



USC Marshall

Critical Thinking Initiative

START Concept Analysis

**A Part of the Comprehensive and Fully Integrated Framework for Critical Thinking at the
USC Marshall School of Business**

USC Marshall Critical Thinking Initiative



- The *USC Marshall Critical Thinking Initiative* is an on-going school wide effort to enhance our students' critical thinking skills in order to make them more successful problem solvers. Its key components include...
 - ✓ The 5 Step **USC-CT** Problem Solving Process which is designed to help students tackle ambiguous, ill-defined challenges.
 - ✓ The **START** Concept Analysis which is designed to teach fundamental concepts/formulas that are utilized within the USC-CT Process.
 - ✓ **Learning Modules** which are designed to enhance specific skills such as how to reduce biases, how to enhance creativity, and how to evaluate claims & evidence.
- The lesson in this document focuses on the **START** Concept Analysis.



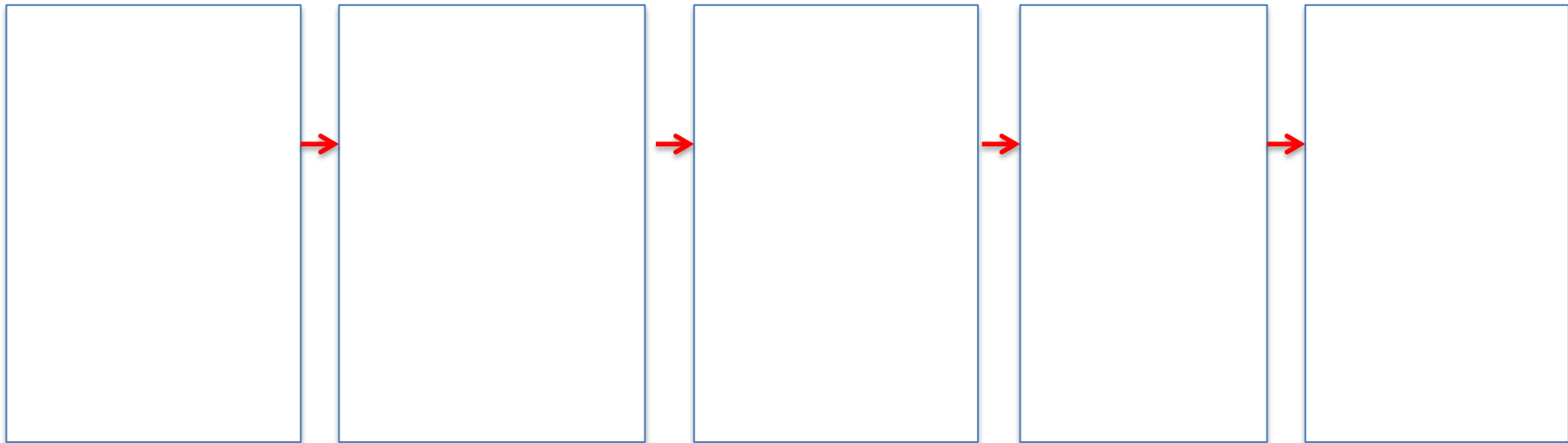
START

(Note: This document is meant as an introduction to the subject. More in-depth coverage will occur in supplemental readings and classroom exercises)

START



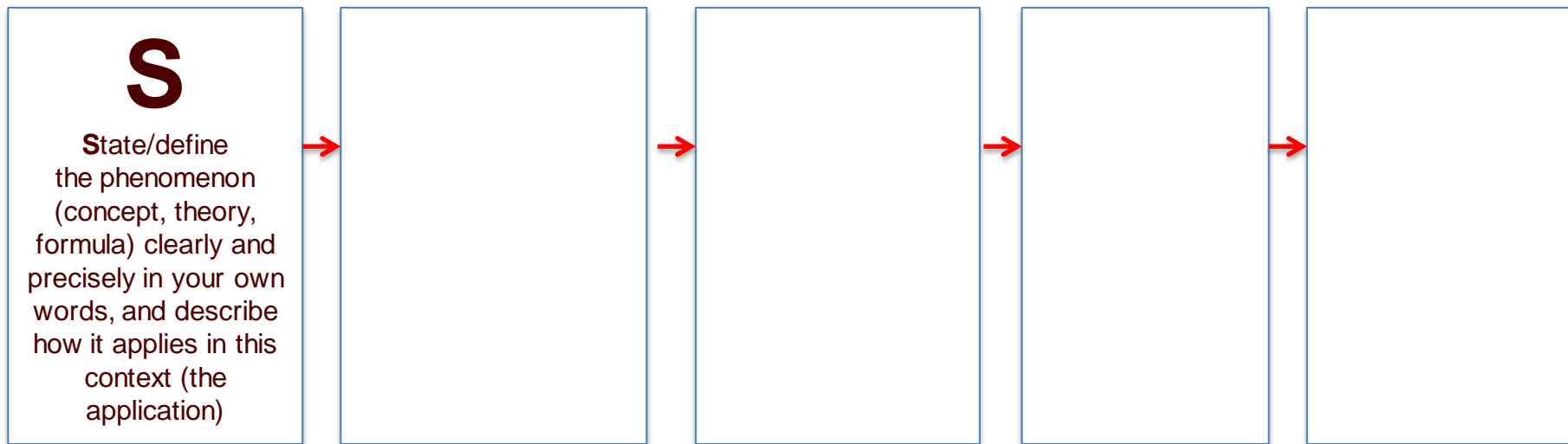
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- Approach: The approach uses key steps to inspire students to **S**tate/define the concept, theory, or formula, to **T**ake it apart, to **A**nalyze the assumptions, to **R**elate it to other phenomenon, and to **T**ranslate it to the real world.



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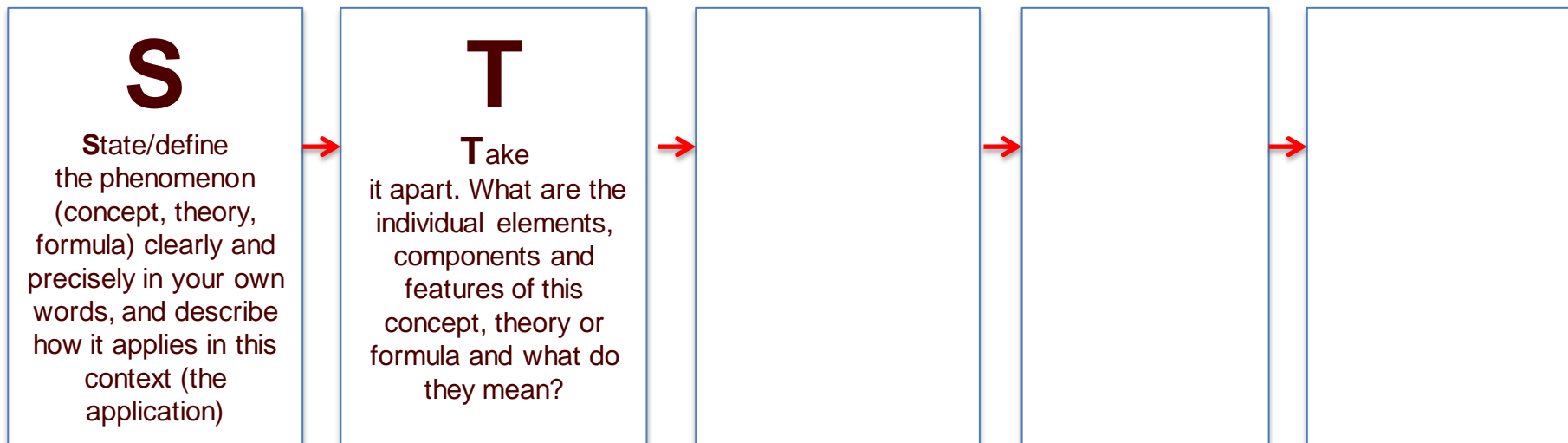
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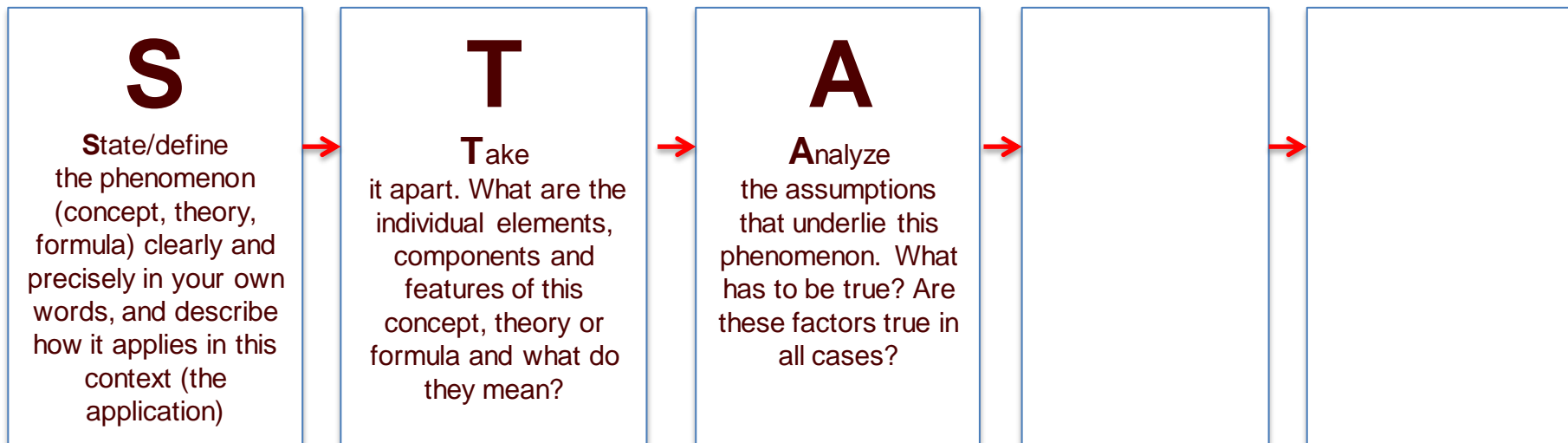
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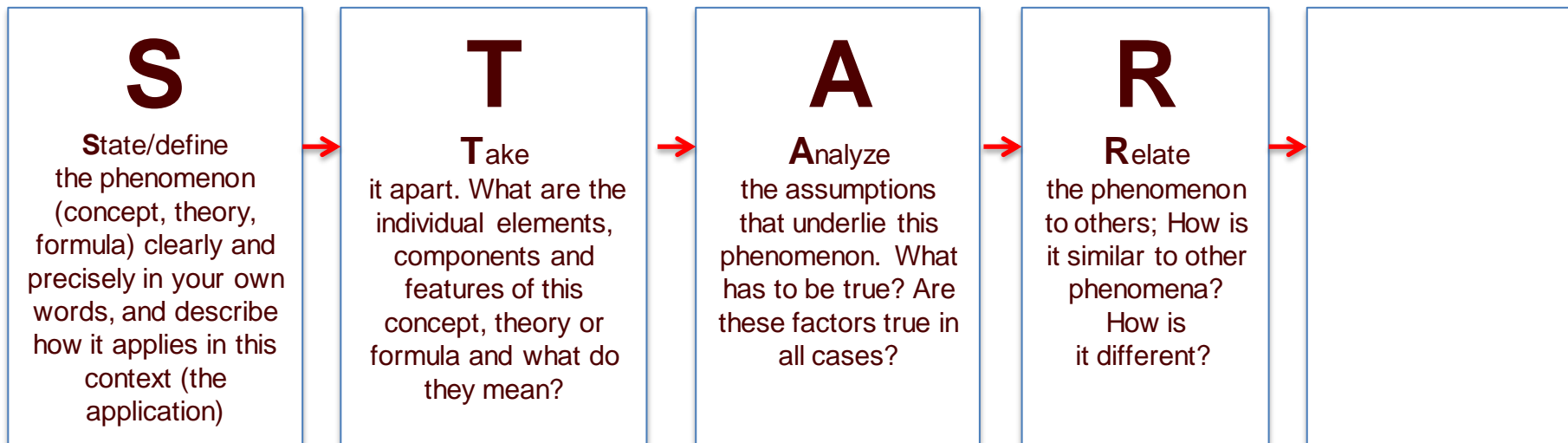
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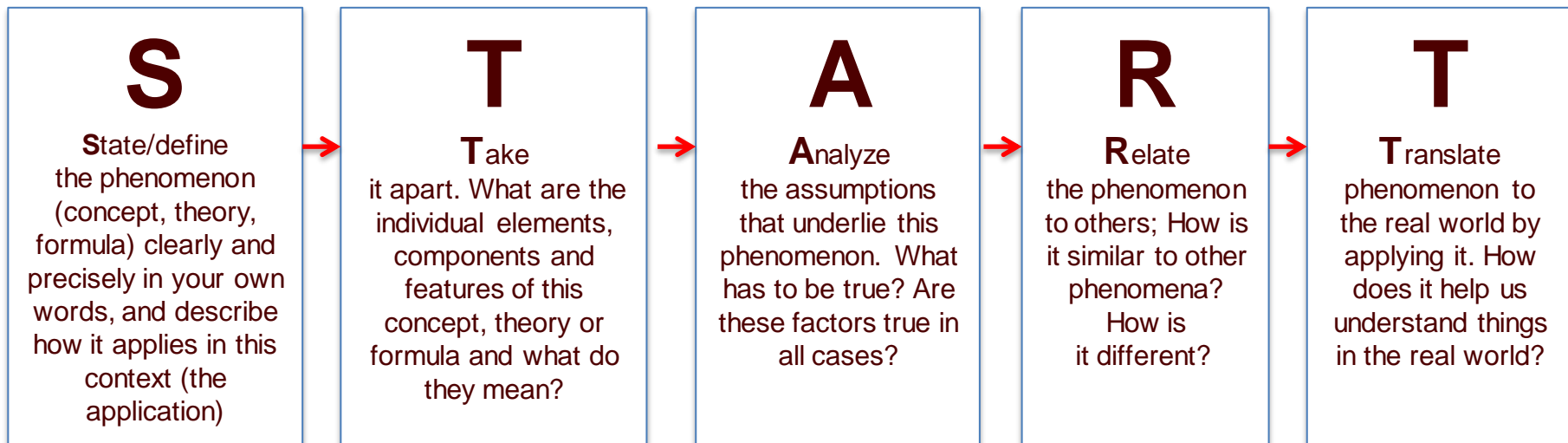
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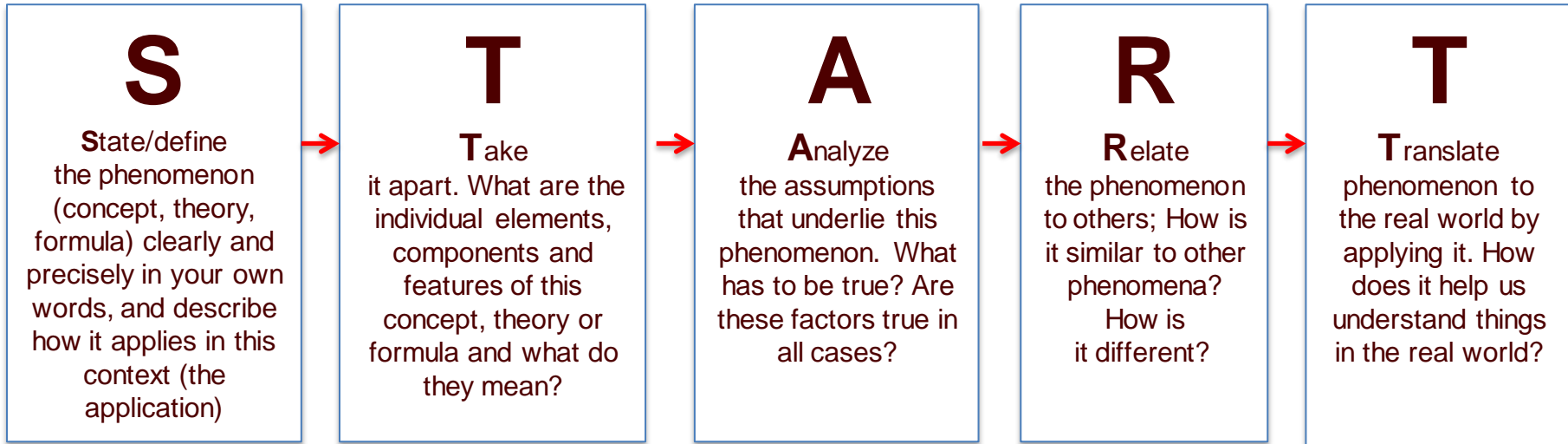
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Example

START: Example



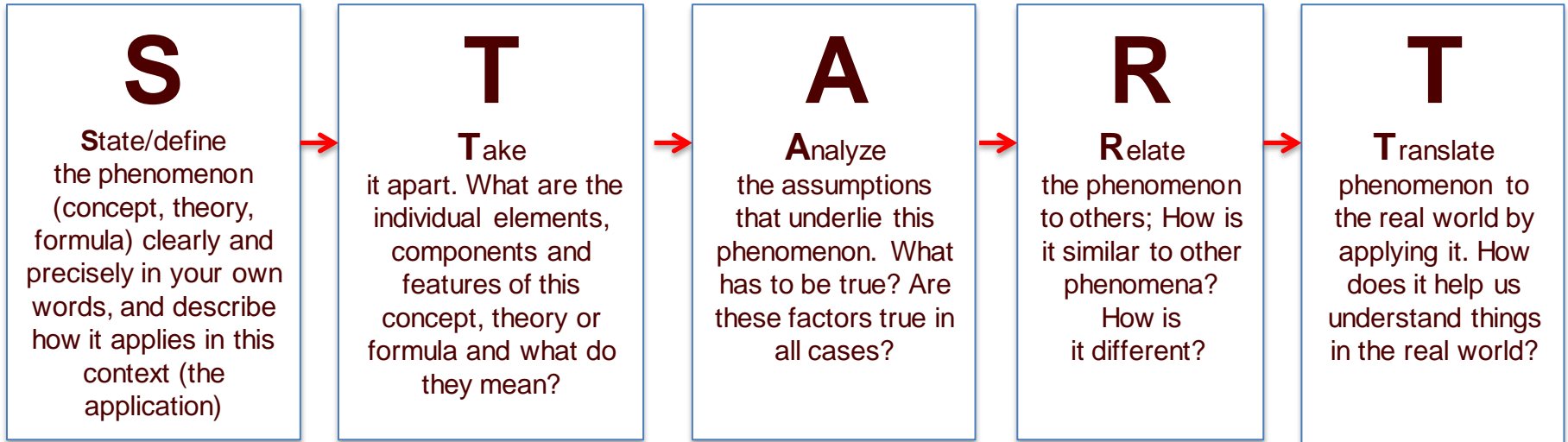
The Situation:

You are the manager of Rent-a-Car, one of the two car rental agencies serving a small regional airport in the U.S. Midwest. Forty percent of your customers are airline passengers and the remaining sixty percent are dwellers of the nearby college town who use rental cars for business and leisure trips. The airport is within two miles from campus and approximately six miles from the city center. It is easy to reach by car, taxi, or city bus.

Your fleet consists of 50 'economy' and 20 'luxury' class cars. Whenever demand for cars exceeds the number of cars available, additional vehicles can be delivered from the nearest company hub in the state capital located 70 miles away.

Source: Journal of Business Cases and Applications

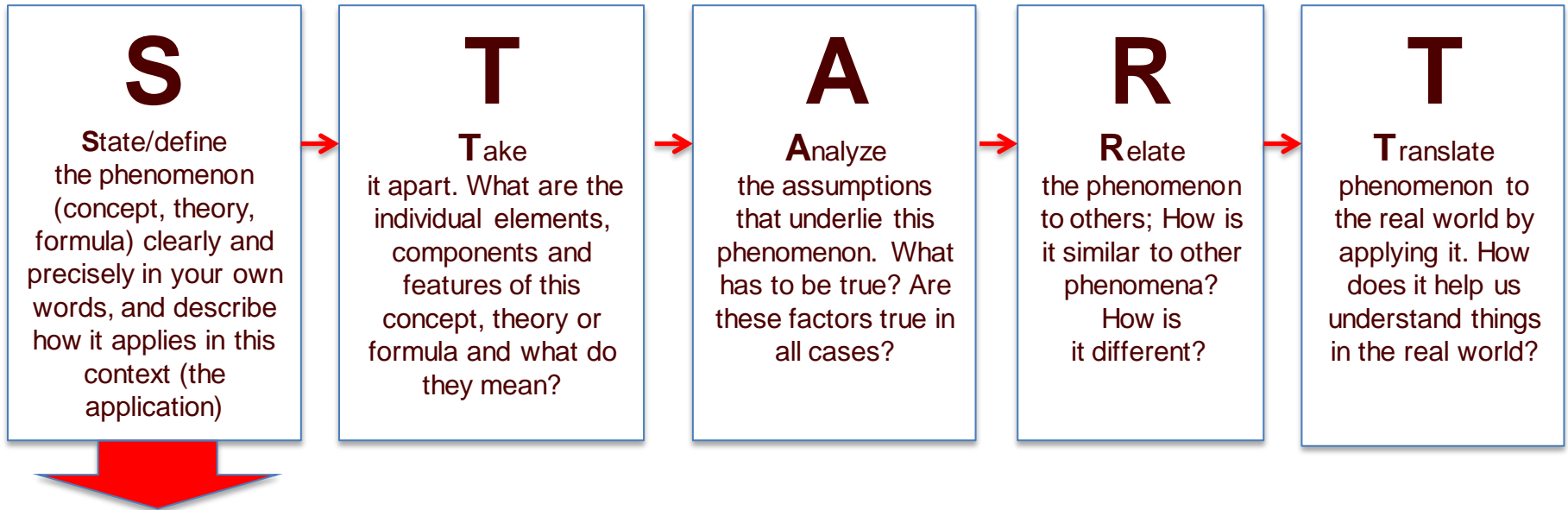
START: Example



The Task:

In order to better understand your unit's operating environment, you are asked to **provide your suggestion for the demand equation** that would account for various factors that affect your customer traffic. You could then estimate the demand equation by using regression techniques.

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Step 1: State/define

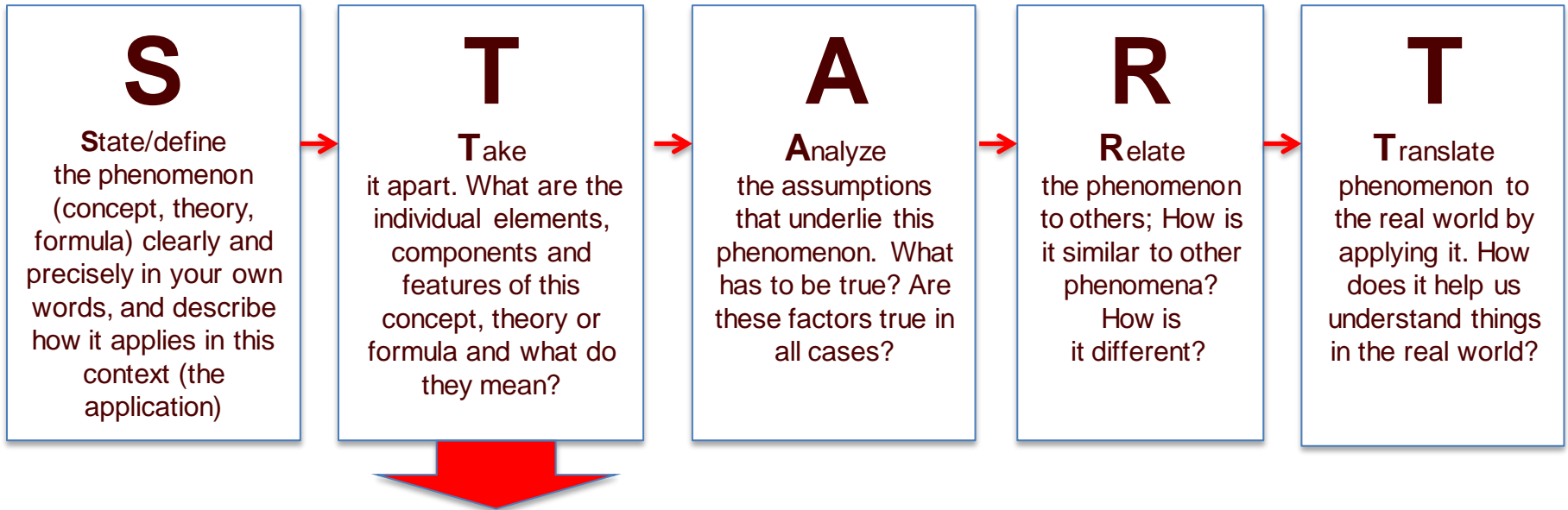
- ✓ What is a demand function?
- ✓ Why do you want to estimate a demand function for your business? How are you planning to use it?

A demand function is a mathematical function explaining the quantity demanded in terms of its various determinants (income, own price, competitors price, etc.).

This business could use the estimated demand function

- to manage its inventory of rental cars.
- to see the effect of advertising spending on their demand.

START: Example



Step 2: Take the demand function apart.

- ✓ What variables would go into the demand function?
- ✓ How are they measured?

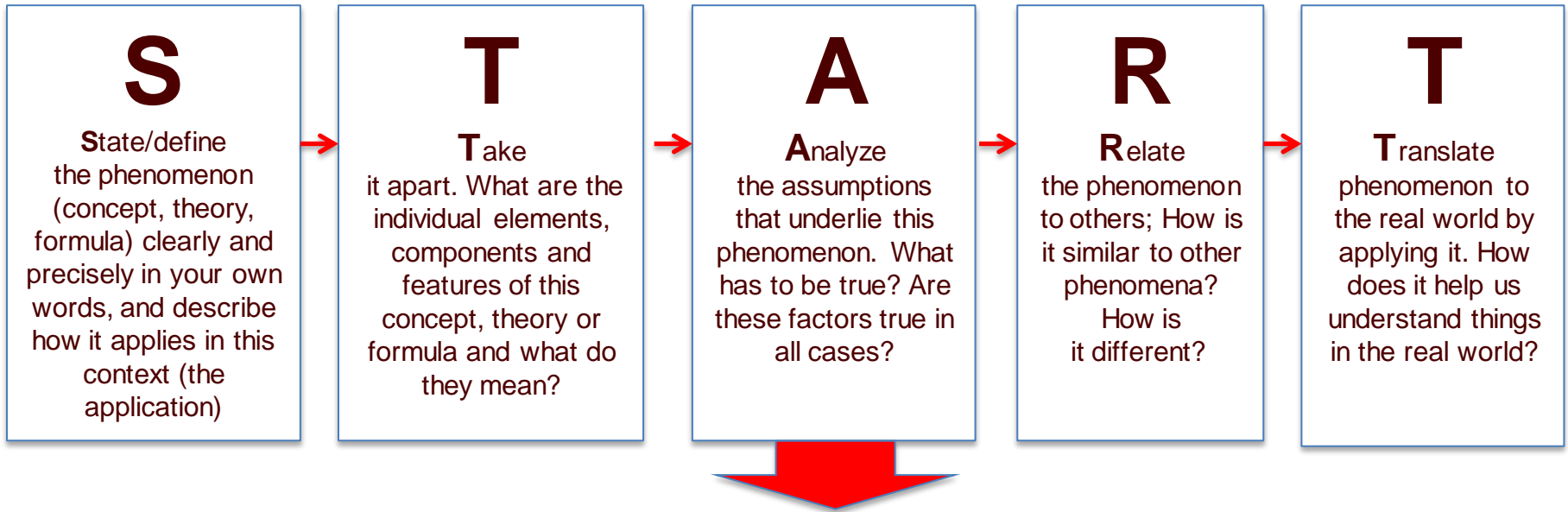
Potential dependent variable:

- number of economy cars rented out per week (could be per month or per year)

Potential independent variables:

- daily rental rate of own economy car averaged over a week, daily rental rate of own luxury car averaged over a week, competitor's daily rental rate averaged over a week, weekly advertising spending on TV, weekly advertising spending on radio, dummy variable for college being in session during that week, etc.

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Step 3: Analyze the assumptions.

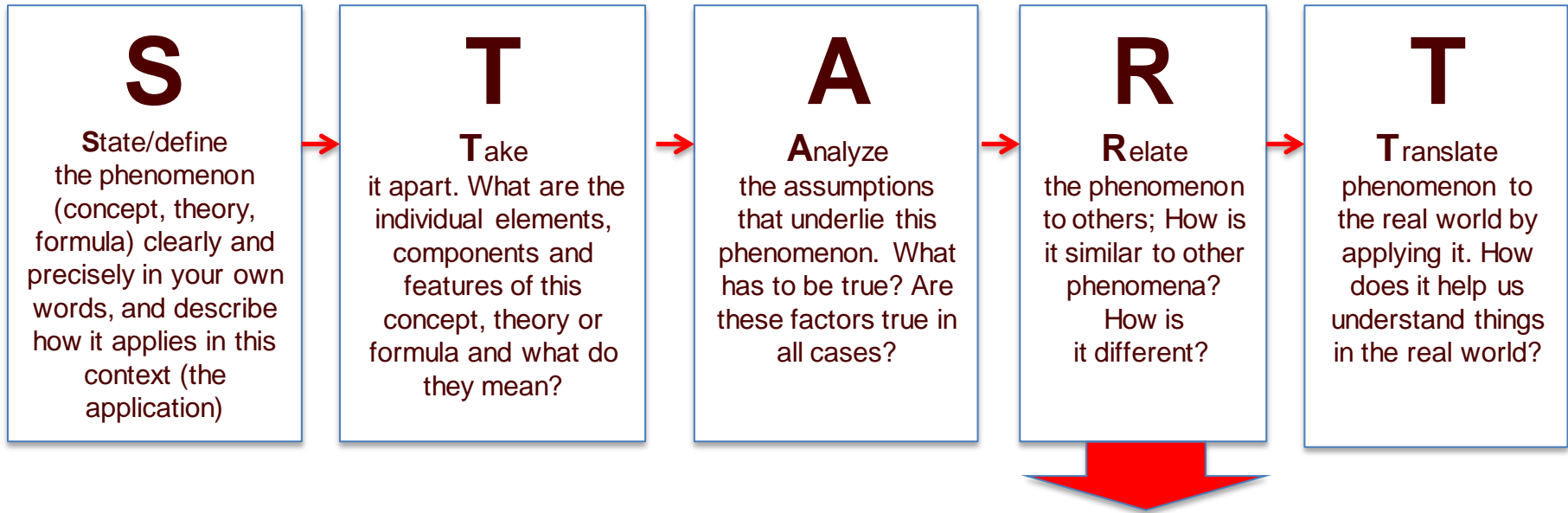
- ✓ What functional form is chosen for the demand equation?
- ✓ What signs do you expect for the parameters?

We can assume that there is a linear relationship between the dependent variable (quantity demanded) and the independent variables (the determinants of demand).

Expectations for the direction of the relationship of dependent variable and independent variables:

- negative parameter for own price, positive parameter for price of own luxury car, positive parameter for competitor's price, positive parameters for all types of advertising, positive parameter for college in session dummy, etc.

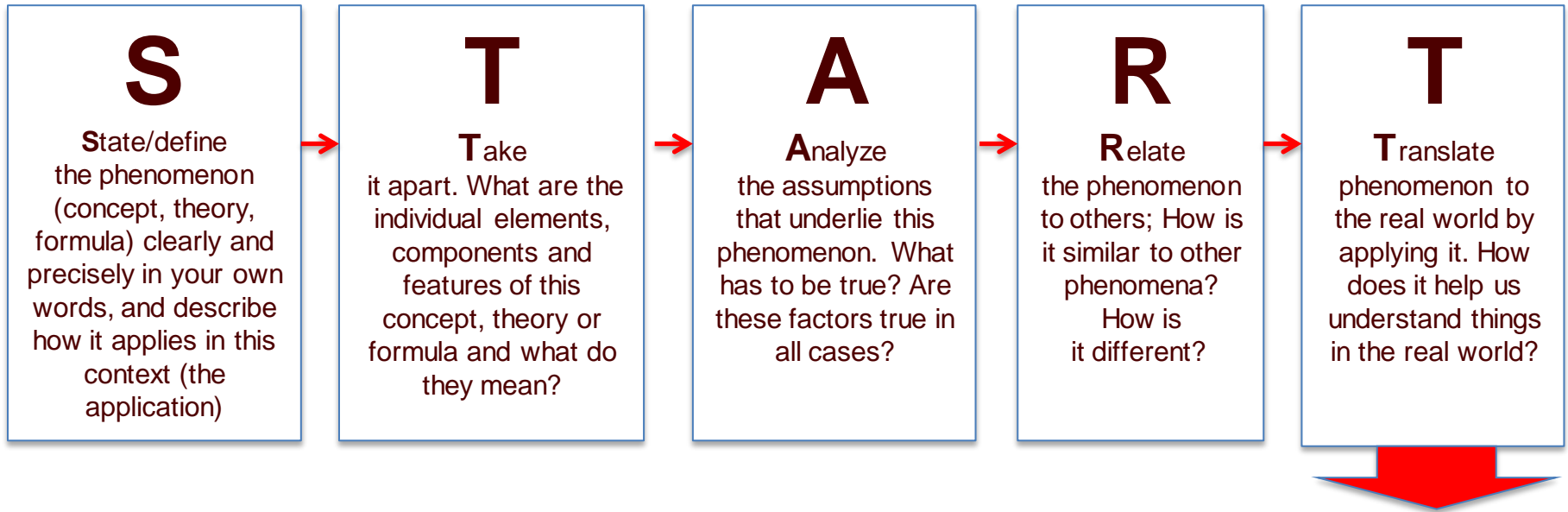
START: Example



Step 4: Relate the demand function to other concepts you learned.

- ✓ How is the demand function related to price elasticity of demand?
- ✓ How is the demand function related to cross-price elasticity of demand?
- ✓ What is the relationship between the demand function and the demand curve that we usually plot?

START: Example



Step 5: Translate this concept to the real world. Apply it.

- ✓ Assuming that you have run a regression and estimated a demand function, how would you interpret the results?

Estimated demand curve could answer the following questions

- Is advertising effective or not? Is a dollar spent on TV ads more or less effective than on radio ads?
- How many additional cars will be demanded if college is in session during that week.



USC Marshall Critical Thinking Initiative Recap

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Check them all out!