Does It Fit? *E003 scoring rubric*

Math Domain

☐ Number/Quantity	☑ Shape/Space	☐ Function/Pattern
☐ Chance/Data	☑ Arrangement	

Math Actions (possible weights: 0 through 4)

2 Modeling/Formulating	0 Manipulating/Transforming
2 Inferring/Drawing Conclusions	2 Communicating

Math Big Ideas

☐ Scale	☐ Reference Frame	☐ Representation
☐ Continuity	☐ Boundedness	☑ Invariance/Symmetry
☐ Equivalence	☐ General/Particular	☐ Contradiction
☐ Use of Limits	☐ Approximation	☐ Other

The intent of this task is to have students demonstrate their understanding of rotation and reflection symmetry.

1. The main issue is how the positions will be counted. This raises two questions.

Does putting the sign in the envelope as pictured and rotated count as more than one position? Since usually only one side of the envelope is unsealed and has a flap on it, rotating the sign should constitute different positions.

Furthermore, can the sign be inserted in the envelope face down to get more choices? Students should recognize the possibility that the sign could be placed "upside down" in the envelope. If "right-side-up" and "upside-down" are counted as distinct positions, this doubles the number of possibilities.

The "Danger" sign can go into the envelope face up in three ways, and face down in three ways—six ways in all.

2. The considerations are the same as in question **1**. The "School Zone" sign can go into its envelope face up in four ways, and face down in four ways—eight ways in all.

	partial level	full level
Modeling/ Formulating (weight: 2)	Devise appropriate numerical counting schemes for **1** *or* **2**.	Devise appropriate numerical counting schemes for **1** *and* **2**.
Transforming/ Manipulating (weight: 0)		
Inferring/ Drawing Conclusions (weight: 2)	Meet some but not all of the criteria for full level.	Consider the distinction between "right-side-up" and "upside-down." Verify that no position is counted more than once. Use a consistent scheme between **1** and **2**.
Communicating (weight: 2)	State answers clearly.	Give a clear prose explanation of the answers. Explicitly state counting assumptions or methods.