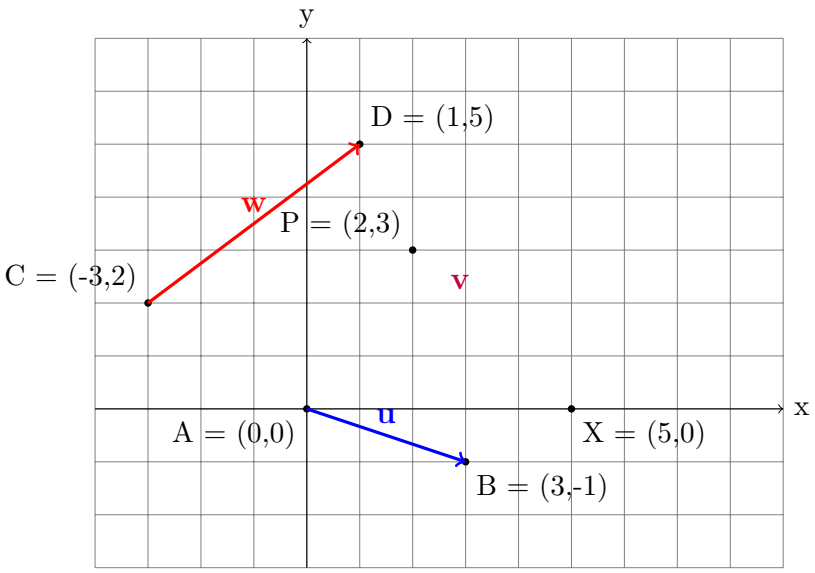
Vector Worksheet

Vector Representations

Use the diagram and the partially completed table to fill in the **three representations** for each vector:

(i) algebraic variable (usually bold) **v**, (ii) directed path $\overrightarrow{AB}$, (iii) column vector $\begin{pmatrix} x \\ y \end{pmatrix}$.

For the last columns, create examples of your own



	u	**v**	_____	_____	
Points	$A = (0,0)$ $B = (3,-1)$	$P(2,3)$ $Q = (\_\_\_\_)$	$C = (-3,2)$ $D = (1,5)$	$X = (5,0)$ $\_\_ = (\_\_\_\_)$	
Directed path	$\overrightarrow{AB}$	$\overrightarrow{\quad}$	$\overrightarrow{\quad}$	$\overrightarrow{\quad}$	
Column vector	$\begin{pmatrix} 3 \\ -1 \end{pmatrix}$	$\begin{pmatrix} 5 \\ 3 \end{pmatrix}$	$\begin{pmatrix} \_\_ \\ \_\_ \end{pmatrix}$	$\begin{pmatrix} \_\_ \\ \_\_ \end{pmatrix}$	

Adding vectors

Use the vectors provided to find a route through the track, that crosses the finish line, you may not leave the grey track, but can touch the sides.

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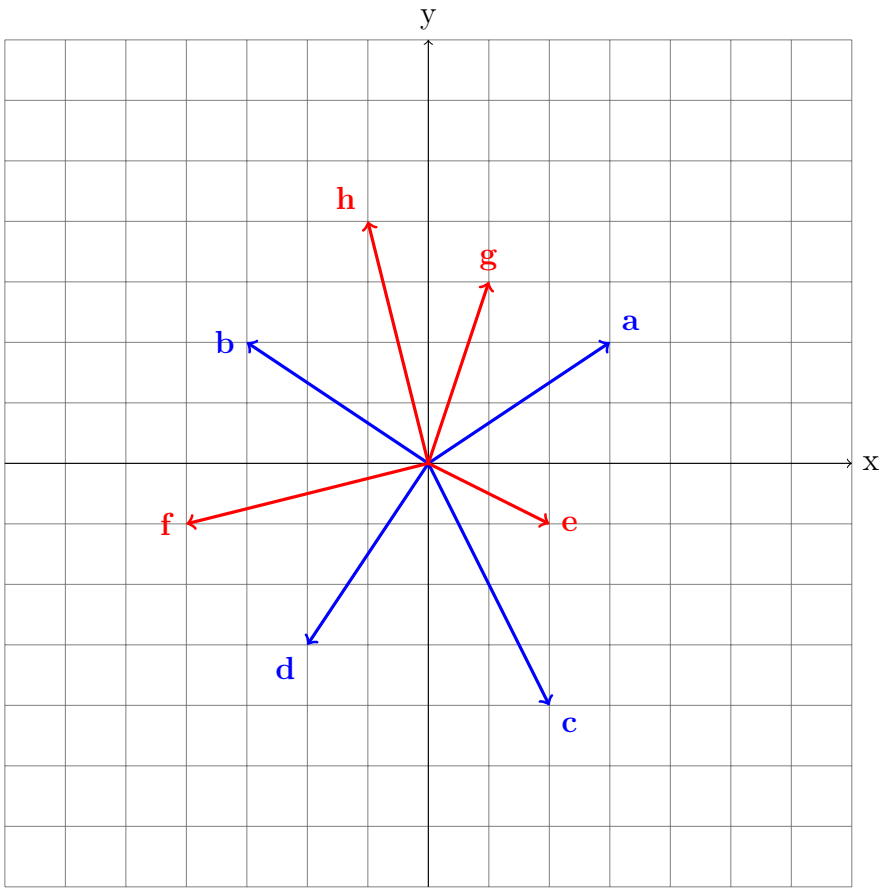
Vectors:

$$\mathbf{a} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}, \quad \mathbf{b} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}, \quad \mathbf{c} = \begin{pmatrix} 2 \\ -4 \end{pmatrix}, \quad \mathbf{d} = \begin{pmatrix} -2 \\ -3 \end{pmatrix},$$

$$\mathbf{e} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}, \quad \mathbf{f} = \begin{pmatrix} -4 \\ -1 \end{pmatrix}, \quad \mathbf{g} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}, \quad \mathbf{h} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$$



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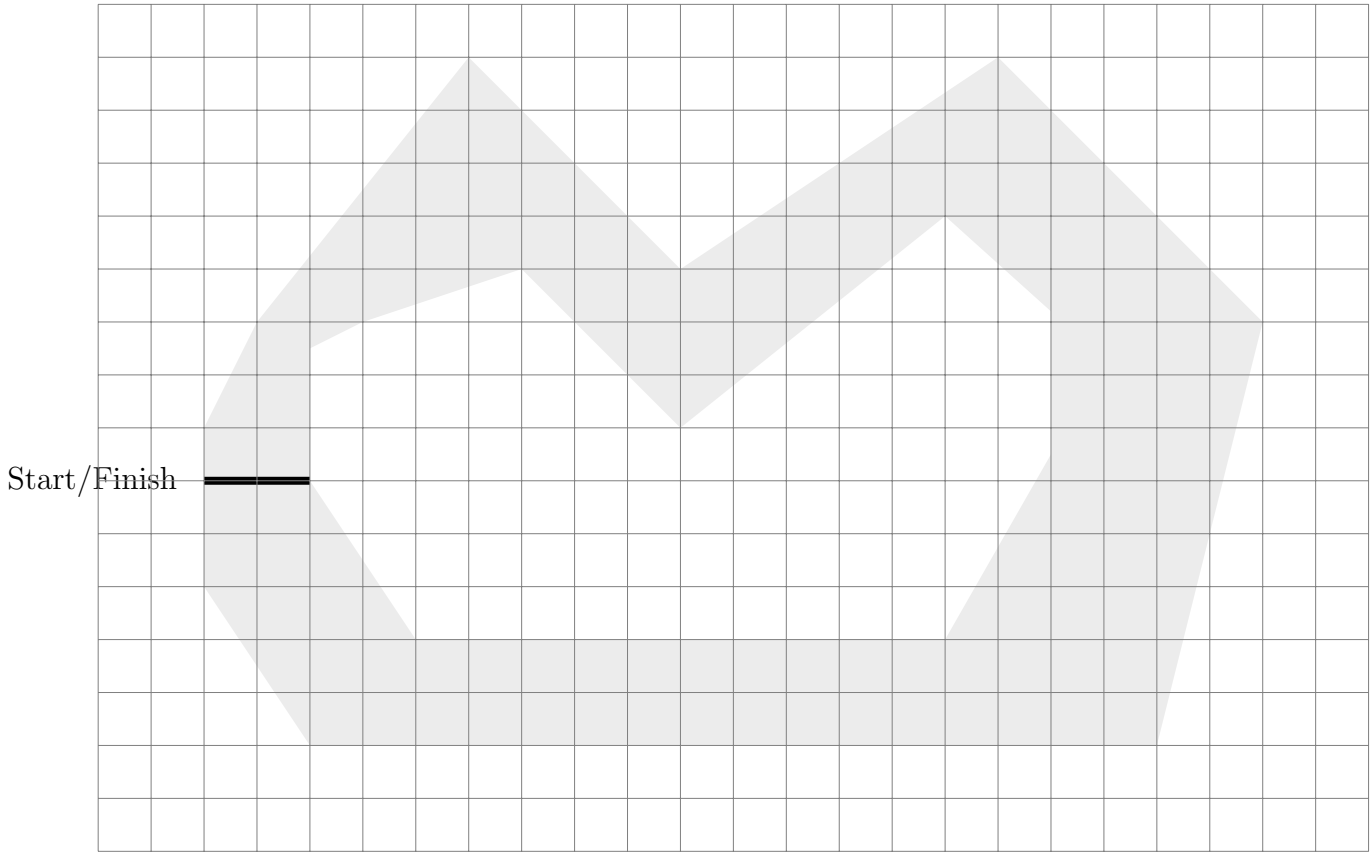
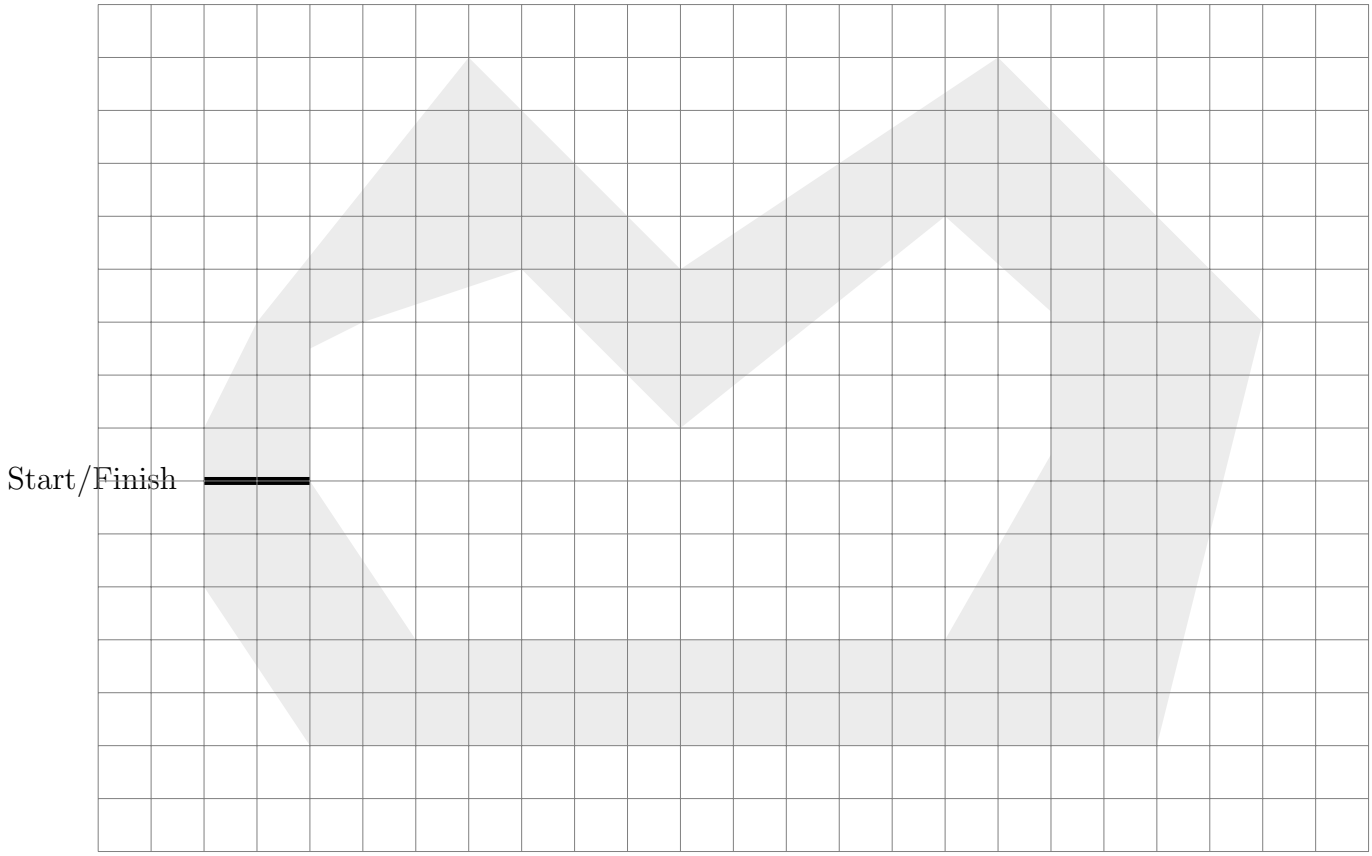
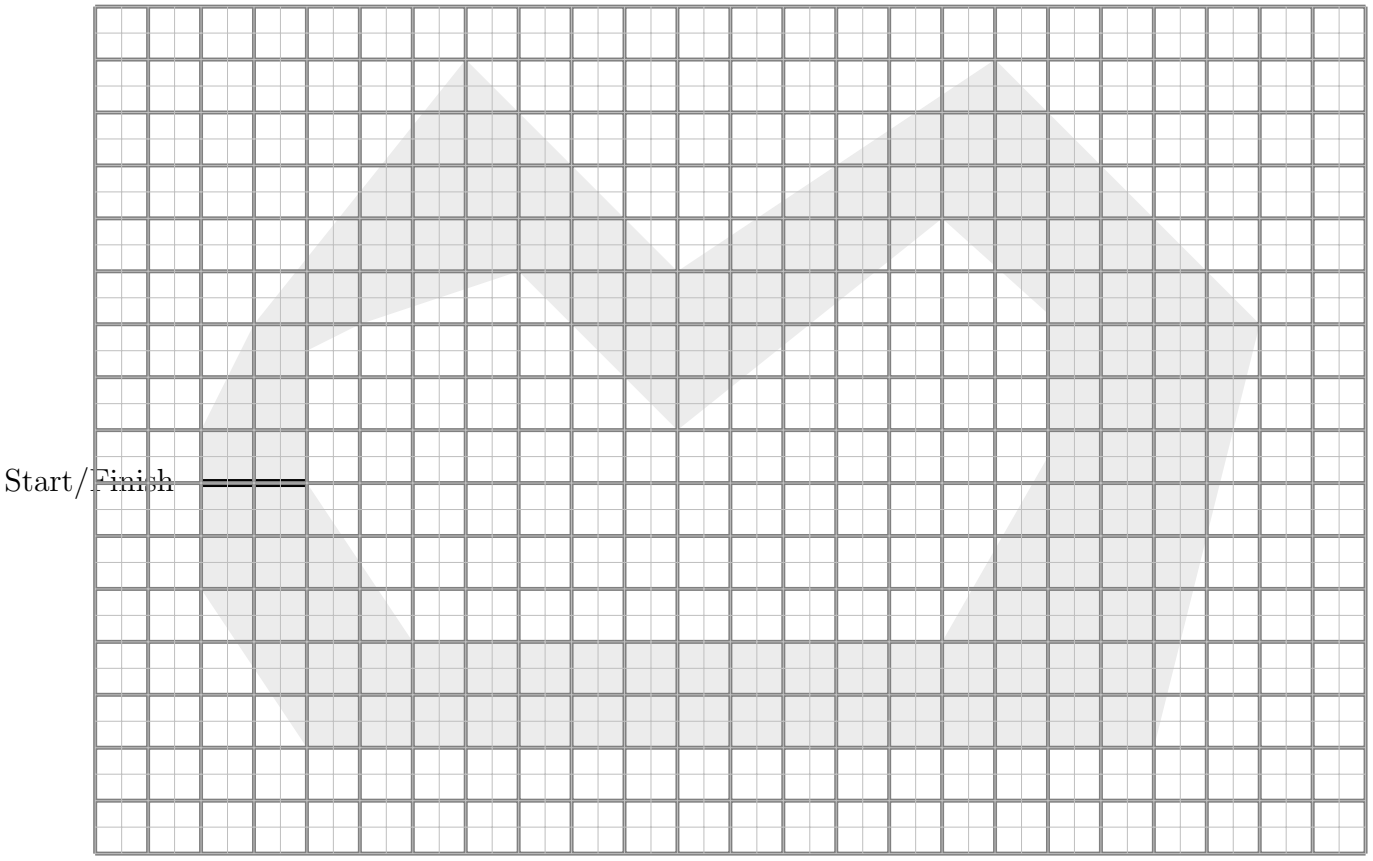

Start/Finish

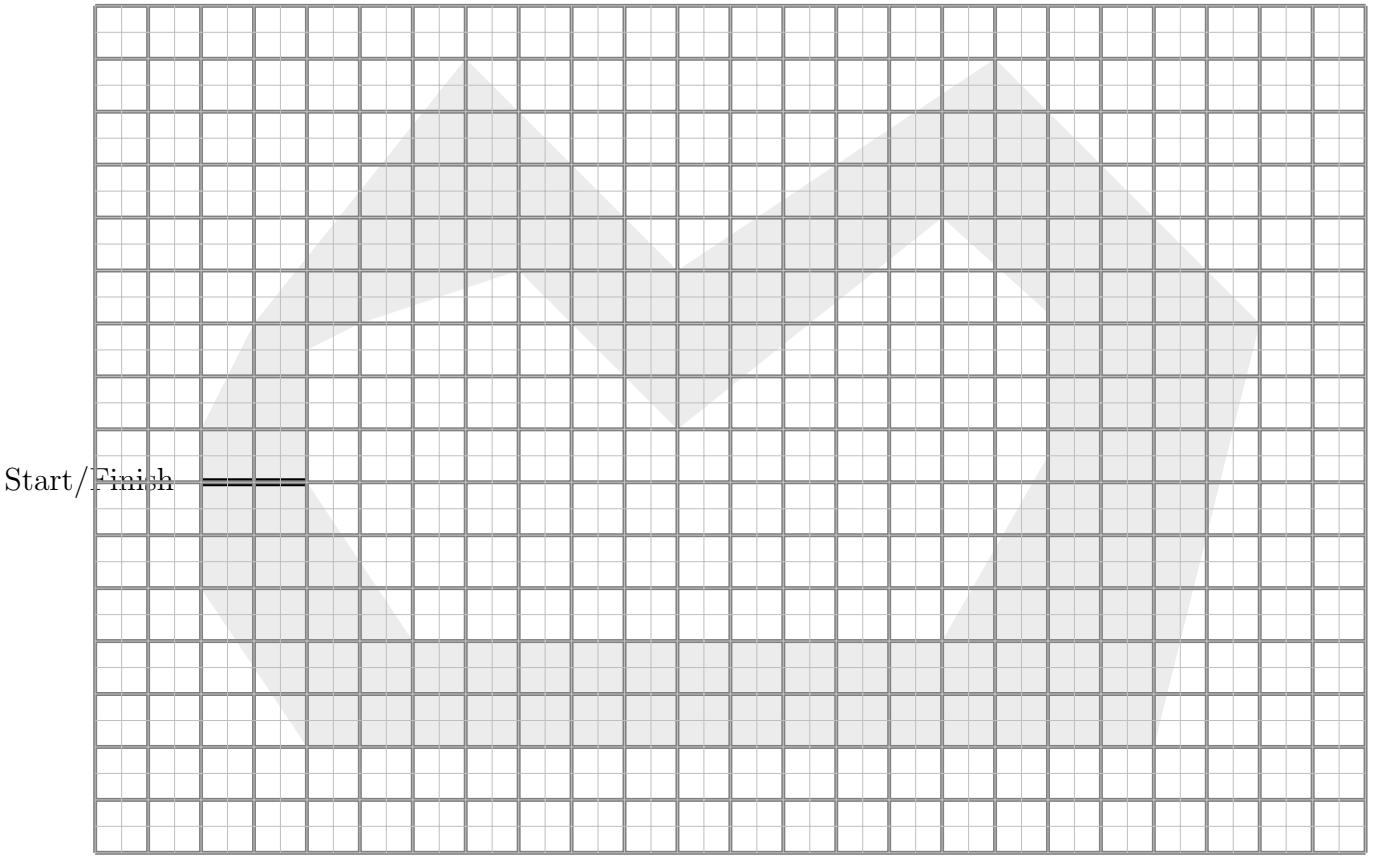

Start/Finish

1. Write your path in the following form: $g + a + ...$

2. Collect the like terms in your expression

3. Thus evaluate the expression from 1. as a column vector, what do you notice?


Start/Finish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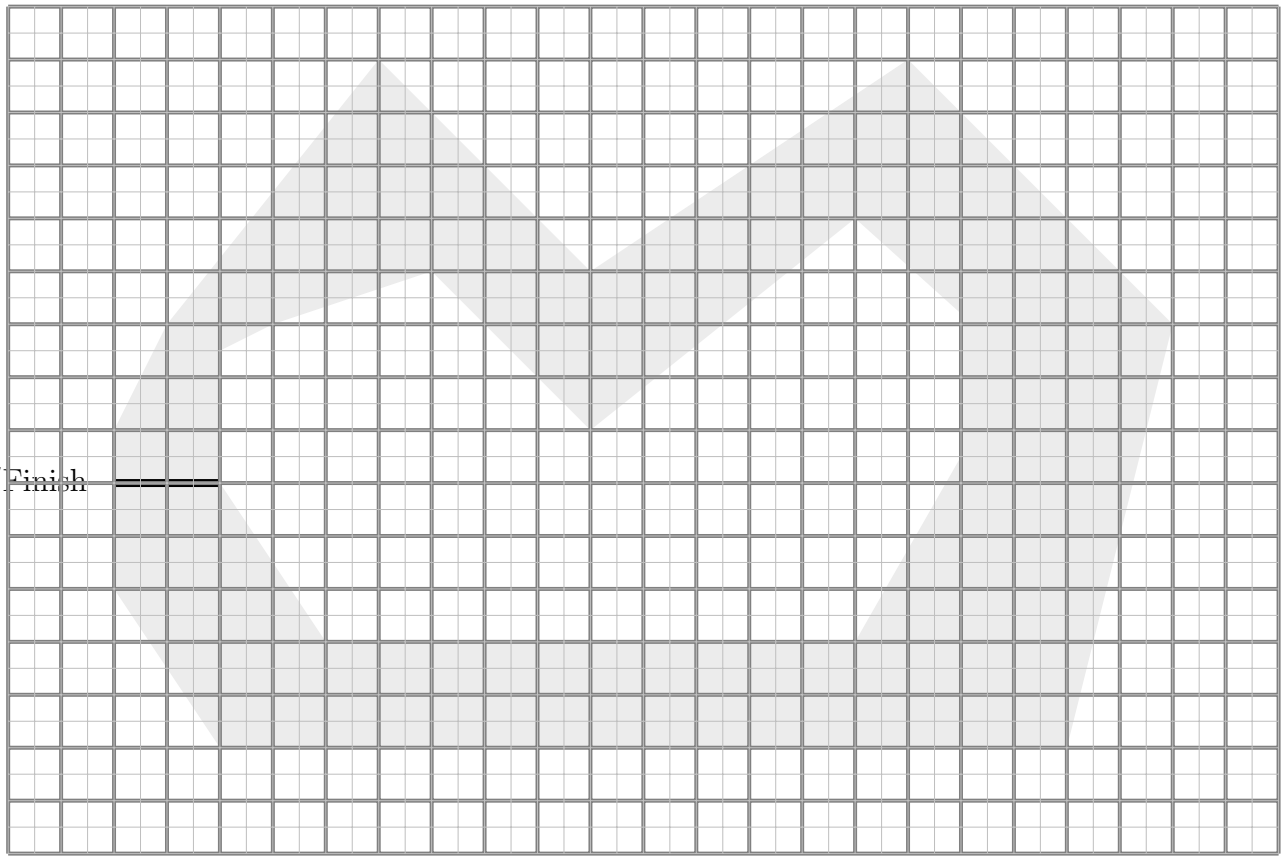
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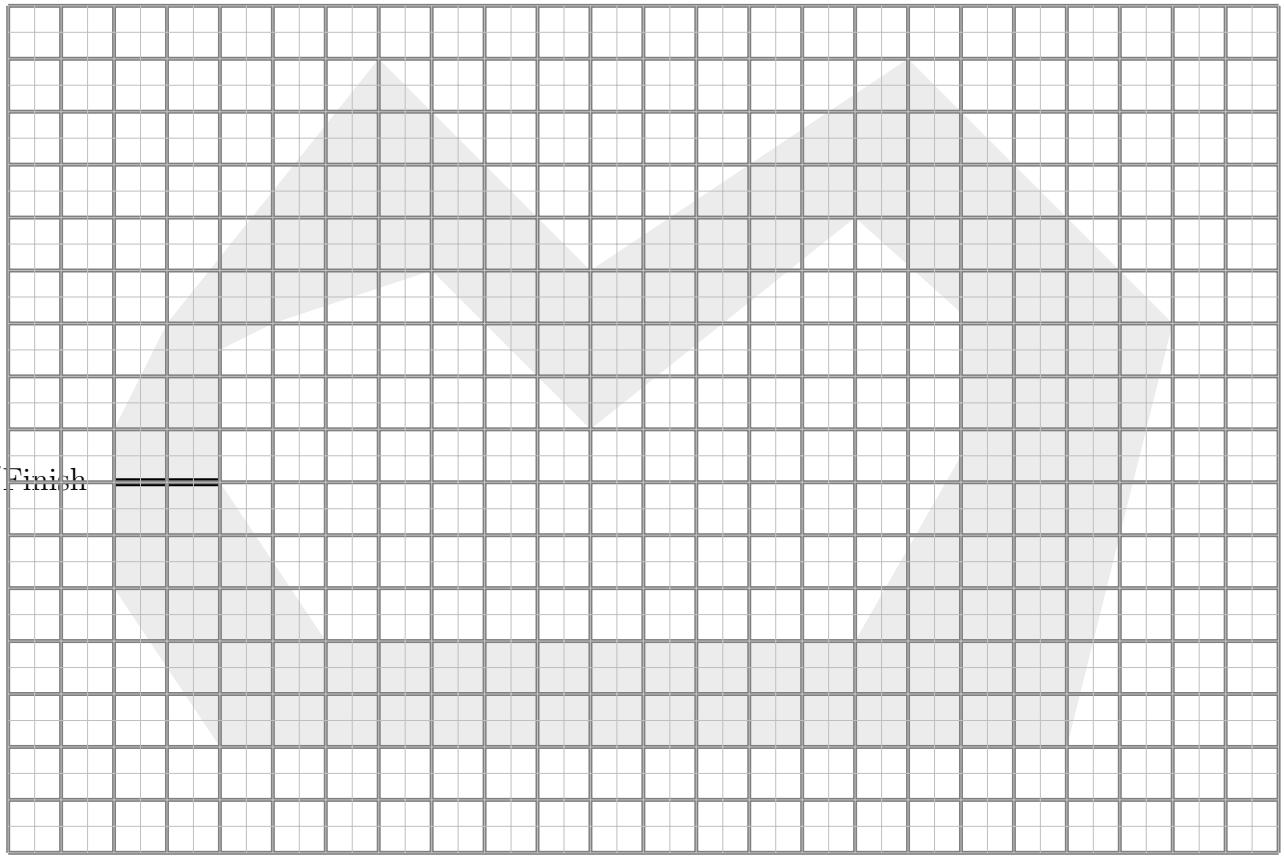
Start/Finish