3.4 Playing the Integer Product Game

Applying Multiplication and Division of Integers

You have developed algorithms for adding, subtracting, multiplying, and dividing integers. You will apply your multiplication and division algorithms in the Integer Product Game.

The game board consists of a list of factors and a grid of products. To play, you need a game board, two paper clips, and colored markers or chips.

Integer Product Game

Rules

1. Player A puts a paper clip on a number in the factor list.
2. Player B puts the other paper clip on any number in the factor list, including the number chosen by Player A. Player B then marks the product of the two factors on the product grid.
3. Player A moves *either one* of the paper clips to another number. He or she then marks the new product with a different color than Player B.
4. Each player takes turns moving a paper clip and marking a product. A product can only be marked by one player.
5. The winner is the first player to mark four squares in a row (up and down, across, or diagonally).

–36	–30	–25	–24	–20	–18
–16	–15	–12	–10	–9	–8
–6	–5	–4	–3	–2	–1
1	2	3	4	5	6
8	9	10	12	15	16
18	20	24	25	30	36

Factors:

–6 –5 –4 –3 –2 –1 1 2 3 4 5 6

- What product would give the least number? What product would give the greatest number?

Problem 3.4

Play the Integer Product Game with positive and negative factors.
Look for strategies for picking the factors and products.

A What strategies did you find useful in playing the game? Explain.

B What pair(s) of numbers from the factor list will give each product?

1. 5
2. -12
3. 12
4. -25

C Your opponent puts a paper clip on -4. List five products that you can form, assuming they are not marked. Tell where you would need to put your paper clip in each case.

D Describe the moves to make in each case.

1. The paper clips are on -5 and -2. You want a product of -15.
2. The paper clips are on -3 and -2. You want a product of -6.
3. Your opponent will win with 24. What numbers should you avoid with your paper clip moves?

E Mia thinks the game could also be called the Division Game. Explain why Mia might think this.

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