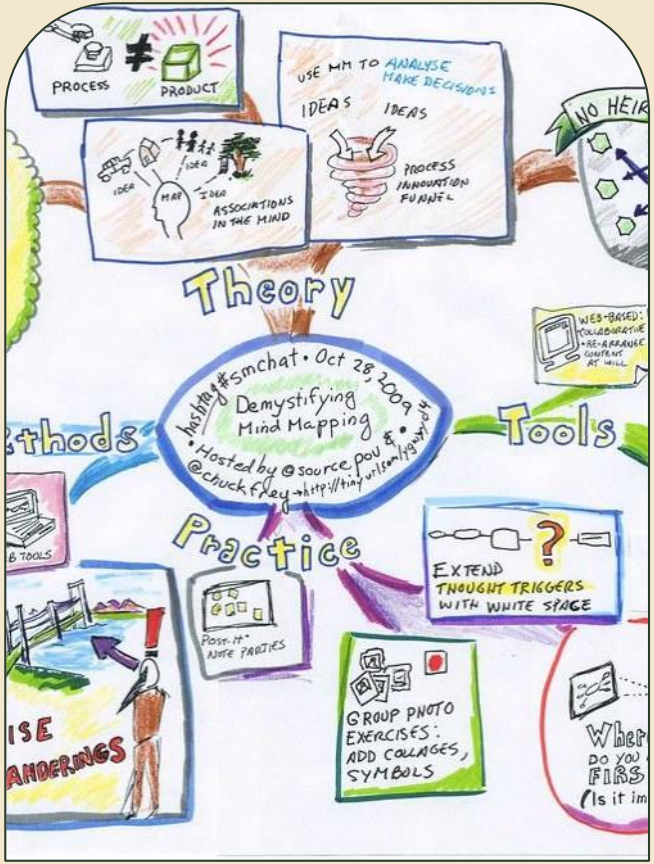
DP Math Internal Assessment Stage 1 - Topic Selection

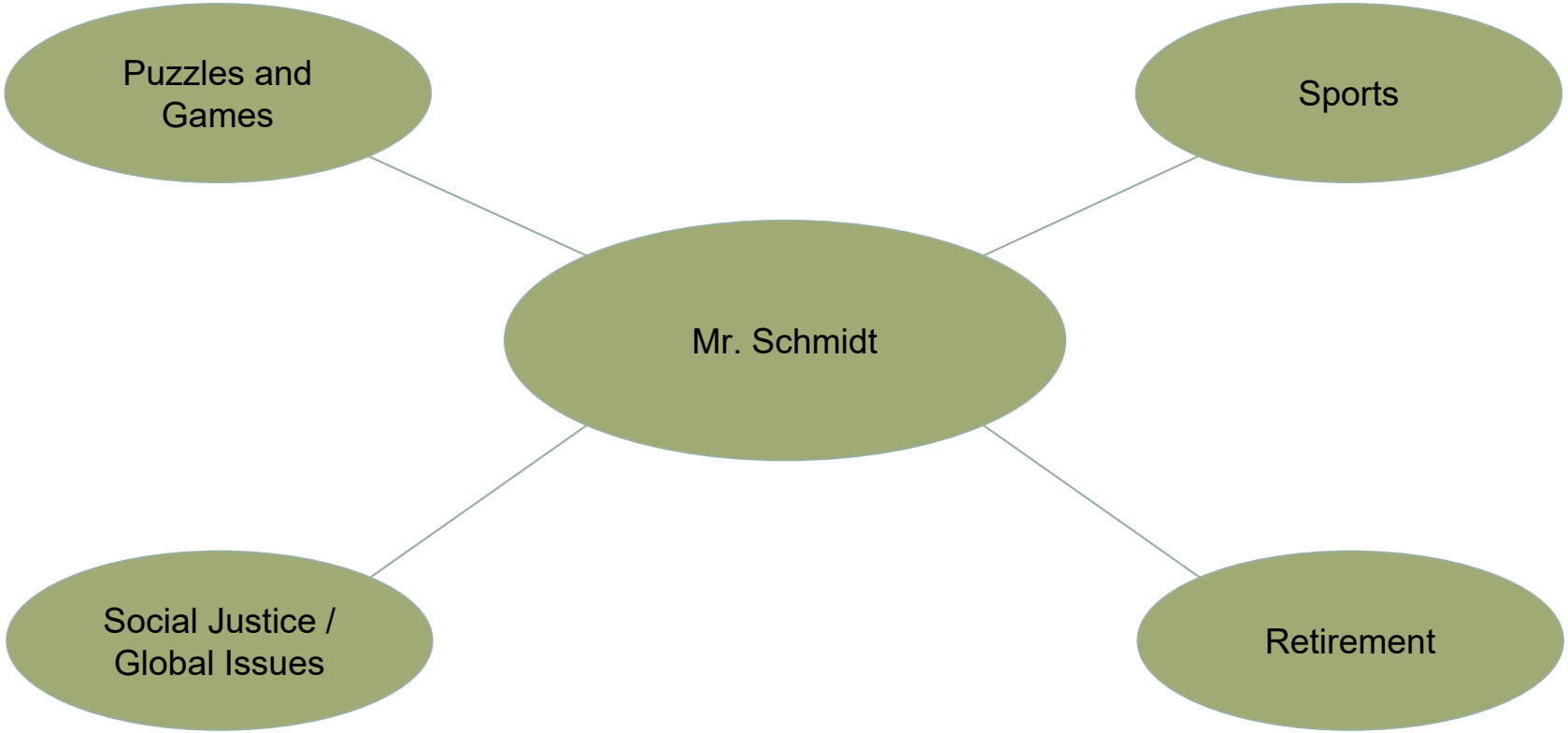
American Cooperative School of Tunis

Warm Up Activity

Create a Mind Map

1. Your name goes in the center.
2. Create some of the following branches:
    a. **Passions**
    Interests, hobbies, things you enjoy.
    b. **Experiences**
    Significant life events, travel, unique experiences.
    c. **Skills**
    Strengths and areas where you excel.
    d. **Challenges**
    Personal obstacles or areas for growth.
    e. **Values**
    Core values and beliefs.
    f. **Goals**
    Short and long term (university major, career)

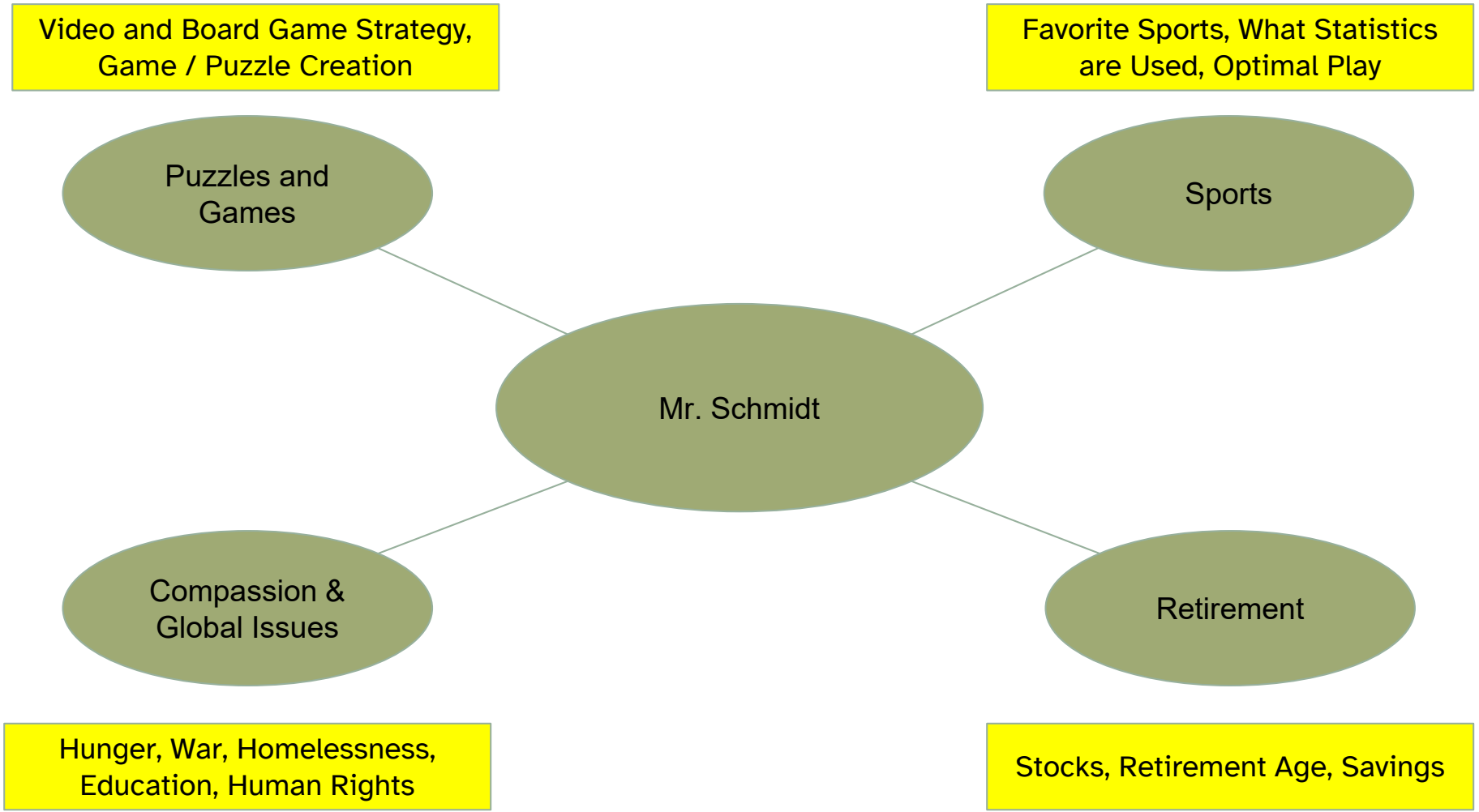



Puzzles and Games
Sports
Mr. Schmidt
Social Justice / Global Issues
Retirement

Warm Up Activity

Think of Big Questions

3. Look at the ends of your mind map branches. What are some specific things that intrigue you? What questions come to mind? What could you explore further? What do you wonder?

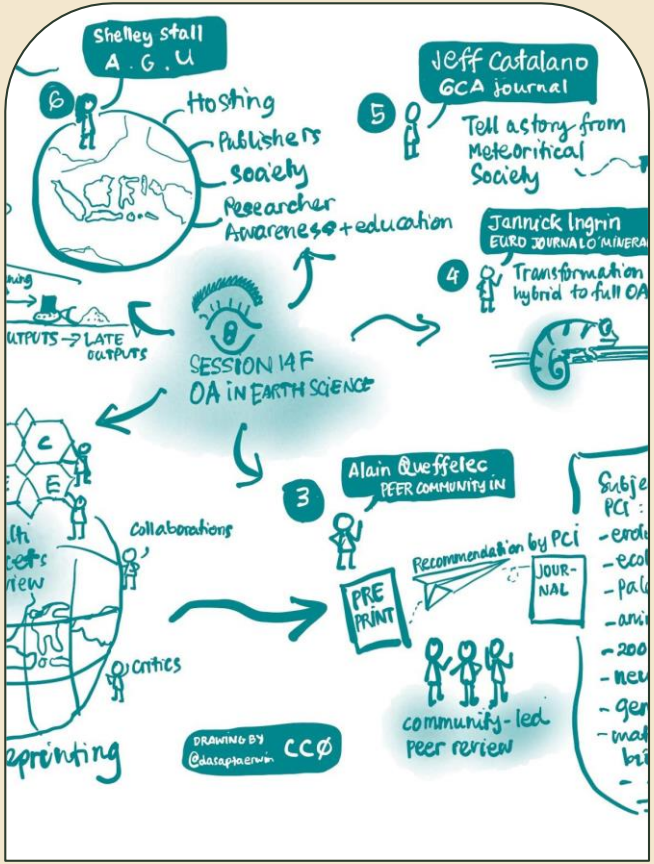

Video and Board Game Strategy, Game / Puzzle Creation
Favorite Sports, What Statistics are Used, Optimal Play
Puzzles and Games
Sports
Mr. Schmidt
Compassion & Global Issues
Retirement
Hunger, War, Homelessness, Education, Human Rights
Stocks, Retirement Age, Savings

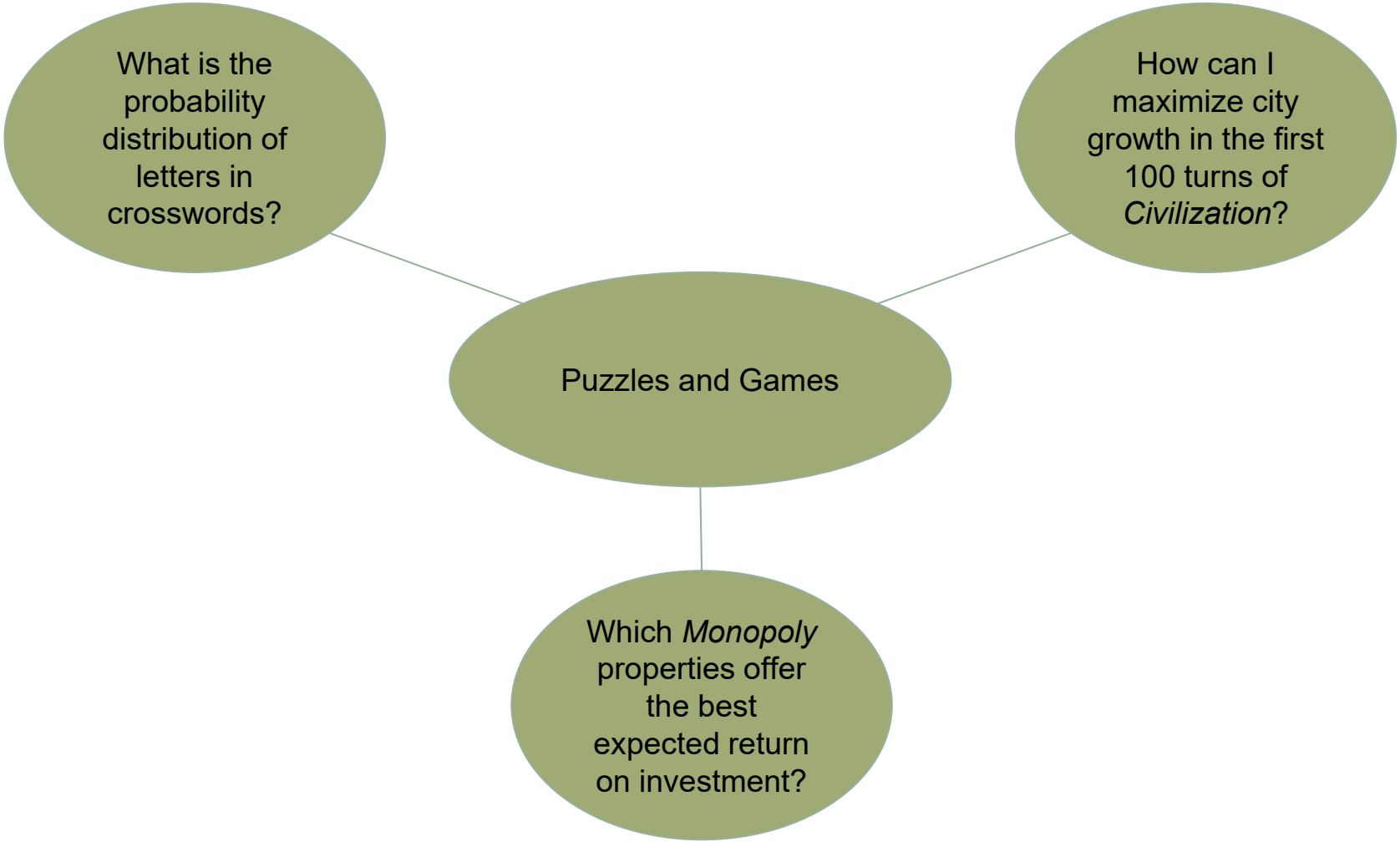
Warm Up Activity

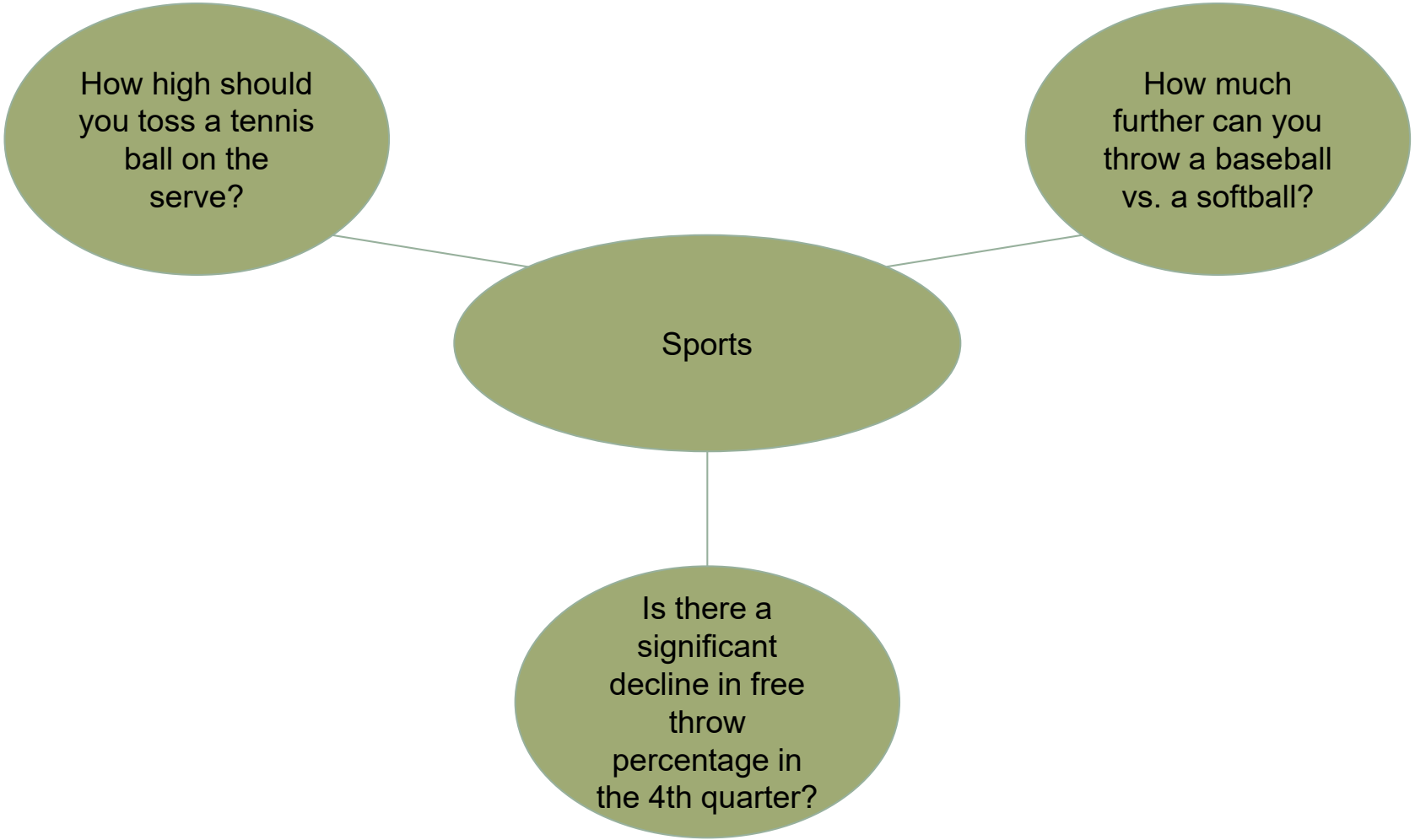
Make Mathematical Connections

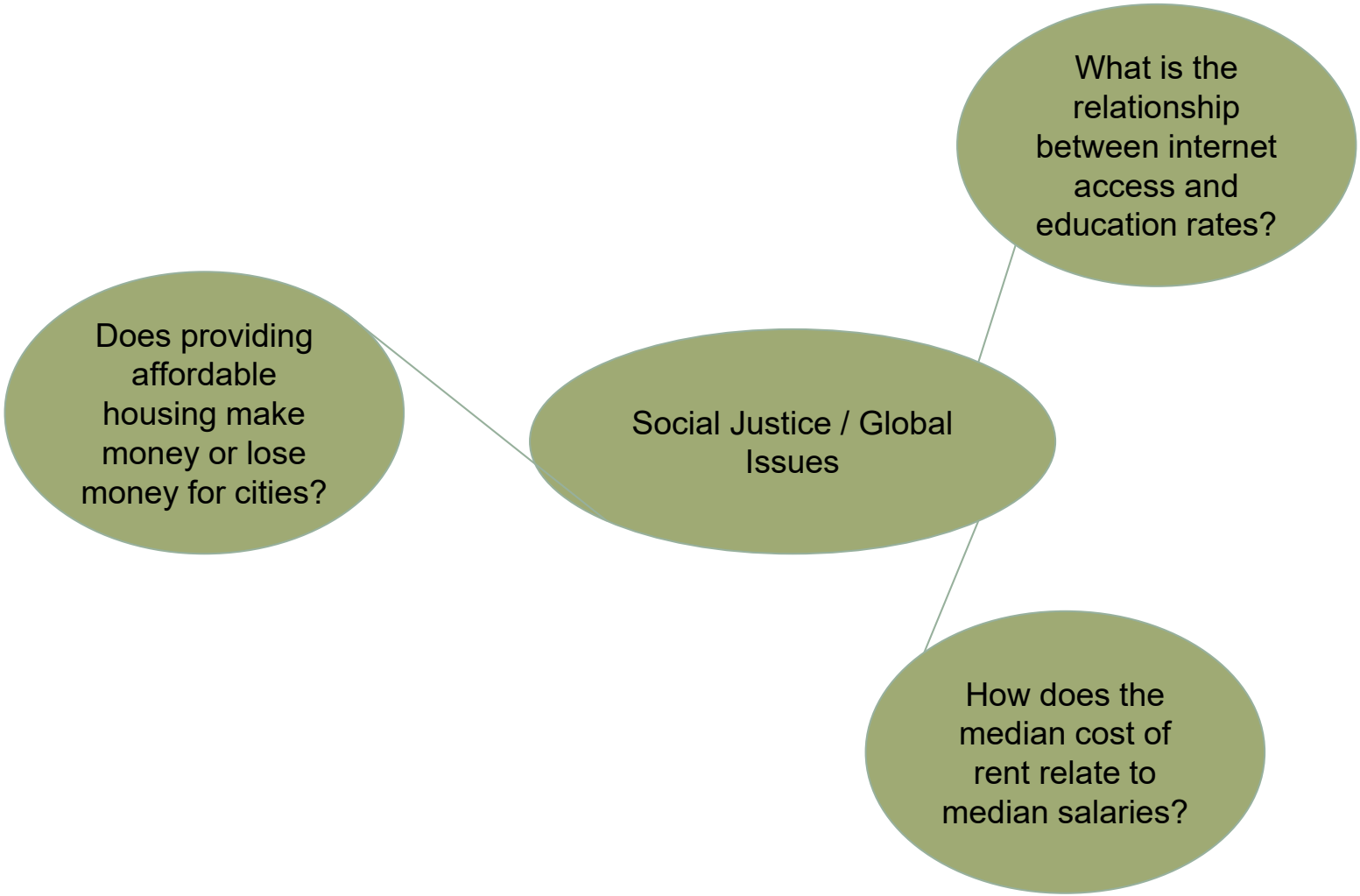
4. Can you ask a mathematical question about any of the ideas you generated?

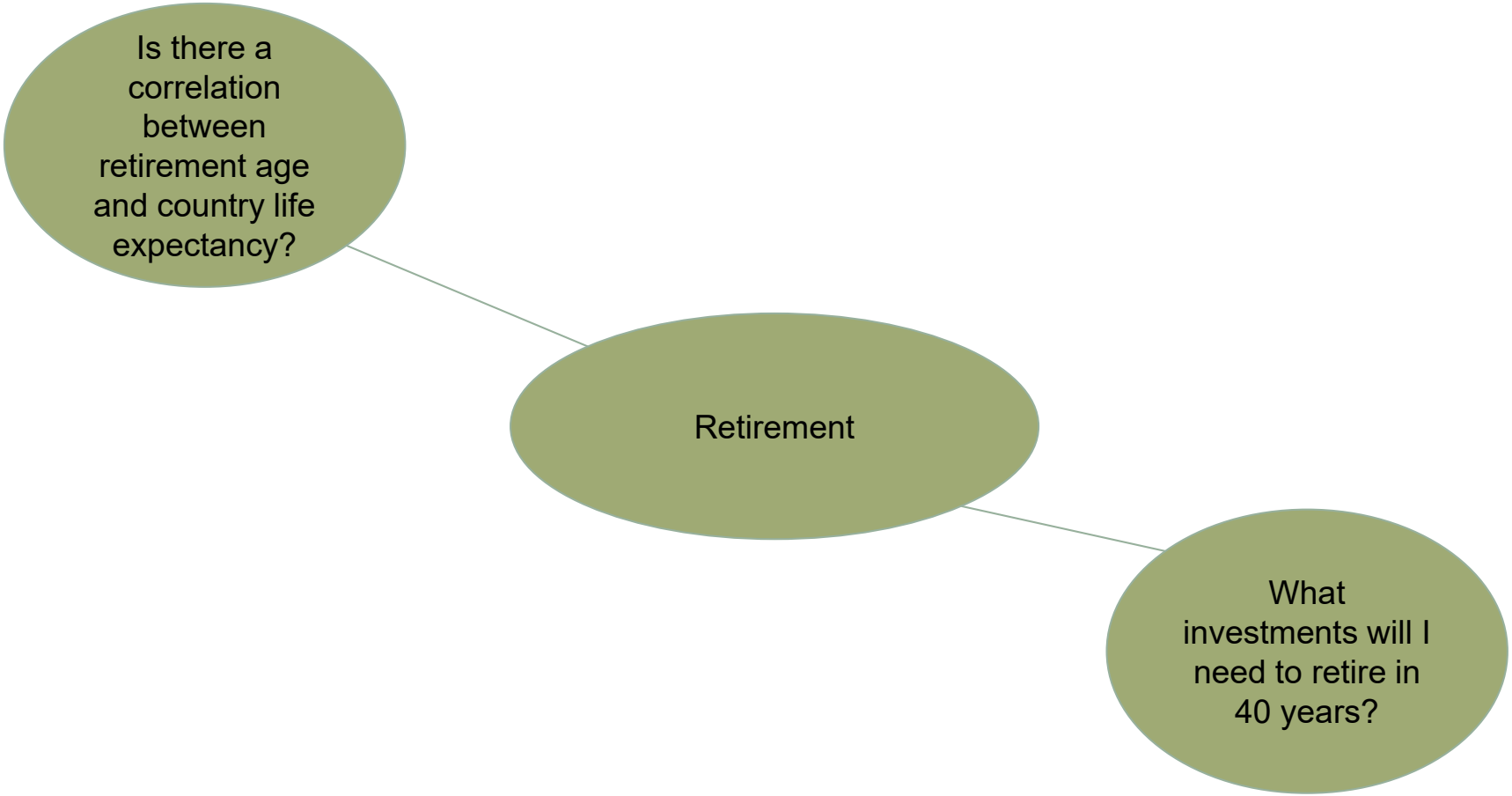
   Connect any mathematical ideas you know of to your questions.




What is the probability distribution of letters in crosswords?
How can I maximize city growth in the first 100 turns of *Civilization*?
Puzzles and Games
Which *Monopoly* properties offer the best expected return on investment?


How high should you toss a tennis ball on the serve?
How much further can you throw a baseball vs. a softball?
Sports
Is there a significant decline in free throw percentage in the 4th quarter?


What is the relationship between internet access and education rates?
Does providing affordable housing make money or lose money for cities?
Social Justice / Global Issues
How does the median cost of rent relate to median salaries?


Is there a correlation between retirement age and country life expectancy?
Retirement
What investments will I need to retire in 40 years?

The Internal Assessment in Mathematics

A written paper (12-20 pages) that is internally assessed and moderated by the IB. It is 20% of your final grade. The primary objective is to **explore** a topic of genuine interest, focused on appropriate mathematics.

Compared to the EE

The IA in mathematics is an exploration, not a research paper.

The focus is on your personal connections, engagement, and presentation.

The formatting is different.

Citation standards are just as important!

Compared to other Classes

The IA in mathematics is a mathematics paper.

Do not follow the format of other IAs.

Use proper MLA or APA format and citations.

Parts: Introduction, Body (may be broken down), Conclusion, Works Cited, Appendix

Unnecessary Parts: Table of Contents, Evaluation, Methodology, Abstract, Index

The Criteria

Assessment Criteria for the Exploration		
Criterion **A**	Maximum of **4** marks	Presentation
Criterion **B**	Maximum of **4** marks	Mathematical Communication
Criterion **C**	Maximum of **3** marks	Personal Engagement
Criterion **D**	Maximum of **3** marks	Reflection
Criterion **E**	Maximum of **6** marks	Use of Mathematics
Total score out of **20** marks.		

A: Presentation (4 pt)

COHERENCE ✦ ORGANIZATION ✦ CONCISENESS

ORGANIZATION

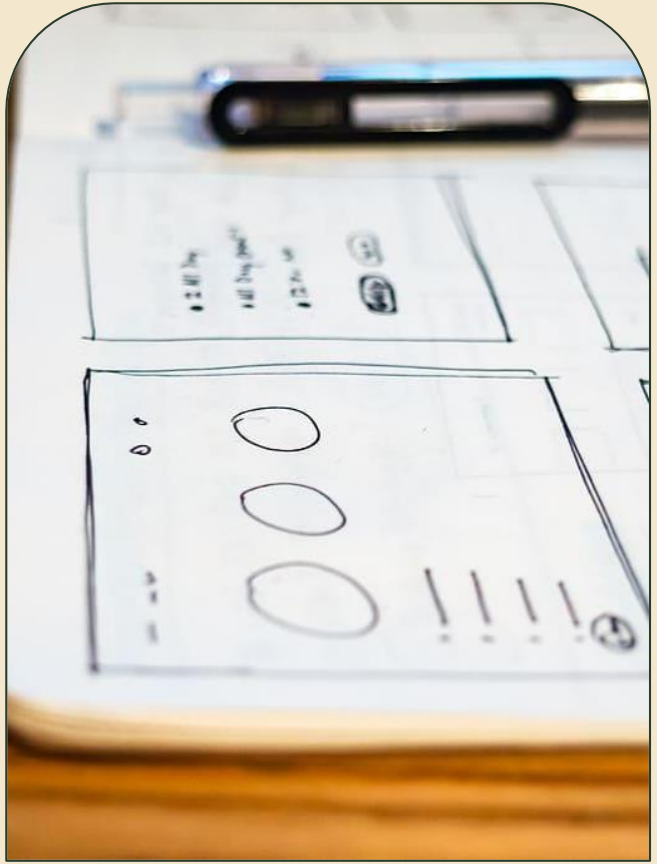
- **Aim** is explicitly stated.
- **Citations** are done properly in a works cited.

COHERENCE

- Paper flows from **section to section**.
- Paper follows **logical order**.
- **Graphs & tables** are in the right place.

CONCISENESS

- Large tables are in the **appendix**.
- Everything is related to **supporting the aim**.
- There are **no repeated calculations**.



B: Mathematical Communication (4 pt)

RELEVANCE ✦ APPROPRIATENESS ✦ CONSISTENCY

RELEVANCE

- Proper **vocabulary & notation** is used.

APPROPRIATENESS

- **Key terms** are defined.
- Graphs have **labeled axes.**
- **Tables** fit on one page.
- **Computer notation** is avoided.

CONSISTENCY

- All **variables** are defined.
- **Functions** have different names.
- **Approximate values** are shown with “≈” symbol.
- **Accuracy** is explained and justified.

C: Personal Engagement (3 pt)

INTEREST ✦ PREDICTION ✦ ORIGINALITY

INTEREST

- Interest in the **topic** is discussed.
- Interest in the **process** is evident.
- Interest is linked to the **aim**.

PREDICTION

- **Questions** are asked: “I wonder…” or “What if…?”

ORIGINALITY

- **Independent thought** is shown.
- Other **perspectives** are explored.
- **New learning** is described.
- **Data** is generated or collected with a survey instead of researched.

D: Reflection (3 pt)

CONSEQUENCES ✦ IMPACT ✦ PERSPECTIVES

CONSEQUENCES

- **Results** are discussed in relation to the topic and are linked to the **aim**.
- **Implications** are discussed.

IMPACT

- **New learning** is discussed.

PERSPECTIVES

- **Improvement** are given.
- **Limitations and extensions** are discussed.
- **Strengths and weaknesses** are explored.
- Different **historical & geographical perspectives** are explored.

E: Use of Mathematics (6 pt)

RELEVANCE ✦ UNDERSTANDING ✦ CORRECTNESS

RELEVANCE

- **Appropriate math** is chosen for accomplishing the aim.
- **Math at the level of the course, or above**, is chosen.

HL: Math **beyond SL** is chosen.
HL: Clear logic is shown when making arguments.

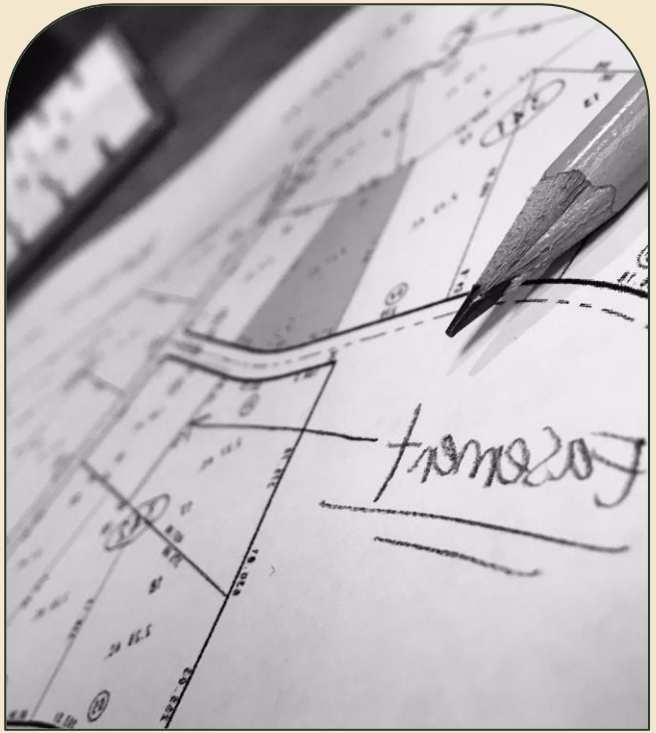
UNDERSTANDING

- **Understanding** of the math is shown.

CORRECTNESS

- **All work** is shown and done correctly and precisely.

HL: The bar is much higher for correctness.



Choosing a Topic

This can often be the most difficult part of the IA process in mathematics!

What can I do my IA about?

Do	Do Not
Interest Pick a topic that genuinely interests you.	**Present Research** Do not simply report on your research.
Manageable Opt for a topic that is manageable in terms of research and analysis.	**Copy Topics** Steer clear of topics that are repeatedly done by other students.

The Topic Proposal

Fill out the form ASAP

1. General Idea of the IA
2. Syllabus Topics
3. Reason for Choice
4. Aim
5. Overall Plan

Be prepared to start over.

Keep a growth mindset.

Rely on the experience and intent of your math teacher.