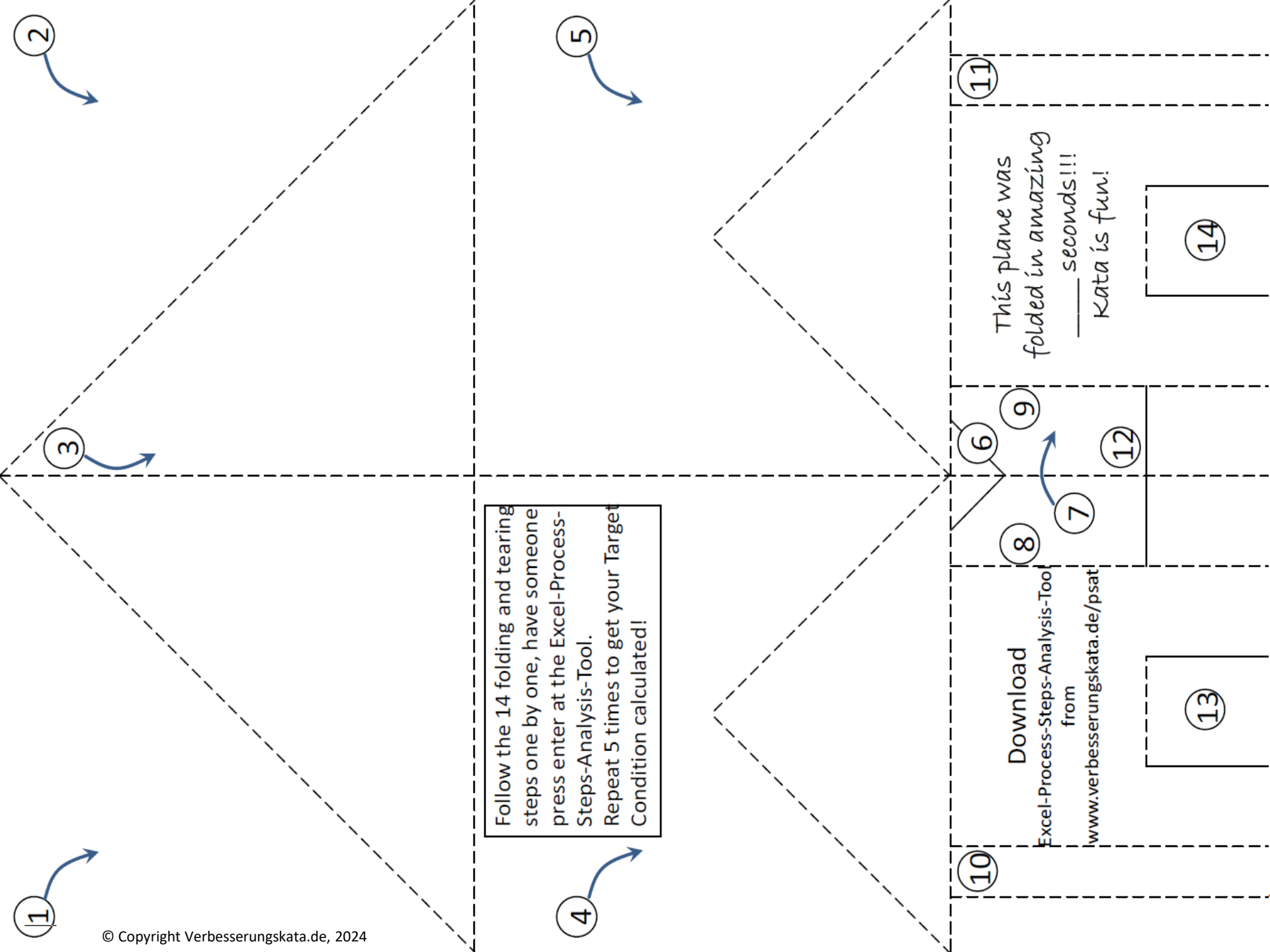
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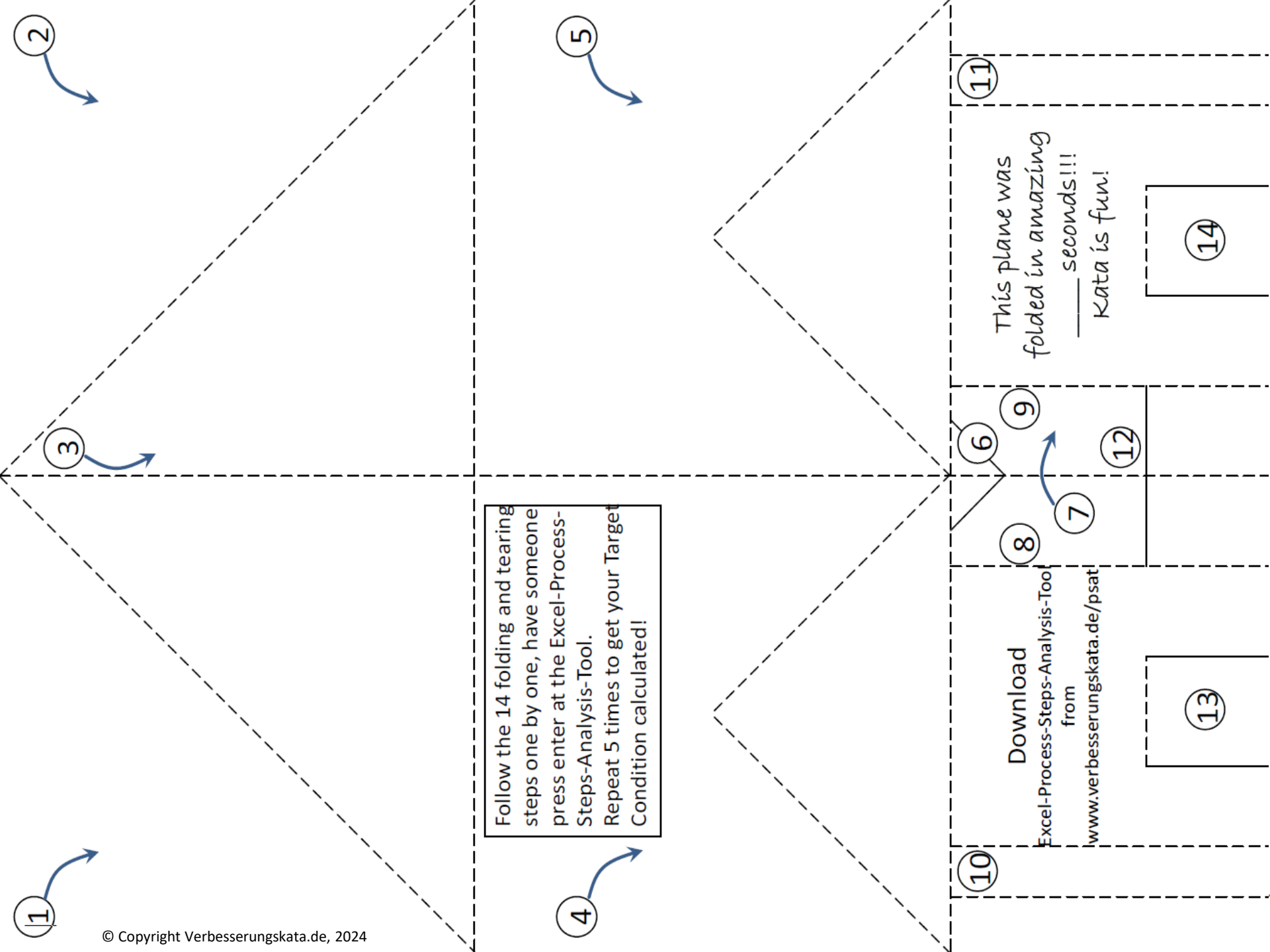
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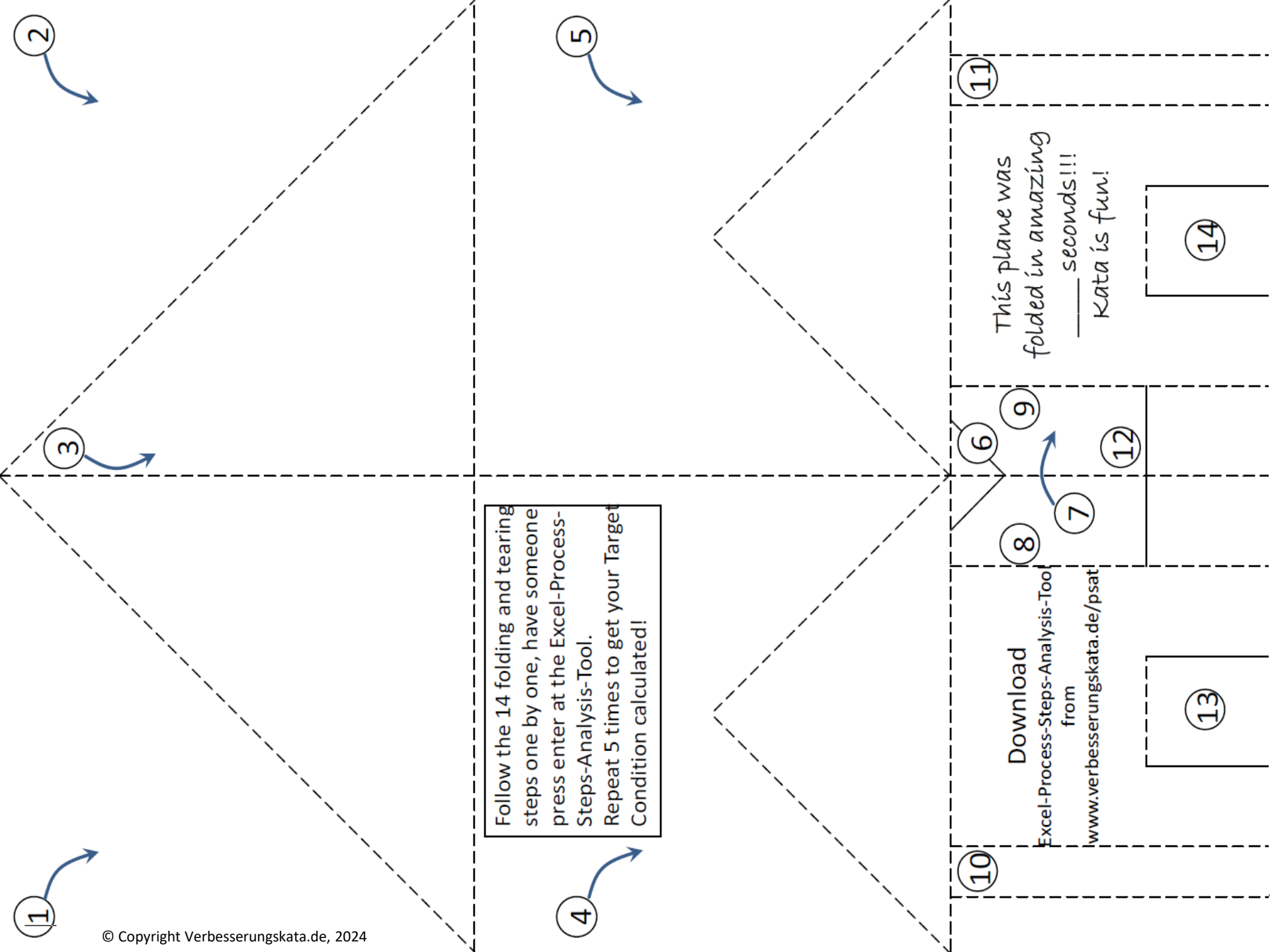
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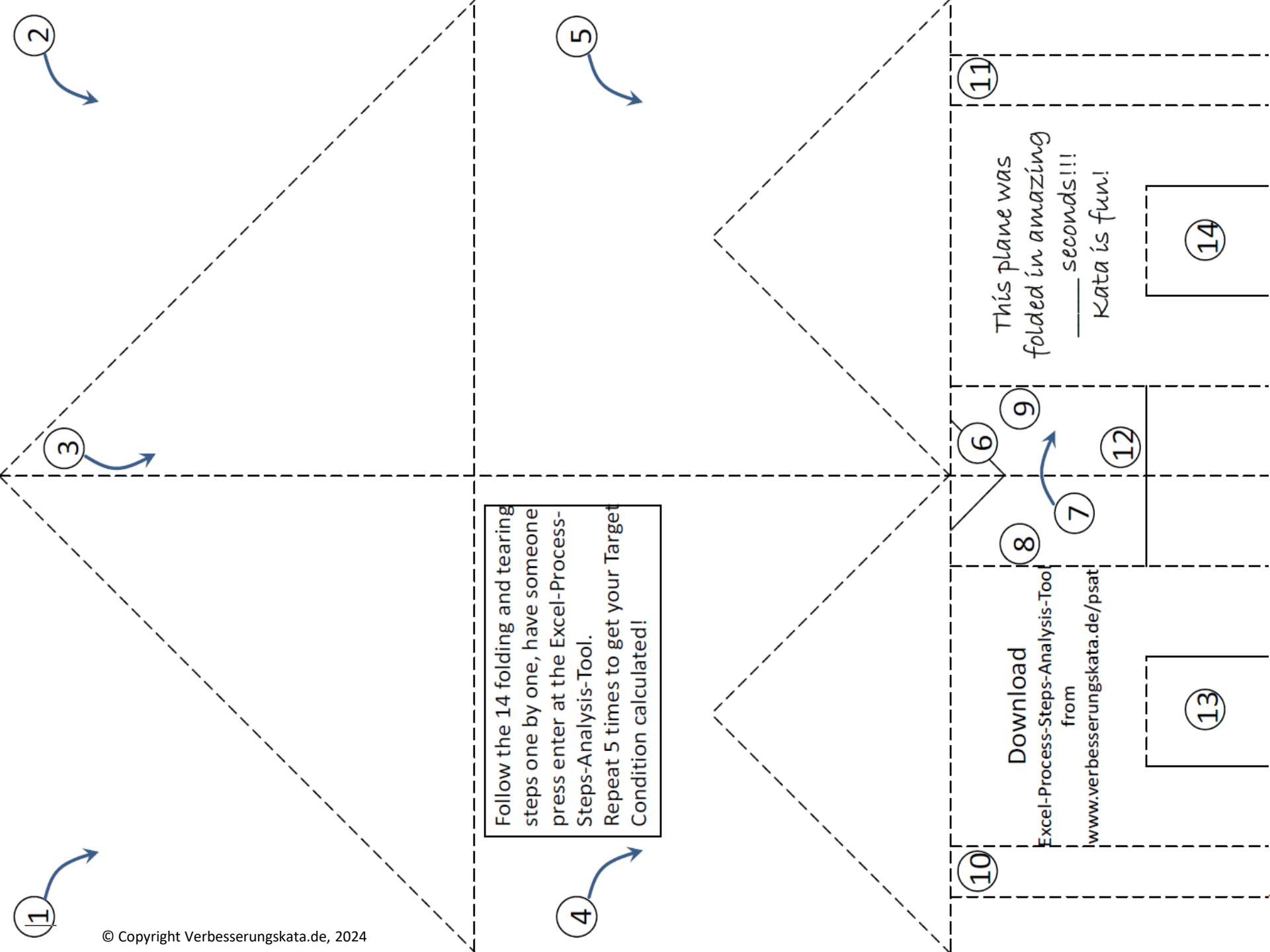
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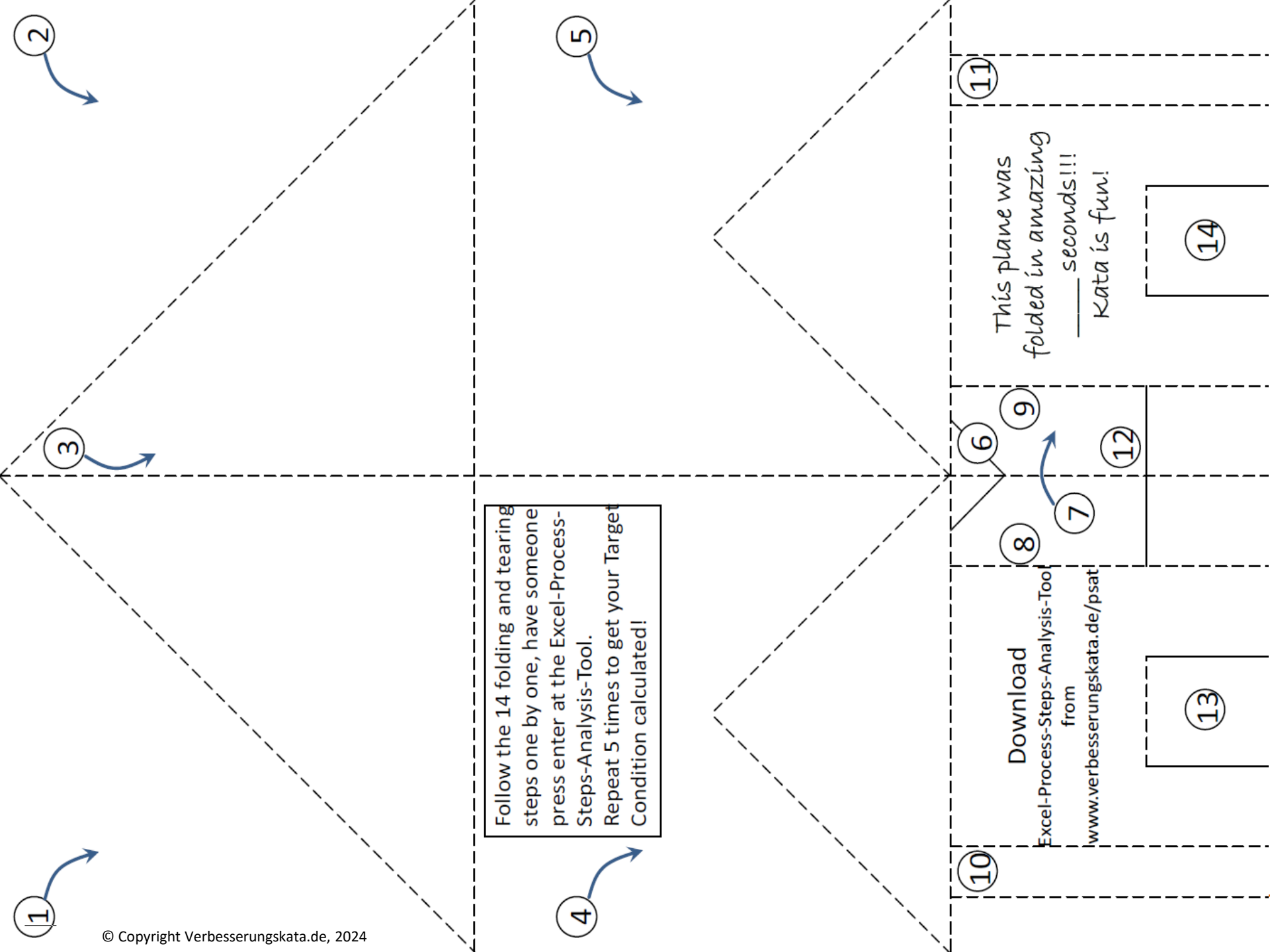
4

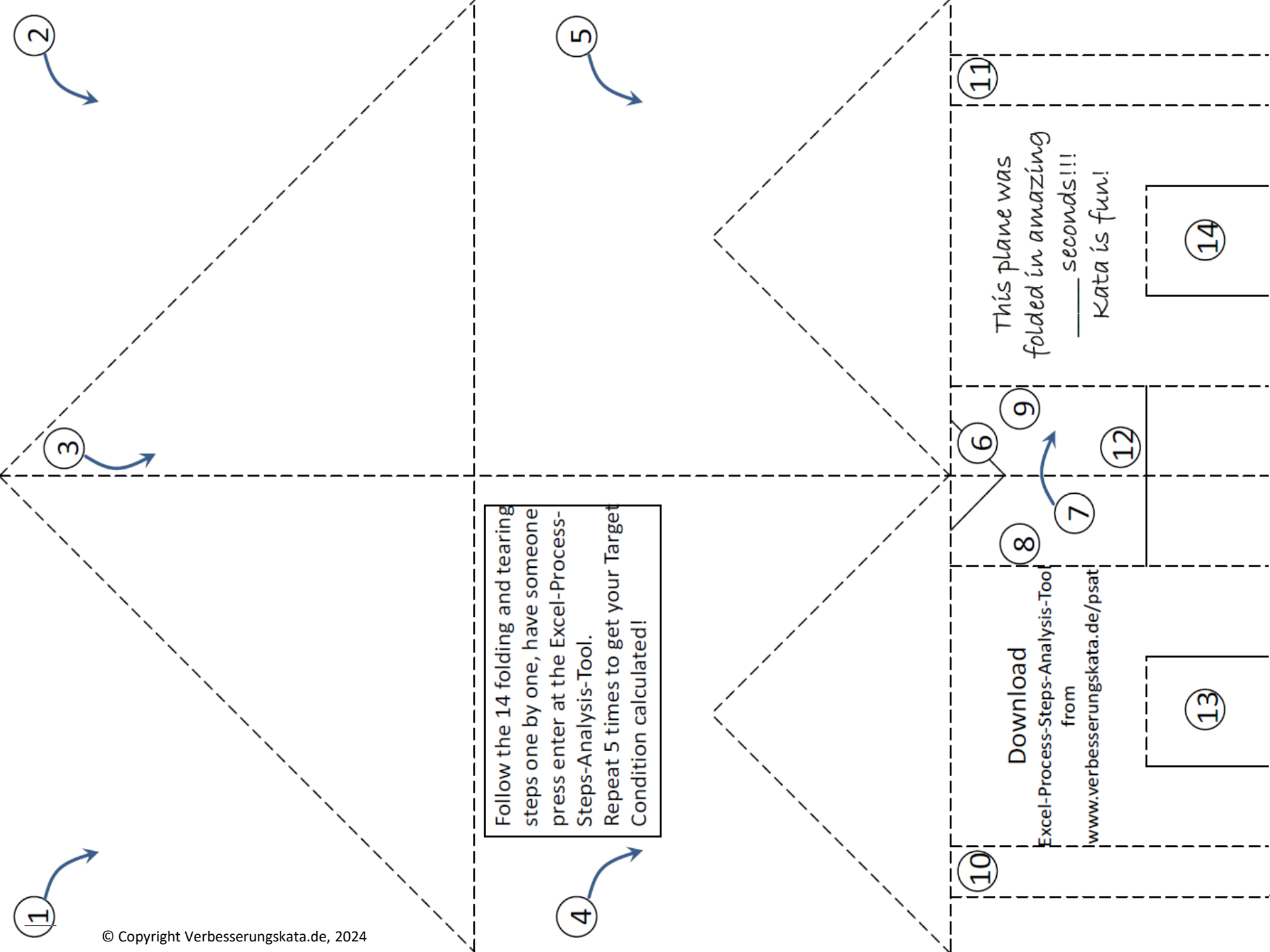
10

Follow the 14 folding and tearing  
steps one by one, have someone  
press enter at the Excel-Process-  
Steps-Analysis-Tool.  
Repeat 5 times to get your Target  
Condition calculated!

This plane was  
folded in amazing  
\_\_\_\_\_ seconds!!!  
Kata is fun!

Download  
Excel-Process-Steps-Analysis-Tool  
from  
[www.verbesserungskata.de/psat/](http://www.verbesserungskata.de/psat/)

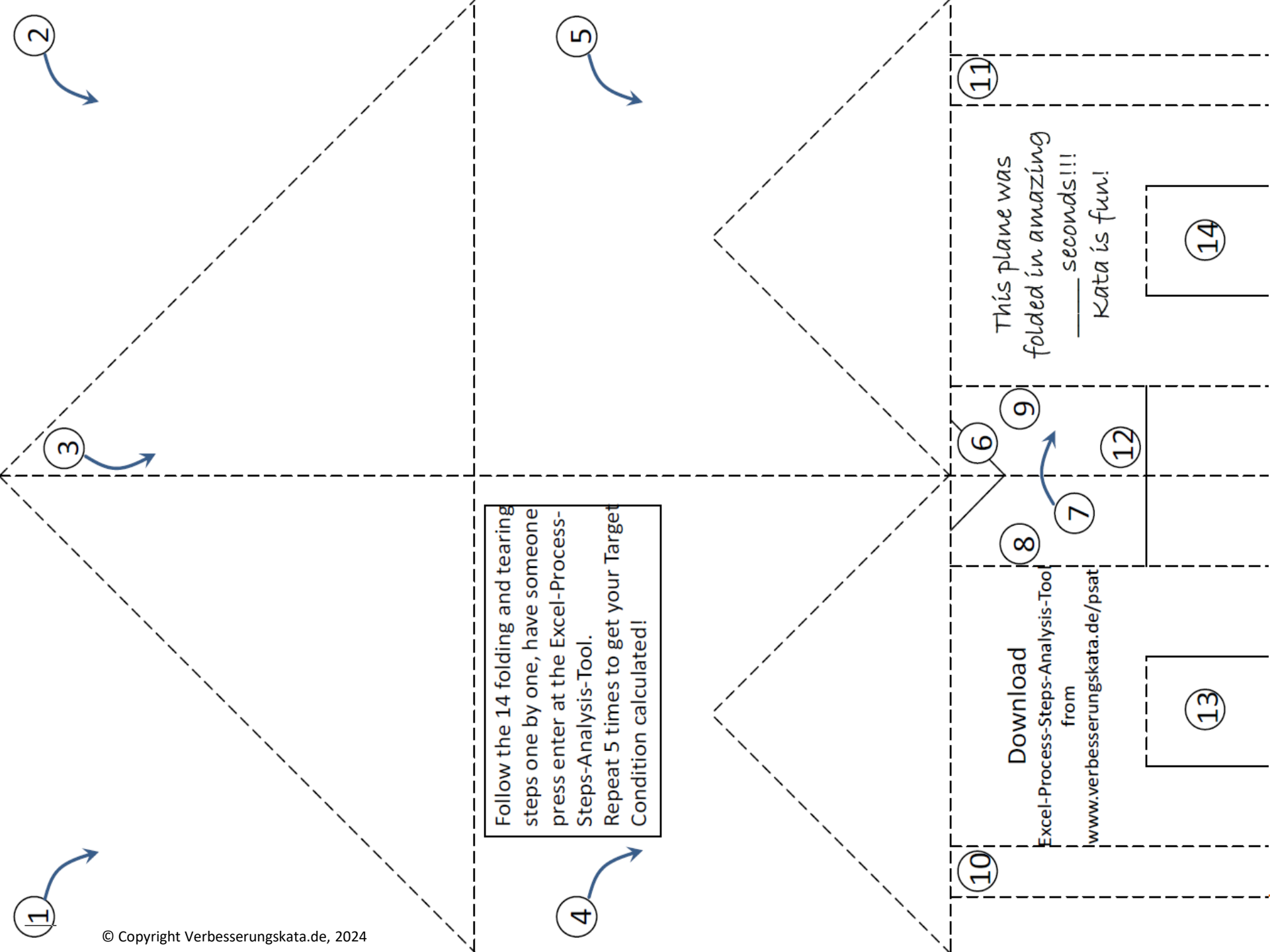




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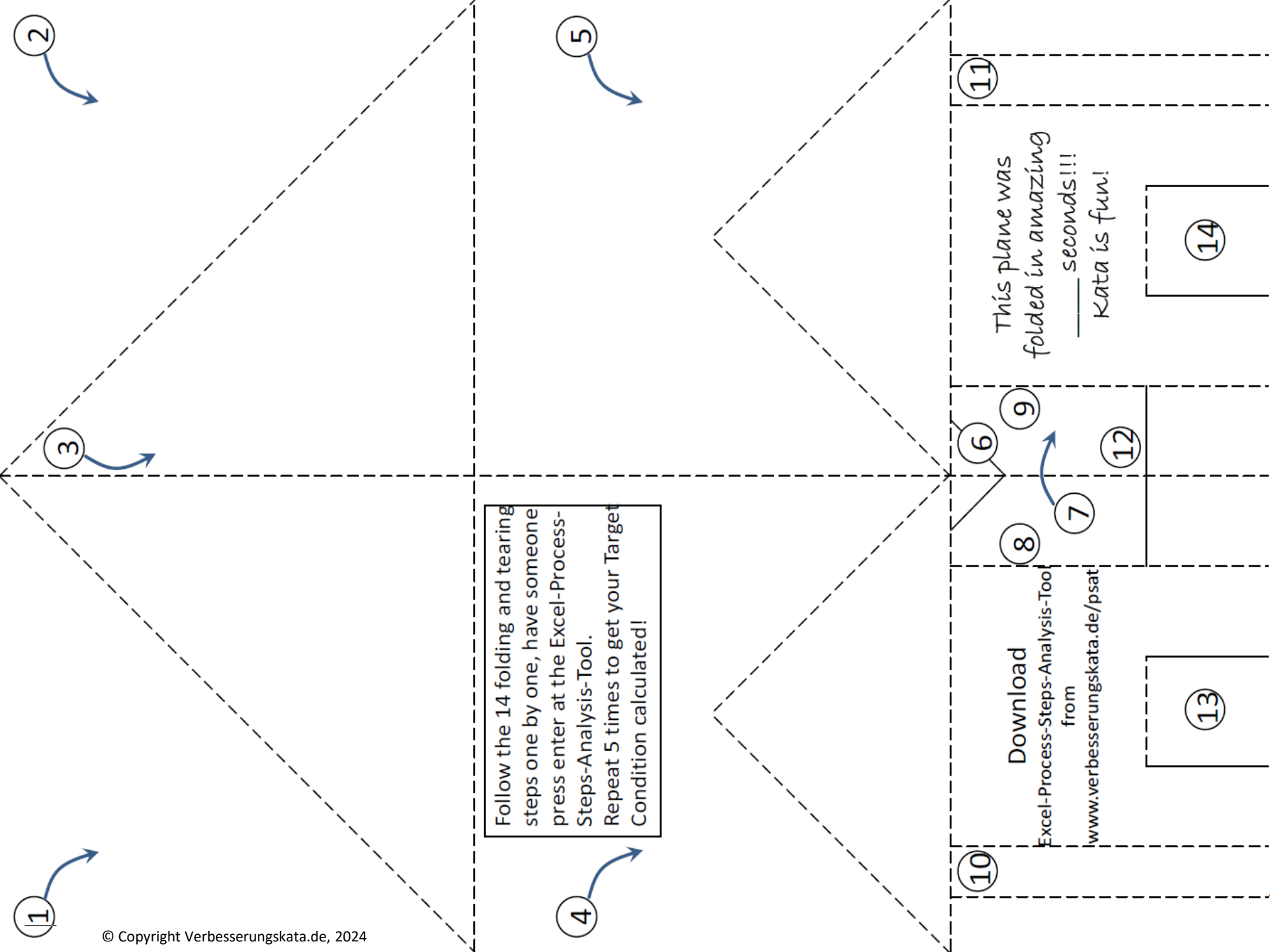
7

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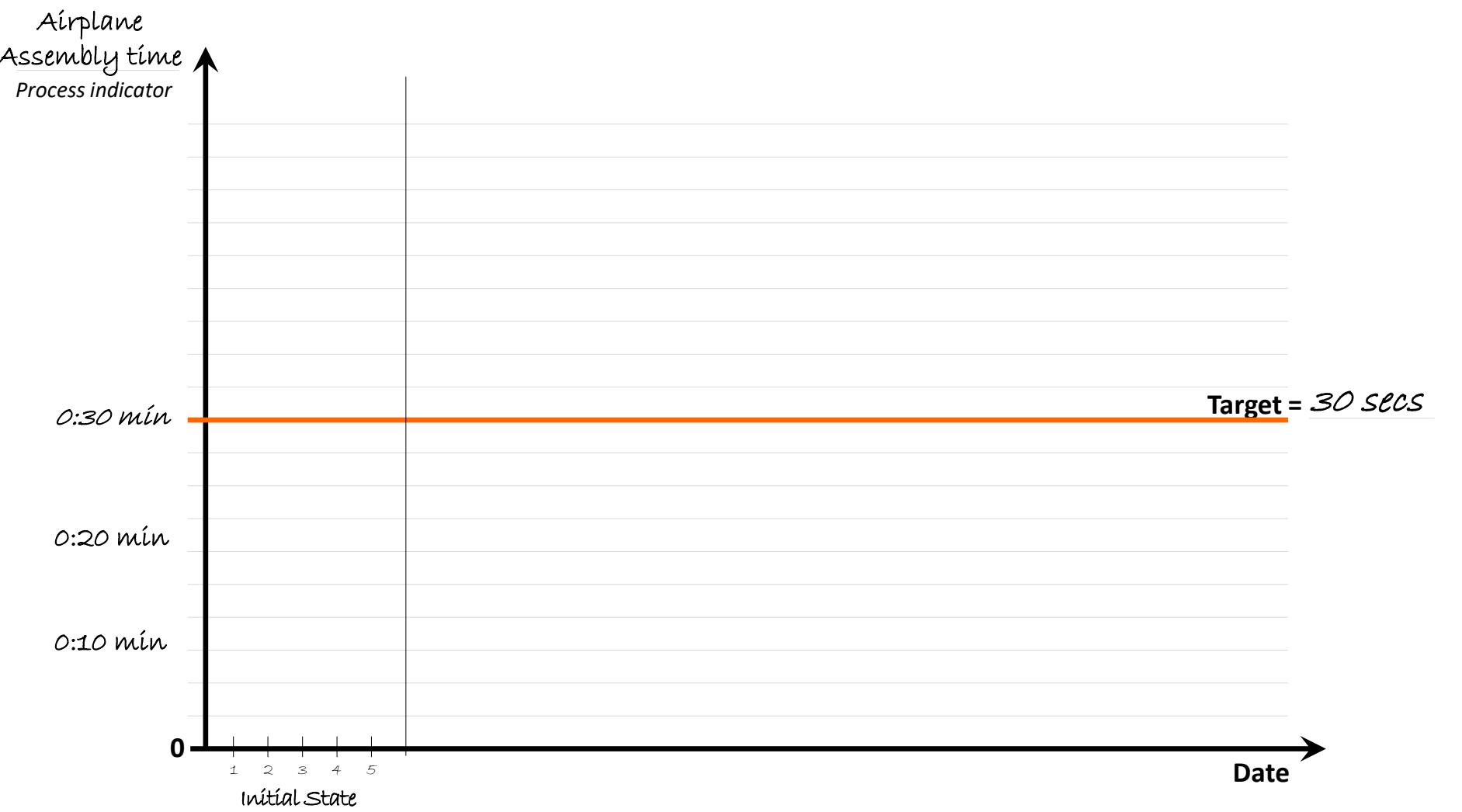
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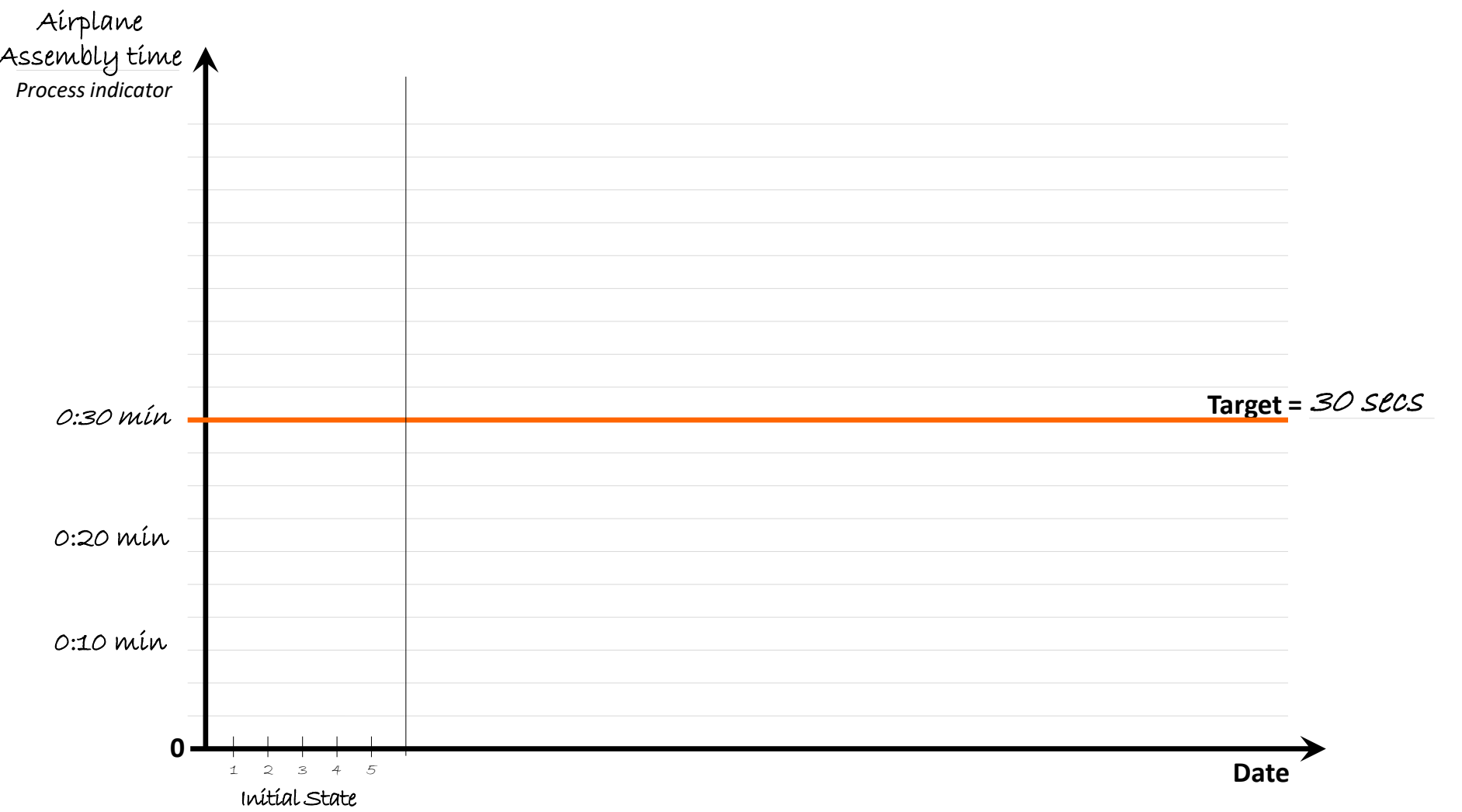
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<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*  
Output and Process Indicators

<sup>2</sup> Current condition Output and Process indicator		<sup>2.3</sup> Learned from last step? Was the last hypothesis refuted or confirmed?	<sup>3.8</sup> Only one obstacle at a time Has root cause been described and quantified?	<sup>4.0</sup> Next stept and what you expect A refutable hypothesis with an expected, numerical effect	<sup>5.0</sup> Date/Place Synchronized with step?
<div></div>	<div></div>	1-			
		2-			
		3-			



<sup>1</sup>Target-Condition (in numbers): *Assembly of paper airplane in 30 seconds with 1 operator*  
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<div></div>	<div></div>	1- 2- 3-			

PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
1	Start: remove sheet of paper from stack		0:00	0:00	0:00	0:00
2	Fold top left corner					
3	Fold top right corner					
4	Fold the tip down to the marking					
5	Fold top left corner					
6	Fold top right corner					
7	Fold the tip down to the marking					
8	Fold vertically along the central axis					
9	Fold wing to the left at the marking					
10	Fold wing to the right at the marking					
11	Fold left winglets twice					
12	Fold right winglets twice					
13	Cut in rudder, fold out					
14	Cut left elevator and fold up					
15	Cut right elevator and fold up					
16	Grab aircraft by fuselage and take off!					
17						
18						
19						
Total time:					30 secs	

PA4-Process-Steps-Analysis

Process:

Airplane  
assembly

☐ Line

☐ Operator Nr. \_\_\_\_\_

Process improver:

Nr.	Process step description	Comments	Current-State		Target-Condition	
			Running*	Step	Running*	Step
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17						
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19						
Total time:					30 secs	

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Version 6.0

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# **Additional** **Forms**

**(Please hand over to Gerd)**

<sup>1</sup>Target-Condition (in numbers):  
Output and Process Indicators

<sup>2</sup>Current condition  
Output and Process indicator

<sup>2.3</sup> Learned from last step?  
Was the last hypothesis refuted or confirmed?

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# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# Kata coaching board

Process:

# The 5 Questions\*

- 1 - What is the Target Condition of this process?
- 2 - What is the Current Condition now?

Go to the process, Turn Card to Reflect on the Last Step

3 - What Obstacles do you think are preventing you from reaching the Target Condition?

3b - Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle

4 - What is therefore your Next Step and what do you expect to Learn from it?

Turn Card to Detail the Next Step

5 - When can we go and see what you have Learned from taking that step?

\* The 5 Questions on the front side of this Card and Question 2.1 on the rear side must be asked every time and always with the same wording as written here.

1

0.1- Hello [Name]! We had agreed on doing a Coaching Cycle now. Is it OK with you?

## Reflect on the Learnings of the Last Step Taken

- 2.1- What did you Plan as your Last Step and what did you learn from it?
- 2.2- What did you Expect?
- 2.3- And what did you learn from it?/from taking that Last Step?
- 2.4- What actually happened?
- 2.5- What Value(s) have you measured?
- 2.6- Is there anything else you learned beyond what you already told me?
- 2.9- [Don't forget to praise!] Thank you! Please, let us (return to the board and) write down what we have learned so far, so that we do not forget anything.

## Be very specific when describing the One Obstacle to tackle next

A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!

- 3.1- What exactly is the problem with/why...[mkw]? Can you show me, please?
- 3.2- Could we simulate the problem/...[mkw] right here?
- 3.3- What should rightly happen (so that...[mkw] can be avoided)?
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- 3.8- What exactly is it that you do not know (about...[mkw])?
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## Be specific when describing the Hypothesis und Experiment

Because in our Next Step we should always be testing refutable hypothesis!

- 4.1- How exactly will you...[mkw]? Can you show me, please?
- 4.2- How exactly will you take that Next Step?
- 4.3- And what do you expect to learn from it?
- 4.4- How exactly will you measure/test your expected result?
- 4.5- How exactly will you document your measurement(s)?

4.9- Thank you! Please, let us (return to the board and) write down what you have said so far, so that we do not forget anything.

## Always take just One Step at a time

- 5.1- What of that next step do you think you could do today/until...[propose time]?

mkw:= try to use the mentee's key words from the last answer he gave you in your next detailing question. He will appreciate that you are actively listening to him!

Fold  
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Fold  
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# The 5 Questions\*

**2** 1 - What is the Target Condition of this Process ?  
(Value Stream?/VS-Loop?)

**3** 2 - What is the Current Condition now?

Go to the Coaching Summary Board, Turn Card to Reflect on the Last Steps ➡

**3** 3 - What Obstacles do you think are preventing you  
from reaching the Target Condition (with your team)?

**8** 3b Which One Obstacle are you addressing now?

Turn Card to Detail the One Obstacle ➡

**9** 4 - What is therefore your Next Step and what do you  
expect to Learn from it?

Turn Card to Detail the Next Step ➡

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**5** **2.1- What did you Plan as your Last Step and what did you learn from it?**

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