

Operating in Order

Purpose

Students will learn that multiplication and division are performed before addition and subtraction in expressions without parentheses.

Materials

For each group of 4 students: copies of sentence strips from Black Line Master (BLM) *Operating In Order*

Activity

A. Pre-Activity Preparation

1. Copy the BLM *Operating In Order* and cut out the sets of sentence strips.
2. Bundle the sets of sentence strips with paper clips or elastic bands, so that the sets will not become mixed.

B. Group Activity

1. Divide students into groups of four and give each group one set of sentence strips, handing one strip to each student in the group.
2. Tell students that each group has all the information they need to solve their problem, but that they must share their sentence strips in order to fit the pieces of the problem together.
3. Have the groups work on their problem and discover how to solve it.
4. When a group has solved its problem, ask students to write a single number sentence that links the given information to the answer to the problem: e.g., $70 - 2 \times 30 = 10$, $80 + 3 \times 50 = 230$.
5. As a group finishes one set of sentence strips, give them another set, again handing one strip to each student in the group.

C. Discussion

When students have completed the problems, discuss with them the number sentences they have written. Emphasize that they did not, for example, compute $70 - 2$ first in the sentence $70 - 2 \times 30$, but performed the multiplication first because that made sense in the problem. Explain to them that this is how we always compute number sentences that include both multiplication/division and addition/subtraction.



INCORPORATING TECHNOLOGY

Have students test several calculators to see whether they follow the rule of multiplication/division before addition/subtraction. Have students use sentences like $70 - 2 \times 30 = 10$. (They will probably find that scientific calculators do follow the rule, but some simpler calculators do not.)



connecting across the curriculum

English/ Language Arts








Have students write their own sets of sentence strips about situations that involve both multiplication/division and addition/subtraction.

Standards Links 4.2.2, 4.2.3, 4.2.4

Questions for Review

Basic Concepts and Processes

During the activity, discuss the following questions with students to gauge their understanding of the indicators:

-  How do your group's sentence strips fit together?
 -  Which strip do you think you should start with?
 -  Which strip asks you a question?
 -  Which numbers should you [*multiply/divide/add/subtract*]?
 -  Why should you do that?
 -  Have you written a number sentence for the whole problem?
 -  In your number sentence, which operation do you do first?
-

Operating in Order

You have 70 cents.	You buy 2 erasers.
One eraser costs 30 cents.	How much money do you have left?

You buy one drink for 80 cents.	You buy 3 doughnuts.
One doughnut costs 50 cents.	How much money do you spend?

Four friends go to the movies.	One movie ticket costs \$3.
The friends start with a \$20 bill.	How much change do they get?

Four friends share some cookies.	There are 24 cookies.
Each person has 5 cookies.	How many cookies are left over?

Four friends share 12 pencils.	They share them equally.
Each friend already has 2 pencils.	How many pencils does each have now?

Four friends buy a drink each.	The total cost of the drinks is \$8.
Each friend starts with \$5.	How much money does each friend have left?

Operating in Order

Teacher Directions

Copy and cut out the sets of sentence strips. Distribute a full set to each student group.

Answer Key

$$70 - 2 \times 30 = 10$$

$$80 + 3 \times 50 = 230$$

$$20 - 4 \times 3 = 8$$

$$24 - 4 \times 5 = 4$$

$$2 + 12 \div 4 = 5$$

$$5 - 8 \div 4 = 3$$