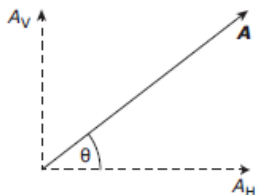


**TSOKOS READING ACTIVITY**

**Section 1-3**

1. Read the IB Assessment Statements below for IB Topic 1.3 – Vectors And Scalars, Old Tsokos Section 1-4.
  - a. Determine the sum or difference of two vectors by a graphical method.
  - b. Resolve vectors into perpendicular components along chosen axes.
2. Essential Idea
  - a. Some quantities have direction and magnitude, others have magnitude only, and this understanding is the key to correct manipulation of quantities. This sub-topic will have broad applications across multiple fields within physics and other sciences.
3. Nature Of Science
  - a. Models: First mentioned explicitly in a scientific paper in 1846, scalars and vectors reflected the work of scientists and mathematicians across the globe for over 300 years on representing measurements in three-dimensional space. (1.10)
4. International-Mindedness
  - a. Vector notation forms the basis of mapping across the globe
5. Theory Of Knowledge
  - a. What is the nature of certainty and proof in mathematics?
6. Understandings
  - a. Vector and scalar quantities
  - b. Combination and resolution of vectors
7. Applications And Skills
  - a. Solving vector problems graphically and algebraically
8. Guidance
  - a. Resolution of vectors will be limited to two perpendicular directions
  - b. Problems will be limited to addition and subtraction of vectors and the multiplication and division of vectors by scalars
9. Data Booklet Reference



- $A_H = A \cos \theta$
- $A_V = A \sin \theta$

a.

## 10. Utilization

- a. Navigation and surveying (see Geography SL/HL syllabus: Geographic skills)
- b. Force and field strength (see Physics sub-topics 2.2, 5.1, 6.1 and 10.1)
- c. Vectors (see Mathematics HL sub-topic 4.1; Mathematics SL sub-topic 4.1)

## 11. Aims

- a. Aim 2 and 3: this is a fundamental aspect of scientific language that allows for spatial representation and manipulation of abstract concepts

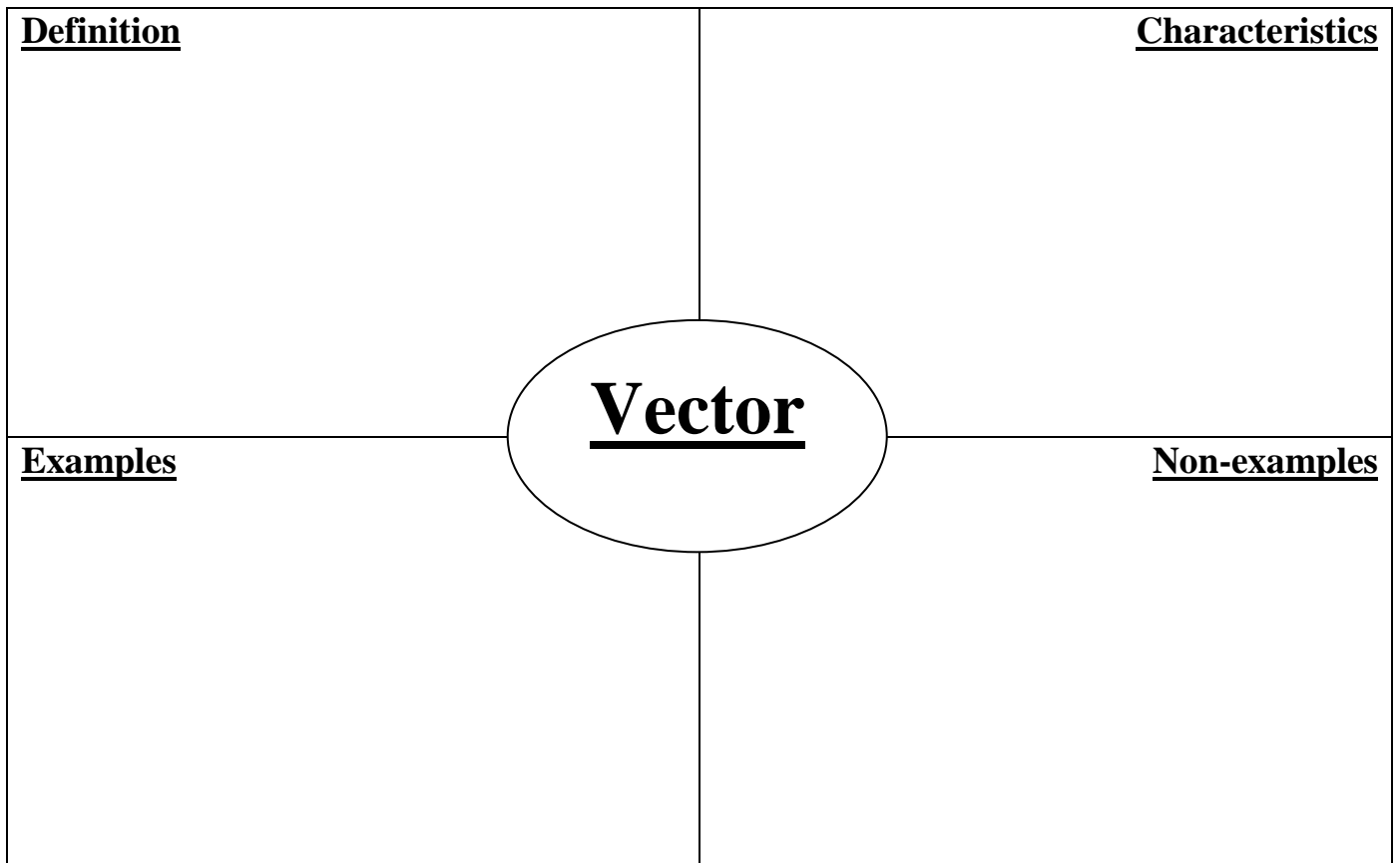
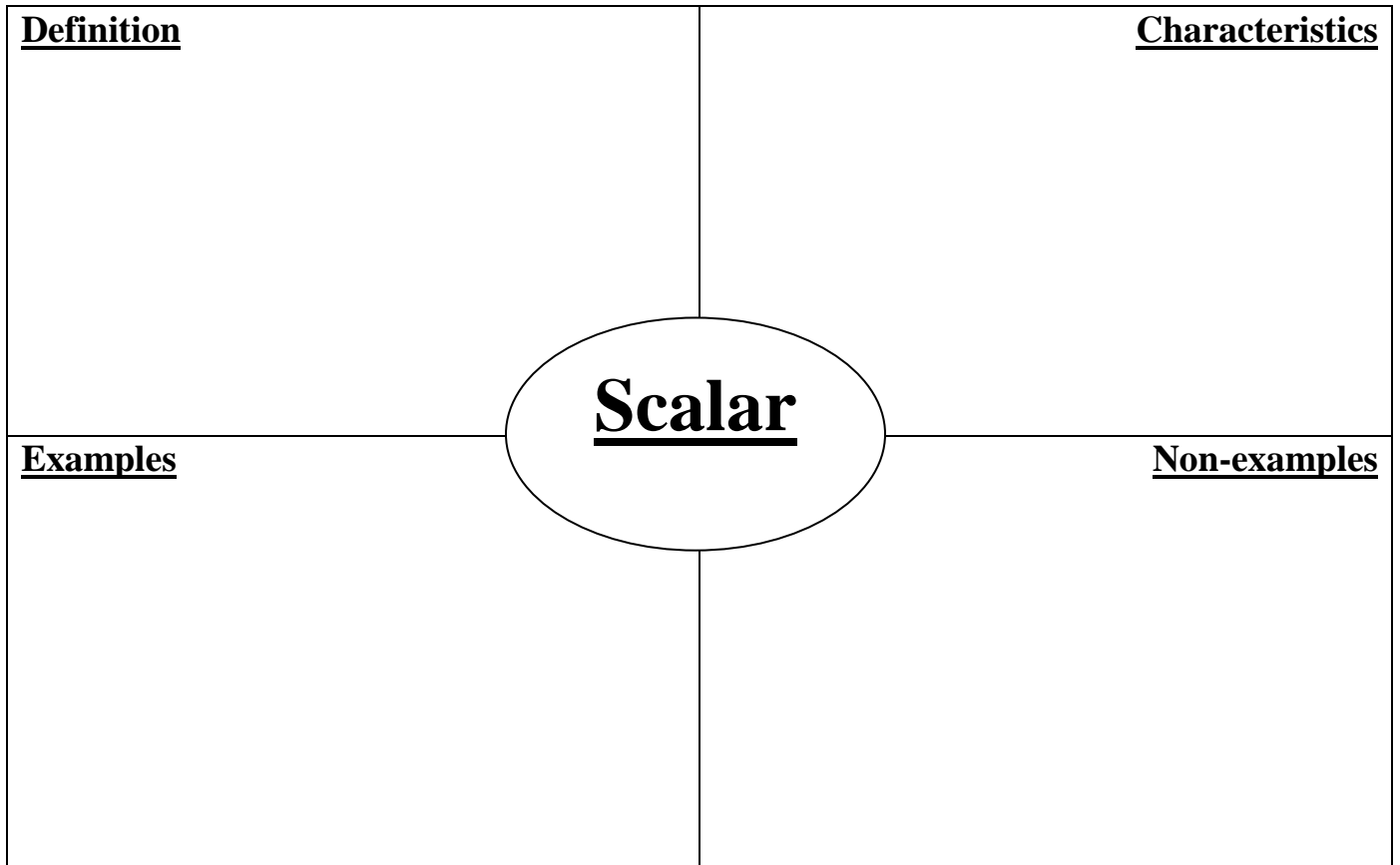
12. Read section 1-3 in your textbook.

~~13. Choreograph and perform an interpretive dance illustrating the meaning of the following terms:~~

14. Use the attached Frayer Model worksheets to explore the following terms:

- a. Complete one model each for the terms *scalar* and *vector*.
- b. Complete the one-page Frayer Model to show how the following relate to the concept of using vectors to solve problems:
  - i. Multiplication of a Vector by a Scalar
  - ii. Pictorial Addition and Subtraction of Vectors
  - iii. Components of a Vector
  - iv. Constructing a Resultant Vector from its Components

15. Answers may be typed or neatly printed. Drawings may be freehand, but try to make use of the ‘Shapes’ or ‘Insert Clipart’ functions of MS Word. Bonus Teacher’s Pet Points for imagination and creativity! If submitted to FOCUS, the filename format must be “LastnameFirstinitialPerXRA1-4”.



**Multiplication of a Vector by a Scalar**

**Pictorial Addition and Subtraction of Vectors**

**Using  
Vectors to  
Solve  
Problems**

**Components of a Vector**

**Re-constructing a Resultant  
Vector from its Components**