Moving the decimal one jump to the left will make the value of "a" smaller, but it also changes the value of the number as a whole. To compensate, we will make the value of "b" larger by one power of ten.

> Slide 9: Guided practice.

> Slide 10: Note the similarities to multiplication when dividing with scientific notation.
> Slide 11: This time we make the value of "a" larger to correctly write the answer in scientific notation. To compensate we make the exponent, b, smaller by one power of ten.
> Slide 12: Guided practice.

Application:

Scientific notation is not just for scientists. Obviously, anyone using a scientific calculator should be familiar with it. Students will find that they are more comfortable with the calculator as they proceed through the course. Pay special attention to students who blame their calculators for giving them wrong answers. More often than not, it is they who are misunderstanding some aspect of the calculator such as scientific notation or order of operations.

Assessment:

Students do Homework Lesson 4-5.

Lesson 4-6: Day 74

Objective:

To add and subtract polynomials.

Skills Attained:
- Identify a monomial, a coefficient of a monomial, a polynomial, a binomial, and a trinomial.
- Discriminate between like monomial terms and unlike monomials terms.
- Add polynomials by combining like terms.
- Subtract polynomials by distributing a negative and combining like terms.
- Solve geometric problems involving the addition and subtraction of polynomials.

Procedure:

Teacher directed lesson using PowerPoint or using overhead transparencies from PowerPoint presentation, Lesson 4-6.

Motivation:

This lesson involves some new vocabulary mixed with some past ideas. Students should focus on the vocabulary. Words like monomial, binomial, trinomial, coefficient, and polynomial are going to be used frequently in the class.

Unit 4: Exponents and Polynomials Daily Lesson Plans

Description:

PowerPoint Lesson 4-6

Slide 1: In the past we referred to –5x as a term. It can also be called a monomial or a monomial term. In this lesson we will be focusing on variable terms as monomials.

Slides 2-3: Review of like terms and coefficients. This slide is a review of Lesson 1-5.

Slide 4: Introduce polynomials, binomials, and trinomials. Encourage your students to use these terms when discussing the problems.

Slides 5-6: Guided practice. The use of parenthesis serves no mathematical purpose other than to group the polynomials. Eliminate the parenthesis and like terms can be easily combined.

Slide 7: In order to subtract one polynomial from another, it is necessary to subtract each monomial term of the second polynomial. Many students will make the mistake of only subtracting the leading term. In order to correct this common error and keep it from recurring, I have my students distribute the negative as if it were a –1. Every monomial term in the polynomial that you are subtracting will change sign. The monomial terms can then be easily combined.

Slide 8: Guided practice.

Slide 9: Students need to add the distances AB and BC to equal the length of $\overline{AC}$.

Slide 10 : Students need to subtract the known distance AB from the known distance AC to find the length of $\overline{BC}$.

Slide 11: Students add the three triangular regions together to find the total area of quadrilateral ABCD.

Slide 12: This problem is tricky. Students must recognize that the area of triangle LMN is half that of rectangle LMNO.

Application:

Adding and subtracting polynomials is easier for students than multiplying and dividing them. Use this time to help students with the vocabulary. When answering your question make sure they use and feel comfortable with the terminology. It will make all future lessons and assignments easier for them to comprehend.

Assessment:

Students do Homework Lesson 4-6.

Unit 4: Exponents and Polynomials Daily Lesson Plans

Lesson 4-7: Days 75-76

Objective:
    To multiply polynomials.

Skills Attained:
- To multiply a polynomial by a monomial.
- To multiply two polynomials using the horizontal method.
- To multiply two polynomials using the vertical method.
- To correctly simplify the square of a polynomial.
- To recognize that $(a+b)^2 \neq a^2 + b^2$.

Procedure:
    Teacher directed lesson using PowerPoint or using overhead transparencies from PowerPoint presentation, Lesson 4-7.

Motivation:
    Multiplying polynomials is one of the fundamental skills of algebra. Many teachers can judge whether a student has successfully mastered a rigorous algebra course by asking students to simplify $(a+b)^2$. Students who have not mastered algebra usually give $a^2 + b^2$, which is incorrect. Today we will be looking at two different techniques that can be used to multiply polynomials, the horizontal method and the vertical method. After a few examples of each, it will be the student's decision which to use on a regular basis.

Description:

PowerPoint Lesson 4-7

    Slide 1: Begin by asking students to multiply a polynomial by a monomial. They may deny ever doing it before, but it was covered in Chapter 1 with the distributive property.
    Slide 2: The horizontal method also uses the distributive property. Students should imagine the (x + 5) binomial as if it were a single term. They can distribute the (x + 5) binomial through the (2x – 3) just like they would with a monomial. Once that is done, they should simply distribute back through the (x + 5) binomials. It's a process of distributing through and distributing back.
    Most students find the vertical method easier. It's a lot like multiplying 2 two-digit numbers together.
    Slide 3: Guided practice. It is important to show the horizontal method at least one more time. Most students choose to use the vertical method, which is the one we use henceforth. Students should be free to use whatever technique they choose as long as they understand and feel comfortable with all of the methods discussed in class.
    Slides 4-6: Guided practice.

Slide 7: This concept is very important and you should make a big deal about it. Remind them of it whenever you can. This idea will be reviewed in the next section and the next chapter.

Slides 8-9: Guided practice.

Application:

In this text as in many algebra texts much less time is spent on multiplying polynomials than on factoring them. Be clear on this lesson because this section and the next are the only two sections on multiplying polynomials. Needless to say these two sections are critically important to factoring. It's difficult to undo what's been done if you don't understand what's been done.

Assessment:

Students do Homework Lesson 4-7.

Lesson 4-8: Days 77-78

Objective:

To multiply binomials mentally using FOIL.

Skills Attained:

- To recognize that the FOIL technique can only be used to mentally multiply two binomials.
- Find the product of two binomials using FOIL.
- Find the square of a binomial using FOIL.
- Find missing terms and coefficients in an equation involving the product of binomials.

Procedure:

Teacher directed lesson using PowerPoint or using overhead transparencies from PowerPoint presentation, Lesson 4-8.

Motivation:

In the last section we saw how the horizontal method and the vertical method could be used to find the product of polynomials. These methods are effective, but the are also time-consuming. The method you will learn today can be done mentally and is much more efficient. This new technique, called FOIL, can only be used to find the product of two binomials. It will not work with trinomials or other types of polynomials. It is very useful though, as we will be multiplying many binomials together in future lessons. In fact, the entire next chapter on factoring is an extension of this technique.