Title: Expanding Binomials Using Pascal’s Triangle

Subject: Math

Grade: 9-12

Time: 55 min.

Anticipatory Set: Set out a few French decorations.

 Ask students to name a few French places, foods, people, etc.

 Ask if students know a famous French mathematician.

Objective: Students will define the terms binomial, coefficient, and variables.

 Students will expand binomials and see connection to Pascal’s triangle.

 Students will discuss and research about Blaise Pascal.

Purpose: To use Pascal’s triangle to solve math problems.

Materials: Worksheet with Pascal’s triangle

 Advanced Math Book

 Reflections Self-Assessment Worksheet

 Self-Assessment Rubric

 Pencil

 Colored Pencils

Procedure: 1. Hand out Pascal’s triangle worksheet.

 2. What patterns do you see?

 3. Have students fill in missing numbers individually.

 4. Have students share in groups, of 2 or 3, methods used to solve triangle

 worksheet and reasons why their solution makes sense. (low ceiling)

 5. Ask students if they saw the problem the same or differently?

 6. Ask students how they can connect Pascal’s triangle to expanding

 binomials.

 7. Define binomial, coefficient, and variables.

 8. Group students in pairs and have them create a math problem for others to

 solve. (high ceiling)

 9. If time allows, have students color in the patterns on Pascal’s triangle.

Guided Practice:

 Work a practice problem expanding a binomial using Pascal’s triangle

 together as a class.

Independent Practice:

 Have students work a math problem created from other students.

Formative Assessment:

 Students complete a reflections self-assessment answering the following

 questions:

1. What was the main idea you learned today?
2. What is something you are struggling with or have questions about?
3. How could the ideas from today’s lesson be used in life?

Student Self-Assessment:

|  |  |  |  |
| --- | --- | --- | --- |
|  | I can do this independently and explain my solution to others. | I can do this independently, but need help explaining my solution to others. | I need more time to understand the concept and how to explain it to others.  |
| See patterns in Pascal’s triangle and fill in missing numbers. |  |  |  |
| Define terms. |  |  |  |
| Able to expand binomials. |  |  |  |
| See connections between expanding binomials and Pascal’s triangle.  |  |  |  |
| Create a math problem for another student.  |  |  |  |

Review/Closure:

 Teacher reviews definitions of terms, how to expand binomials, and how

 to explain the connection to Pascal’s triangle.