

WAMC Lab Template

Math Concept(s): Points, Lines, and Planes

Source / Text:

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Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

Students will be designing the living room of the apartment that has AT LEAST 8 planes (counting the floor, walls, and the ceiling).

Lab Plan

Lab Title: Points, Lines, and Planes

Prerequisite skills: Students should have an understanding of points, lines, and planes.

Lab objective: Students will be able to solve real-life problems involving points, lines, and planes.

Standards: (Note SPECIFIC relationship to Science, Technology, and/or Engineering)

Mathematics K–12 Learning Standards:

- HSG-CO.A.1 Know precise definition of ... line segment, based on the notions of point, line, distance along a line...

Standards for Mathematical Practice:

- 1 Make sense of problems and persevere in solving them.
- 4 Model with mathematics.
- 5 Use appropriate tools strategically.

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- Collaborative group work.
- Speaking and listening.

Engineering

- HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Leadership/21st Century Skills:

| | | |
|--|--|----------------|
| <u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.) | | |
| Global Awareness | Financial/Economic/Business/Entrepreneurial Literacy | Civic Literacy |
| Health/Safety Literacy | Environmental Literacy | |
| <u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.) | | |

LEARNING AND INNOVATION

Creativity and Innovation

- Think Creatively
- Work Creatively with Others
- Implement Innovations

Critical Thinking and Problem Solving

- Reason Effectively
- Use Systems Thinking
- Make Judgments and Decisions
- Solve Problems

Communication and Collaboration

- Communicate Clearly
- Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy

- Access and Evaluate Information
- Use and manage Information

Media Literacy

- Analyze Media
- Create Media Products

Information, Communications and Technology (ICT Literacy)

- Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability

- Adapt to Change
- Be Flexible

Initiative and Self-Direction

- Manage Goals and Time
- Work Independently
- Be Self-Directed Learners

Social and Cross-Cultural

- Interact Effectively with Others
- Work Effectively in Diverse Teams

Productivity and Accountability

- Manage Projects
- Produce Results

Leadership and Responsibility

- Guide and Lead Others
- Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Ruler
- Plane paper
- Pencils
- Glue Sticks or Tape

Set-Up Required:

- Form students in groups of two.
- Task to complete the design and be ready to present.

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

Cooperative Learning:

- Students will be working in groups of two. One is Idea Generator and One is Critic. Roles will be randomly rotated.

Expectations:

- It is expected that students will gain the understanding of plane, collinear points, intercepting planes, points that in more than one plane.

Timeline:

- 5 minutes for intro
- 15 minutes for activity
- 10 minutes to present

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Construction, Engineering

Career Applications

- Construction, Engineering

Optional or Extension Activities

- Name parallel planes
- Name three different planes that contain one point.

WAMC Lab: Points, Lines, and Planes

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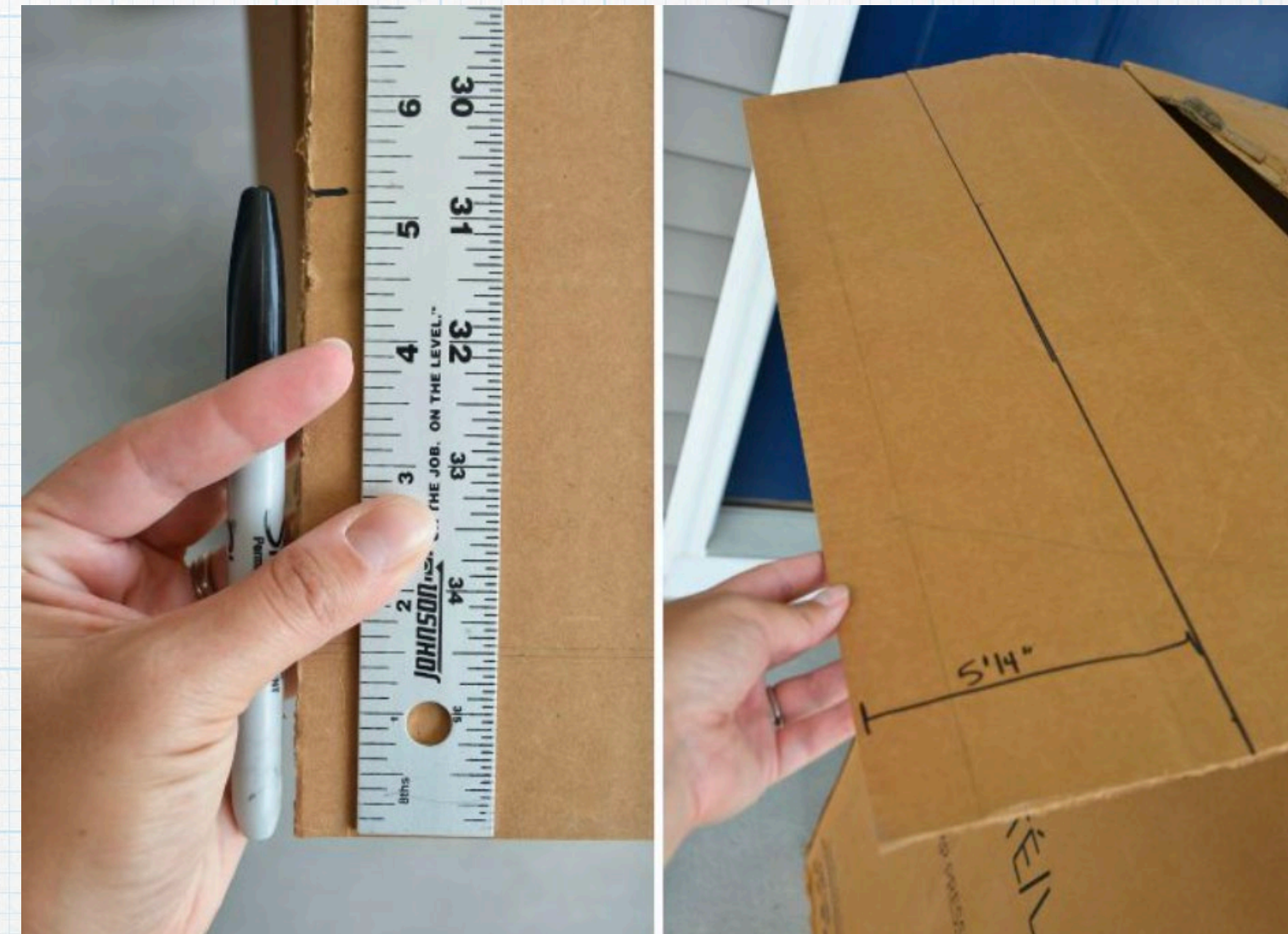
Look around the room

- * Name two points that are collinear with “A”
- * Name two planes that contain “B”
- * Name all the points that are in more than one plane.



Design!

- * You are a designer.
- * Your goal is to design a living room of an apartment that has at least 8 planes (counting the floor, walls, and the ceiling).



Extension Questions

- * Show parallel planes
- * Show three different planes that contain one point
- * Show points that are more than in one plane

