

Lab Framework

Text: Applied Mathematics

Unit number and title: 17 Graphing Data

Short Description: Use coordinate data to create a class puzzle.

Developed by: Ron Noble

Contact Information: (509) 684-7800

Date: 1997

Lab Title Plotting Data Puzzle

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
 - To familiarize students with Cartesian coordinate systems
 - To plot ordered pairs on a graph
 - To illustrate need for accuracy in group work
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
- **Vocabulary**
- **Materials List**
 - Graph paper or coordinate paper trimmed to 8" x 10"
 - 1 - red felt pen per group
 - 1 - blue felt pen per group
 - 1 - black felt pen per group
 - ?# - envelopes with plotting data*
 - * If the envelopes are not numbered, puzzled can be more of a challenge when all pages have been plotted!(THIS MATH IS FUN)
- **GLEs (State Standards) addressed**
 - Math: (Math)
 - Reading: (Reading)
 - Writing: (Writing)
- **Leadership Skills**
- **SCAN Skills/Workplace Skills**
- **Set-up information**
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)
 - 5 groups w/ 5 or 6 students each
- **Teacher Assessment of student learning** (scoring guide, rubric)
- **Summary of learning** (to be finished after student completes lab)

- discuss real world application of learning from lab
- opportunity for students to share/present learning

- **Optional activities**

- **Career Applications**

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LAB TITLE: _____

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
Assembly work requires accuracy across different departments. Each team will construct a puzzle piece and join it to the class puzzle.
- **Grouping instructions and roles**
Teams of five to six students
- **Procedures** – steps to follow/instructions
 1. Each student in lab group will be given an envelope containing a set of coordinate data.
 2. Find and label both points with a pencil.
 3. Draw a line connecting the first point and the second point using the pencil and a straight edge.
 4. Trace over each one with appropriate color felt pen.
 5. When you are finished you will assemble the puzzle pieces you have created as a class.
- **Outcome instructions**
- **Assessment instructions** (peer-teacher)

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Coordinate Points

Envelope 1

1. BLK FROM (-10,15) TO (20,15)
2. BLK FROM (-10,15) TO (-10,-25)
3. RED FROM (-5,10) TO (20,10)
4. RED FROM (-5,10) TO (-5,-25)
5. RED FROM (5,-5) TO (20,-5)
6. RED FROM (5,-5) TO (5,-15)
7. RED FROM (5,-15) TO (15,-15)
8. RED FROM (15,-15) TO (15,-25)
9. BLU FROM (10,-10) TO (20,-10)
10. BLU FROM (20,-10) TO (20,-25)

Envelope 4

1. BLK FROM (-20,15) TO (20,15)
2. RED FROM (-20,10) TO (20,10)
3. RED FROM (-20,-5) TO (-10,-5)
4. RED FROM (-10,-5) TO (-10,-15)
5. RED FROM (-10,-15) TO (-15,-15)
6. RED FROM (-15,-15) TO (-15,-25)
7. BLU FROM (-15,-10) TO (-20,-10)
8. RED FROM (20,-5) TO (5,-5)
9. RED FROM (5,-5) TO (5,-25)
10. RED FROM (20,-15) TO (15,-15)
11. RED FROM (15,-15) TO (15,-20)
12. RED FROM (15,-20) TO (20,-20)
13. BLU FROM (20,-10) TO (10,-10)
14. BLU FROM (10,-10) TO (10,-25)

Envelope 2

1. BLK FROM (-20,15) TO (20,15)
2. RED FROM (-20, 10) TO (20,10)
3. RED FROM (-20,-5) TO (-5,-5)
4. RED FROM (-5,-5) TO (-5,-15)
5. RED FROM (-5,-15) TO (-15,-15)
6. RED FROM (-15,-15) TO (-15,-25)
7. BLU FROM (-20,-10) TO (-10,-10)
8. RED FROM (5,-25) TO (5,-5)
9. RED FROM (5,-5) TO (15,-5)
10. RED FROM (15,-5) TO (15,-20)
11. RED FROM (15,-20) TO (20,-20)
12. BLU FROM (10,-10) TO (10,-25)

Envelope 5

1. BLK FROM (-20,15) TO (10,15)
2. BLK FROM (10,15) TO (10,-25)
3. RED FROM (-20,10) TO (5,10)
4. RED FROM (5,10) TO (5,-25)
5. RED FROM (-20,-5) TO (-10,-5)
6. RED FROM (-10,-5) TO (-10,-15)
7. RED FROM (-10,-15) TO (-20,-15)
8. RED FROM (-20,-20) TO (-10,-20)
9. RED FROM (-10,-20) TO (-10,-25)

Envelope 3

1. BLK FROM (-20,15) TO (20,15)
2. RED FROM (-20,10) TO (20,10)
3. RED FROM (-20,-20) TO (-15,-20)
4. RED FROM (-15,-20) TO (-15,-5)
5. RED FROM (-15,-5) TO (-5,-5)
6. RED FROM (-5,-5) TO (-5,-25)
7. BLU FROM (-10,-10) TO (-10,-25)
8. RED FROM (20,-5) TO (10,-5)
9. RED FROM (10,-5) TO (10,-15)
10. RED FROM (10,-15) TO (15,-15)
11. RED FROM (15,-15) TO (15,-25)
12. BLU FROM (15,-10) TO (20,-10)

Envelope 6

1. BLK FROM (-10,25) TO (-10,-25)
2. RED FROM (-5,25) TO (-5,-25)
3. RED FROM (15,25) TO (15,5)
4. RED FROM (15,5) TO (20,5)
5. BLU FROM (20,25) TO (20,10)
6. RED FROM (5,-25) TO (5,-5)
7. RED FROM (5,-5) TO (15,-5)
8. RED FROM (15,-5) TO (20,-15)
9. BLU FROM (10,-25) TO (10,-15)
10. BLU FROM (10,-15) TO (20,-25)

Envelope 7

1. RED FROM (-15,25) TO (-15,5)
2. RED FROM (-15,5) TO (-20,5)
3. RED FROM (5,25) TO (5,5)
4. RED FROM (5,5) TO (15,5)
5. RED FROM (15,5) TO (15,20)
6. RED FROM (15,20) TO (20,20)
7. BLU FROM (10,10) TO (10,25)
8. RED FROM (-20,-15) TO (-15,-5)
9. RED FROM (-15,5) TO (-5,-5)
10. RED FROM (-5,-5) TO (-5,-25)
11. BLU FROM (-20,-25) TO (-10,-15)
12. BLU FROM (-10,-15) TO (-10,-25)
13. RED FROM (20,-5) TO (15,-5)
14. RED FROM (15,-5) TO (7.5,-25)
15. BLU FROM (20,-10) TO (12.5,-25)
16. RED FROM (20,-15) TO (15,-25)

Envelope 9.

1. RED FROM (-15,25) TO (-15,15)
2. RED FROM (-15,15) TO (-10,15)
3. RED FROM (-10,15) TO (-10,5)
4. RED FROM (-10,5) TO (-20,5)
5. BLU FROM (-20,10) TO (-15,10)
6. RED FROM (-20,-5) TO (-5,-5)
7. RED FROM (-5,-5) TO (-5,-15)
8. RED FROM (-5,-15) TO (-15,-15)
9. RED FROM (-15,-15) TO (-15,-25)
10. BLU FROM (-10,-10) TO (-20,-10)
11. RED FROM (5,25) TO (5,20)
12. RED FROM (5,20) TO (20,20)
13. RED FROM (20,20) TO (20,15)
14. RED FROM (20,15) TO (5,15)
15. RED FROM (5,15) TO (5,5)
16. RED FROM (5,5) TO (20,5)
17. BLU FROM (10,10) TO (20,10)
18. RED FROM (20,-20) TO (15,-20)
19. RED FROM (15,-20) TO (15,-5)
20. RED FROM (15,-5) TO (5,-5)
21. RED FROM (5,-5) TO (5,-25)
22. BLU FROM (10,-10) TO (10,-25)

Envelope 8

1. RED FROM (-5,25) TO (-5,5)
2. RED FROM (-5,5) TO (-15,5)
3. RED FROM (-15,5) TO (-15,20)
4. RED FROM (-15,20) TO (-20,20)
5. BLU FROM (-20,25) TO (-10,25)
6. BLU FROM (-10,25) TO (-10,10)
7. RED FROM (15,25) TO (15,15)
8. RED FROM (15,15) TO (10,15)
9. RED FROM (10,15) TO (10,5)
10. RED FROM (10,5) TO (20,5)
11. BLU FROM (20,25) TO (20,10)
12. BLU FROM (20,10) TO (15,10)
13. RED FROM (-20,-5) TO (-15,-5)
14. RED FROM (-15,-5) TO (-7.5,-25)
15. BLU FROM (-20,-10) TO (-12.5,-25)
16. RED FROM (-20,-15) TO (-15,-25)
17. RED FROM (20,-5) TO (5,-5)
18. RED FROM (5,-5) TO (5,-15)
19. RED FROM (5,-15) TO (15,-15)
20. RED FROM (15,-15) TO (15,-25)
21. BLU FROM (10,-10) TO (20,-10)
22. BLU FROM (20,-10) TO (20,-25)

Envelope 10

1. BLK FROM (10,25) TO (10,-25)
2. RED FROM (5,25) TO (5,-25)
3. RED FROM (-10,25) TO (-10,5)
4. RED FROM (-10,5) TO (-20,5)
5. BLU FROM (-20,25) TO (-15,25)
6. BLU FROM (-15,25) TO (-15,10)
7. BLU FROM (-15,10) TO (-20,10)
8. RED FROM (-20,-20) TO (-15,-20)
9. RED FROM (-15,-20) TO (-15,-5)
10. RED FROM (-15,-5) TO (-5,-5)
11. RED FROM (-5,-5) TO (-5,-25)
12. BLU FROM (-10,-10) TO (-10,-25)

Envelope 11

1. BLK FROM (-10,25) TO (-10,-25)
2. RED FROM (-5,25) TO (-5,-25)
3. RED FROM (5,25) TO (5,5)
4. RED FROM (5,5) TO (15,5)
5. RED FROM (15,5) TO (15,25)
6. RED FROM (15,25) TO (20,15)
7. BLU FROM (10,25) TO (10,10)

Envelope 13

1. RED FROM (-20,-5) TO (-10,-5)
2. RED FROM (-10,-5) TO (-10,-15)
3. RED FROM (-10,-15) TO (-15,-15)
4. RED FROM (-15,-15) TO (-15,-25)
5. BLU FROM (-15,-10) TO (-20,-10)
6. RED FROM (-7.5,25) TO (0,5)
7. RED FROM (0,5) TO (-10,5)
8. RED FROM (-10,5) TO (-15,15)
9. RED FROM (-15,-5) TO (-20,15)
10. BLU FROM (-5,10) TO (-12.5,25)
11. BLU FROM (-10,15) TO (-20,20)
12. RED FROM (15,25) TO (15,5)
13. RED FROM (15,5) TO (20,5)
14. BLU FROM (20,25) TO (20,10)
15. RED FROM (20,-5) TO (5,-5)
16. RED FROM (5,-5) TO (5,-25)
17. BLU FROM (20,-10) TO (10,-10)
18. BLU FROM (10,-10) TO (10,-25)
19. BLU FROM (20,-15) TO (15,-15)
20. BLU FROM (15,-15) TO (15,-20)
21. BLU FROM (15,-20) TO (20,-20)

Envelope 12

1. RED FROM (20,15) TO (-15,25)
2. RED FROM (-15,25) TO (-15,5)
3. RED FROM (-15,5) TO (-5,5)
4. RED FROM (-5,5) TO (-5,25)
5. BLU FROM (-10,10) TO (-10,25)
6. RED FROM (7.5,25) TO (0,5)
7. RED FROM (0,5) TO (10,5)
8. RED FROM (10,5) TO (15,15)
9. RED FROM (15,15) TO (20,15)
10. BLU FROM (12.5,25) TO (7.5,10)
11. BLU FROM (12.2,20) TO (20,20)
12. RED FROM (20,-5) TO (10,-5)
13. RED FROM (10,-5) TO (10,-15)
14. RED FROM (10,-15) TO (15,-15)
15. RED FROM (15,-15) TO (15,-25)
16. BLU FROM (15,-10) TO (20,-10)
17. BLU FROM (20,-10) TO (20,-25)
18. RED FROM (15,25) TO (20,25)

Envelope 14

1. RED FROM (-15,25) TO (-15,5)
2. RED FROM (-15,5) TO (-20,5)
3. RED FROM (-20,-5) TO (-10,-5)
4. RED FROM (-10,-5) TO (-10,-15)
5. RED FROM (-10,-15) TO (-20,-15)
6. BLU FROM (-15,-10) TO (-20,-10)
7. RED FROM (-20,-20) TO (-10,-20)
8. RED FROM (-10,-20) TO (-10,-25)
9. BLU FROM (-20,-25) TO (-15,-25)
10. RED FROM (5,25) TO (5,5)
11. RED FROM (5,5) TO (15,5)
12. RED FROM (15,5) TO (15,20)
13. RED FROM (15,20) TO (20,20)
14. BLU FROM (10,25) TO (10,10)
15. BLU FROM (10,25) TO (20,25)

Envelope 15

1. BLK FROM (10,25) TO (10,-25)
2. RED FROM (5,25) TO (5,-25)
3. RED FROM (-5,25) TO (-5,5)
4. RED FROM (-5,5) TO (-15,5)
5. RED FROM (-15,5) TO (-15,20)
6. RED FROM (-15,20) TO (-20,20)
7. BLU FROM (-20,25) TO (-10,25)
8. BLU FROM (-10,25) TO (-10,10)

Envelope 18

1. RED FROM (-15,25) TO (-15,15)
2. RED FROM (-15,15) TO (-10,15)
3. RED FROM (-10,15) TO (-10,5)
4. RED FROM (-10,5) TO (-20,5)
5. BLU FROM (-15,10) TO (-20,10)
6. RED FROM (-15,-25) TO (-15,-5)
7. RED FROM (-15,-5) TO (-5,-5)
8. RED FROM (-5,-5) TO (-5,-25)
9. BLU FROM (-10,-10) TO (-10,-25)
10. RED FROM (5,-25) TO (5,-5)
11. RED FROM (5,-5) TO (15,-5)
12. RED FROM (15,-5) TO (15,-25)
13. BLU FROM (10,-10) TO (10,-25)
14. RED FROM (5,25) TO (5,20)
15. RED FROM (5,20) TO (20,20)
16. RED FROM (20,20) TO (20,15)
17. RED FROM (20,15) TO (5,15)
18. RED FROM (5,15) TO (5,5)
19. RED FROM (5,5) TO (20,5)
20. BLU FROM (10,25) TO (20,25)
21. BLU FROM (10,10) TO (20,10)

Envelope 16

1. BLK FROM (-10,25) TO (-10,-25)
2. RED FROM (-5,25) TO (-5,-25)

Envelope 17

1. RED FROM (-15,-25) TO (-15,-5)
2. RED FROM (-15,-5) TO (15,-5)
3. RED FROM (15,-5) TO (15,-15)
4. RED FROM (15,-15) TO (-5,-15)
5. RED FROM (-5,-15) TO (-5,-20)
6. RED FROM (-5,-20) TO (5,-20)
7. RED FROM (5,-20) TO (5,-25)
8. BLU FROM (10,-10) TO (-10,-10)
9. BLU FROM (-10,-10) TO (-10,-25)
10. BLU FROM (-10,-25) TO (0,-25)
11. RED FROM (15,25) TO (15,15)
12. RED FROM (15,15) TO (10,15)
13. RED FROM (10,15) TO (10,5)
14. RED FROM (10,5) TO (20,5)
15. BLU FROM (20,25) TO (20,10)
16. BLU FROM (20,10) TO (15,10)

Envelope 19

1. RED FROM (-10,25) TO (-10,5)
2. RED FROM (-10,5) TO (-20,5)
3. BLU FROM (-20,25) TO (-15,25)
4. BLU FROM (-15,25) TO (-15,10)
5. BLU FROM (-15,10) TO (-20,10)
6. RED FROM (-15,-25) TO (-15,-5)
7. RED FROM (-15,-5) TO (-5,-5)
8. RED FROM (-5,-5) TO (5,-20)
9. RED FROM (5,-20) TO (5,-5)
10. RED FROM (5,-5) TO (15,-5)
11. RED FROM (15,-5) TO (15,-25)
12. BLU FROM (-10,-10) TO (-10,-25)
13. BLU FROM (-10,-10) TO (0,-25)
14. BLU FROM (10,-10) TO (10,-25)

Envelope 20

1. BLK FROM (10,25) TO (10,-25)
2. RED FROM (5,25) TO (5,-25)

Envelope 23

1. RED FROM (-15,25) TO (-15,5)
2. RED FROM (-15,5) TO (15,5)
3. RED FROM (15,5) TO (15,25)
4. RED FROM (-5,25) TO (-5,15)
5. RED FROM (-5,15) TO (5,15)
6. RED FROM (5,15) TO (5,25)
7. BLU FROM (-10,25) TO (-10,10)
8. BLU FROM (-10,10) TO (10,10)
9. BLU FROM (10,10) TO (10,25)

Envelope 21

1. BLK FROM (-10,25) TO (-10,-15)
2. BLK FROM (-10,-15) TO (20,-15)
3. RED FROM (-5,25) TO (-5,-10)
4. RED FROM (-5,-10) TO (20,-10)

Envelope 24

1. BLK FROM (-20,-15) TO (20,-15)
2. RED FROM (-20,-10) TO (20,-10)
3. RED FROM (-15,25) TO (-15,5)
4. RED FROM (-15,5) TO (-5,5)
5. RED FROM (-5,5) TO (-5,20)
6. RED FROM (-5,20) TO (5,5)
7. RED FROM (5,5) TO (15,5)
8. RED FROM (15,5) TO (15,25)
9. BLU FROM (-10,10) TO (-10,25)
10. BLU FROM (0,25) TO (10,10)
11. BLU FROM (10,10) TO (10,25)

Envelope 22

1. BLK FROM (-20,-15) TO (20,-15)
2. RED FROM (-20,-10) TO (20,-10)
3. RED FROM (-15,20) TO (-15,5)
4. RED FROM (-15,5) TO (-5,5)
5. RED FROM (-5,5) TO (-5,20)
6. RED FROM (-5,20) TO (5,20)
7. RED FROM (5,20) TO (5,25)
8. BLU FROM (-10,25) TO (-10,10)

Envelope 25

1. BLK FROM (-20,-15) TO (10,-15)
2. BLK FROM (10,-15) TO (10,25)
3. RED FROM (-20,-10) TO (5,-10)
4. RED FROM (5,-10) TO (5,25)

Lab Data Collection

Student: _____ **Date:** _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)

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