Factoring Using Grouping Technique

Summary

This lesson will concentrate on factoring trinomials using the grouping method. It is usually apparent just by looking at a trinomial, how to go about factoring it. In the case of trinomials that don't appear to be factorable, at first, the student must recognize the need to use the grouping technique. This technique is best utilized by first factoring out the GCF from each binomial pair and then combining the resulting new binomials.

Time Frame

1 class periods of 45 minutes each

Group Size

Pairs

Life Skills

Thinking & Reasoning, Communication

Materials

Worksheets and overhead or powerpoint slides for demonstration of examples.

Background for Teachers

Teachers should be familiar with most all aspects of trinomial factoring. Teachers should be particularly well versed in factoring using the GCF (greatest common factor). A brief review of factoring with algebra tiles and GCF would greatly help the teacher with this lesson.

Student Prior Knowledge

Students should have a good understanding of simple factoring techniques to this point. Students should also understand about the GCF and how to identify or determine the GCF.

Intended Learning Outcomes

At the end of this lesson, students should have a better understanding of factoring trinomials when no apparent solution seems obvious. This technique, along with the other factoring methods learned to this point, will well-equip the student with sufficient knowledge and a deeper understanding of factoring trinomials.

Instructional Procedures

Problems will be presented on the worksheet in the following form: ab + ad + 2b + 2d. Notice that if the problem is written as a trinomial, the original problem reads: ab + 2abd + 2d. The next step will be to group the first and second 'groups' of binomials in the following manner: (ab + ad) + (2b + 2d). The student will then be asked to factor out the GCF(greatest common factor) in each set of terms, a(b + d) + 2(b + d). Ask the students if the notice anything common in each set of terms. Hopefully, they will recognize that (b + d) is common in both terms! The final step in this process will be to combine the 'new groups' of first and second terms together to provide the factored answer as (a + 2)(b + d). To check if we have the correct answer, we can use the F-O-I-L method to arrive at the original problem mentioned earlier of ab +2abd + 2d. Have the students work the problems on the worksheet as explained above, and using the two examples at the top of the worksheet. Make sure they combine

the four terms into an 'original' problem first, so they will have a reference point to trace their answer back to in order to verify its correctness.

Assessment Plan

Part of the assessment plan will be to question students' understanding as the method is being explained. If the level of understanding is not acceptable, try more examples. The next step in the assessment plan will be to see how well the accomplish the worksheet. Walk around the classroom to check this progress out and answer any questions that may arise. The last step in the assessment plan will be to have some questions like these on the unit test.

Rubrics

Factoring by Grouping

Bibliography

Obtained from information provided by Loree Rominger, a math teacher at Midvale Middle School.

Authors

Ted Mabey, B.S., M.Ed.