Ask students to determine the length of the sides of a square that has an area of 2.

Ask students to find the perimeter of this same square.

Use this example to start a discussion of rational and irrational numbers.

Have groups use the Rally Table strategy to generate lists of rational and irrational numbers.

Groups would then add and multiply various combinations of numbers, make observations and come to conclusions.

Groups would be asked to prepare a convincing argument for the teacher that the conclusions that they came to based on their observations would always be true.

Give each student a card displaying either a rational or irrational number.. Tell students to mix and mingle to find a partner who has a different type of number. The students should then add their 2 numbers and multiply their 2 numbers. Various pairs would be asked to share their results. After several rounds of this, ask pairs to make generalizations about the outcomes.

Students would return to their seats and write an explanation as to why this might always occur.

N-RN.3

***Explain why the sum or product of two rational numbers is rational: that the sum of a rational and an irrational is irrational; and that the product of a nonzero rational number and an irrational number is irrational*.**

#

I would ask students to

- *generate a list of rational and irrational numbers.*
- *to add and multiply their various numbers and identify the sum or product as being rational or irrational.*
- *Construct an argument as why the sum or product of two rational numbers is rational: that the sum of a rational and an irrational is irrational; and that the product of a nonzero rational number and an irrational number is irrational.*

Standard for Mathematical Practice

#7 Look for and make use of structure.

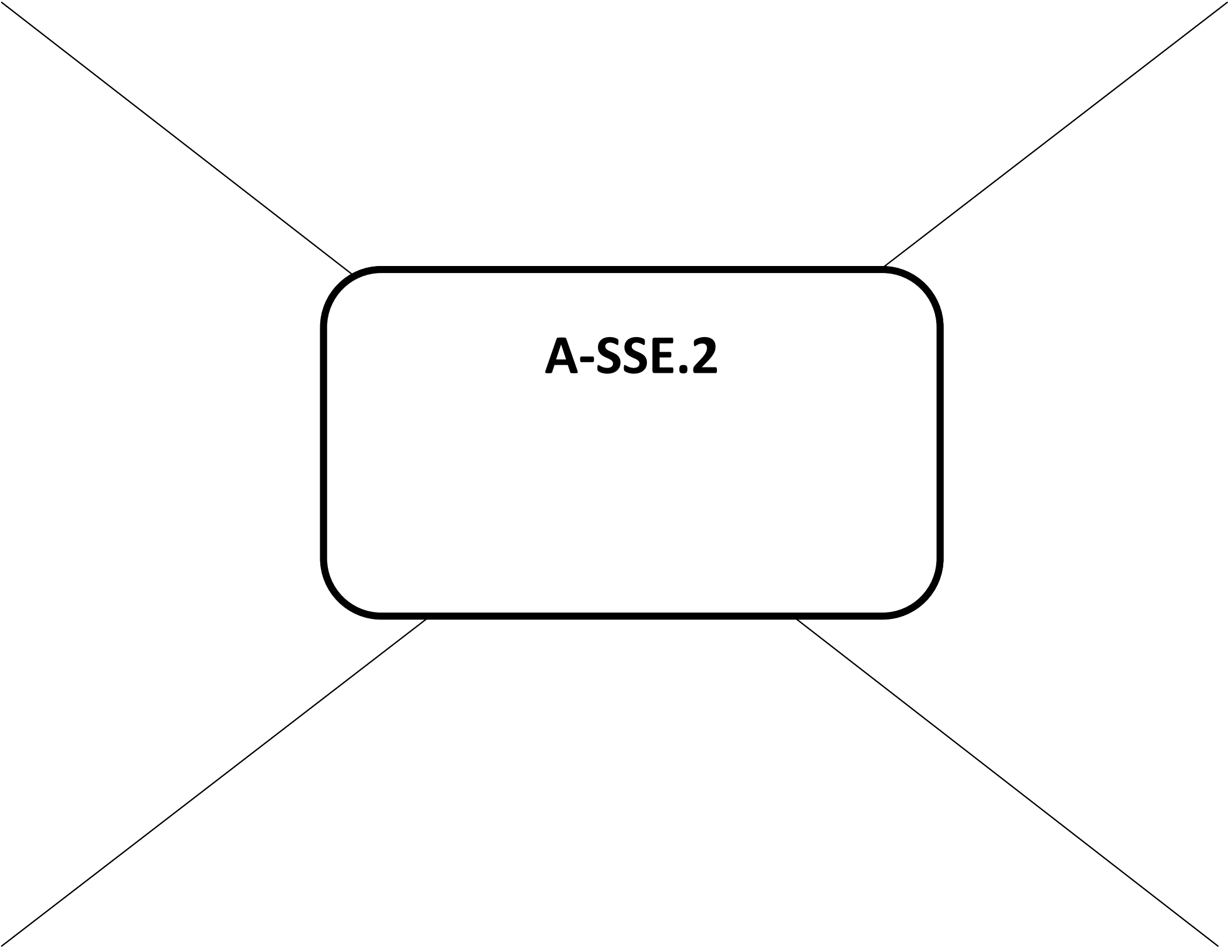
Ask students to complete a Frayer model for irrational numbers and one for rational numbers. Have students share their model with a partner and ask a few to share whole class.

Next I would ask students to add and multiply numbers from the Example section of their Frayer model and make note of the type of number they get for each sum or product.

Students would then be asked to share conclusions that they made based on their observations. Then using clear mathematical vocabulary students would provide an argument as to why their conclusion would always hold true.

Standard for Mathematical Practice

#3 Construct a Viable Argument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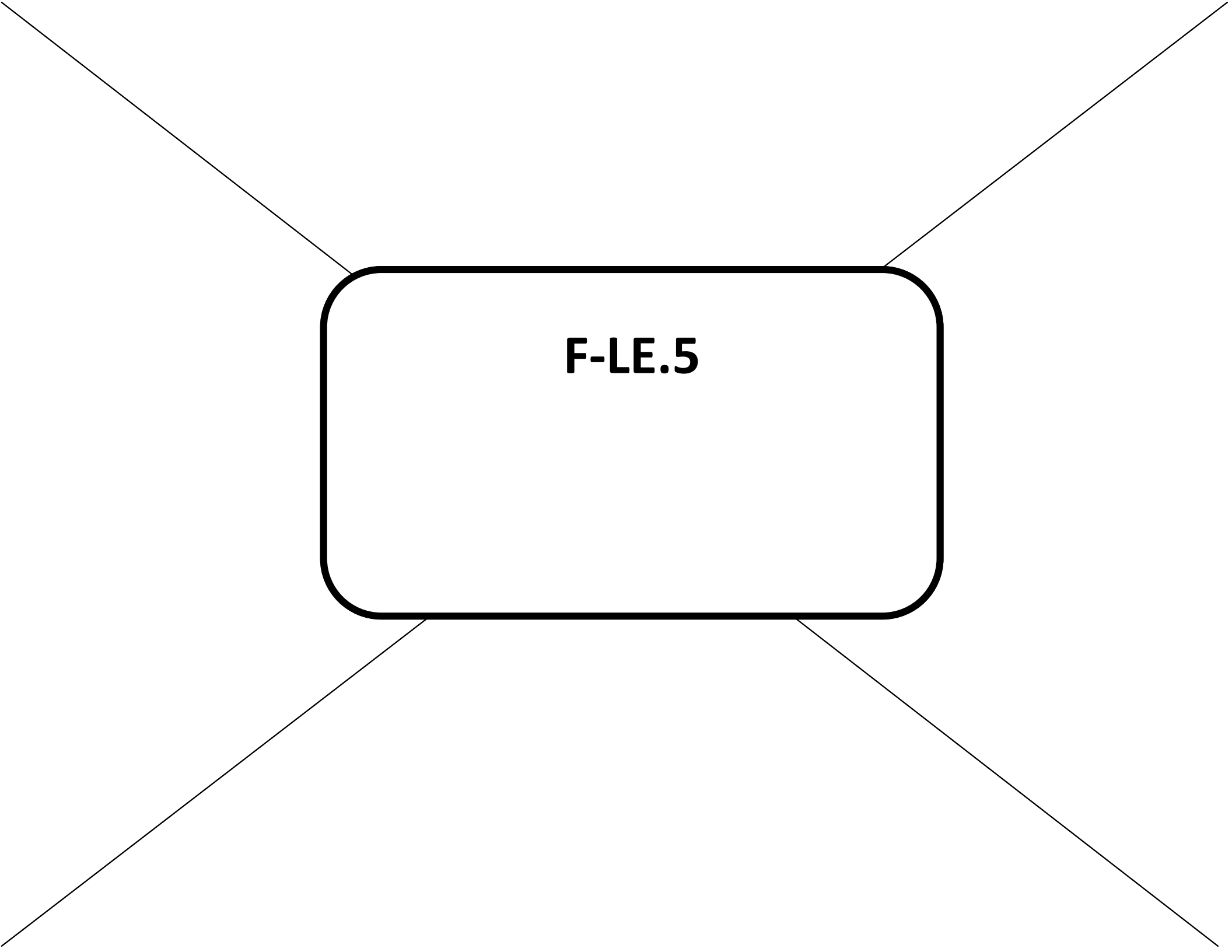
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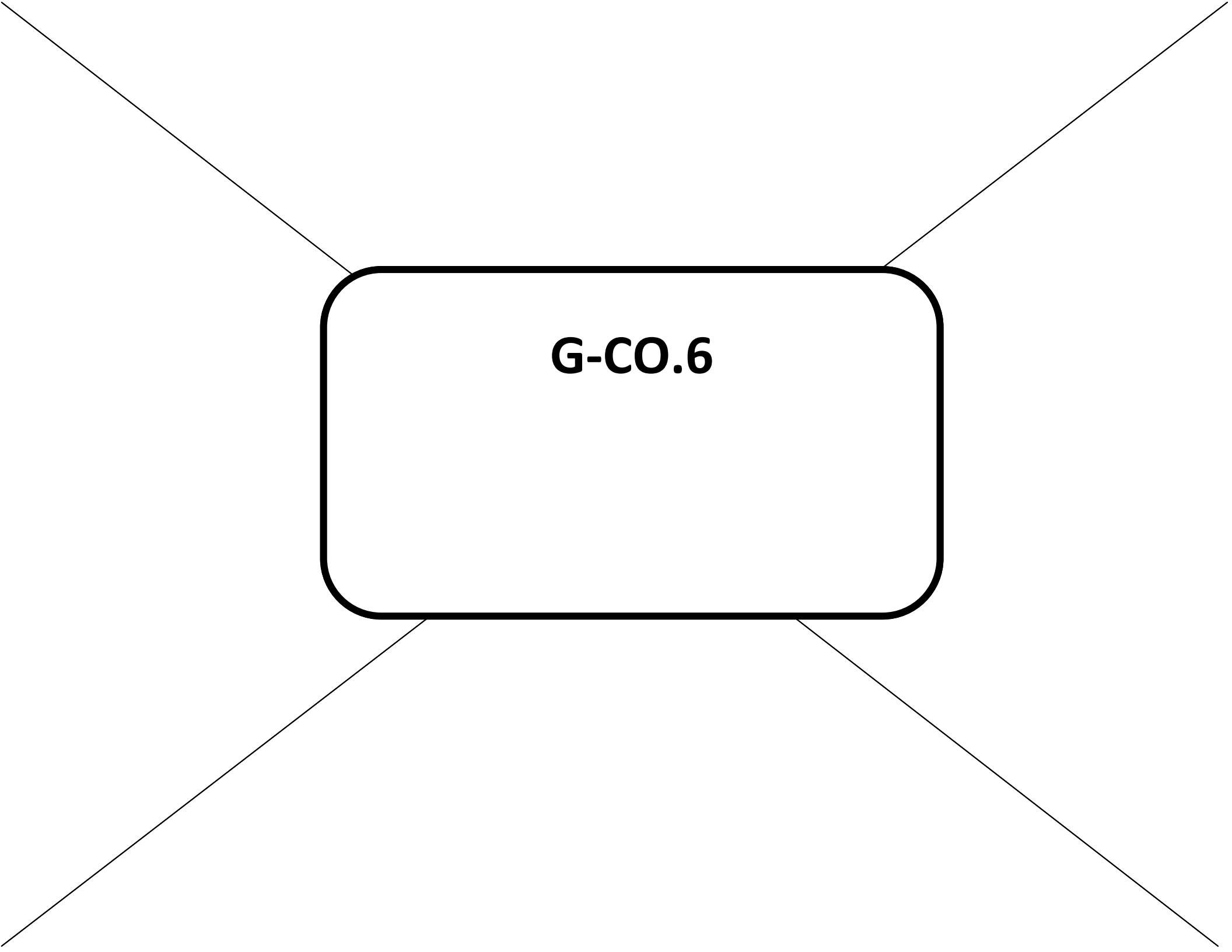
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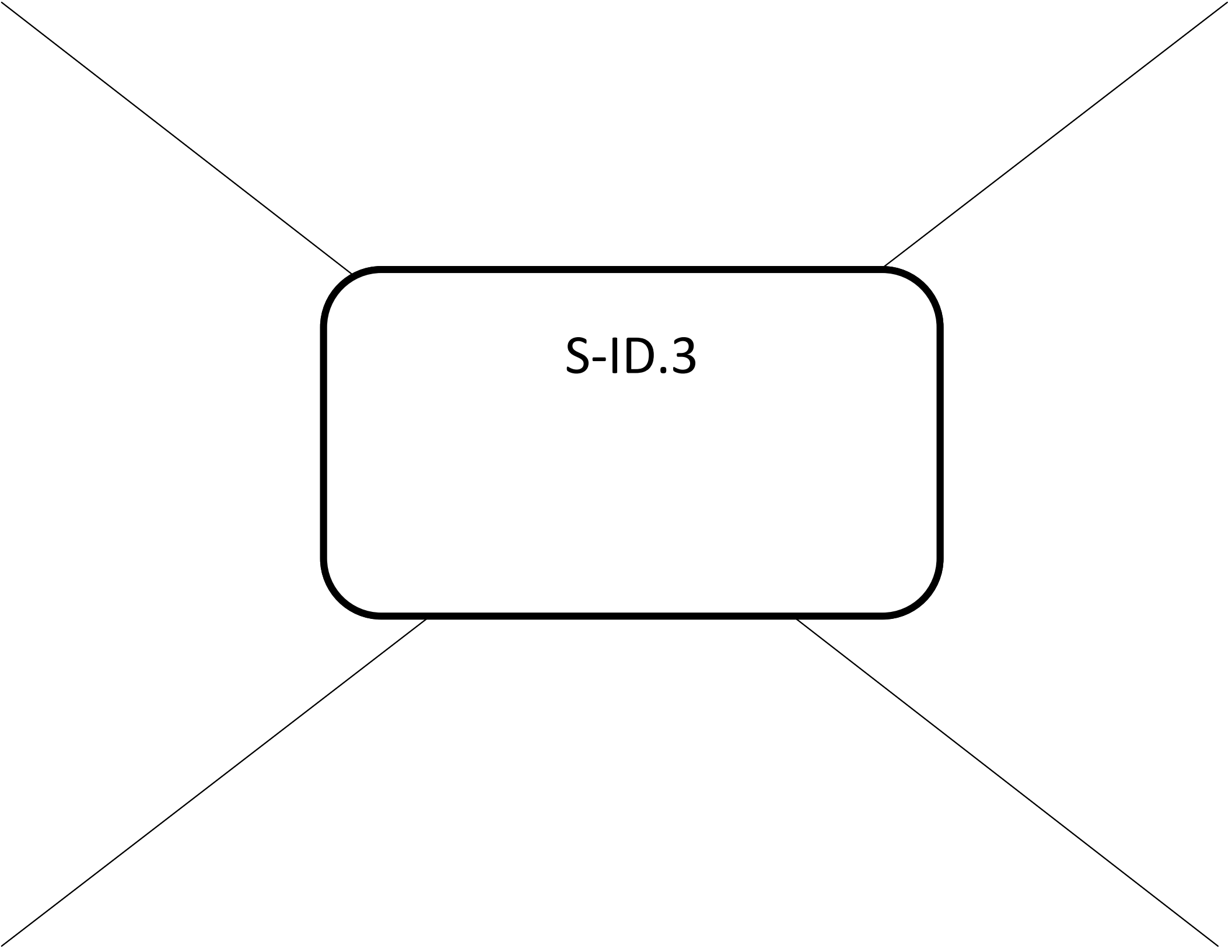
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