

I - Answer the questions by TRUE or FALSE and explain your answer or show why by a picture :

Let ABC be a regular triangle,

| Question | Answer | Explanation or Picture | Score |
|--|--------|------------------------|-------|
| 1. $\overrightarrow{AB} = \overrightarrow{AC} + \overrightarrow{BC}$? | | | |
| 2. $\overrightarrow{AB} = \overrightarrow{CB} - \overrightarrow{CA}$? | | | |
| 3. $\overrightarrow{AC} = \overrightarrow{AB} + \overrightarrow{BC}$? | | | |
| 4. $\overrightarrow{CB} = \overrightarrow{AB} + \overrightarrow{CA}$? | | | |
| 5. $\overrightarrow{BC} = \overrightarrow{AC} - \overrightarrow{AB}$? | | | |

II - Answer the questions by TRUE or FALSE and explain your answer or show why by a picture:

Let ABCD be an ordinary quadrilateral

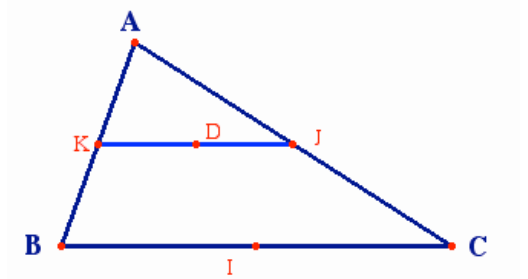
| Question | Answer | Explanation or Picture | Score |
|--|--------|------------------------|-------|
| 6. $\overrightarrow{AD} = \overrightarrow{AB} + \overrightarrow{AC}$? | | | |
| 7. $\overrightarrow{AB} + \overrightarrow{BC} + \overrightarrow{CD} = \overrightarrow{DA}$? | | | |
| 8. $\overrightarrow{AB} + \overrightarrow{DA} = \overrightarrow{DC} + \overrightarrow{CB}$? | | | |
| 9. $\overrightarrow{DA} + \overrightarrow{AB} + \overrightarrow{BC} + \overrightarrow{CD} = \vec{0}$ | | | |
| 10. $\overrightarrow{AB} + \overrightarrow{AD} = \overrightarrow{CB} + \overrightarrow{CD}$? | | | |

III - Answer the questions by TRUE or FALSE and explain your answer or show why by a picture: given the parallelogram (A,B,C,D). and I the Midpoint of [AC].

| Question | Answer | Explanation or Picture | Score |
|---|--------|------------------------|-------|
| 11. $\vec{AB} + \vec{AD} = \vec{CB} + \vec{CD} ?$ | | | |
| 12. $\vec{AB} = \vec{CD} ?$ | | | |
| 13. $\vec{BA} + \vec{BC} = 2\vec{BI} ?$ | | | |
| 14. $\vec{IB} + \vec{ID} = \vec{O} ?$ | | | |
| 15. $\vec{AI} + \vec{IC} = \vec{O} ?$ | | | |

IV - Let A,B,C be an ordinary triangle :

16. Build the point M such that $4\vec{MA} - 2\vec{MB} + 2\vec{MC} = \vec{O}$
(Justify your answer).



17. Let I,J,K be the midpoints of the sides, and D the midpoint of [JK].
Prove that $\vec{AI} = 2\vec{AD}$