

# Tips for Teachers

## Chapter 10 The Real-Number System

### Section 10.2 Addition of Real Numbers

Whereas students can be expected to know how to add two positive numbers from their study of arithmetic, addition involving negative numbers will probably be new to them.

#### The Rules for Addition

Addition of real numbers can be introduced on the number line in order to give students a visual and graphical frame of reference and to demonstrate the patterns that occur when real numbers are added. Once this has been done, however, students must learn to add without the number line. The patterns observed by adding on the number line lead to the formal statement of the rules for addition of real numbers on page 524 of the text.

State the rule being used in each example you do in class. You might want to state the procedure you are using in more than one way also.

#### Alternate Statements of the Rules

For example, when adding two negative numbers, you could state the procedure in both of the following ways.

As given in the text: Add absolute values. The answer is negative.

An alternate statement: Disregard the signs of the numbers. Add as in arithmetic and then make the answer negative.

Although the procedure is clearly the same in both cases, one statement of the process might be more clearly understood by some students while the other is better understood by others.

Similarly, when numbers with different signs are added the procedure can be stated in both of the following ways.





As given in the text: Subtract the smaller absolute value from the larger. Then:

- a) If the positive number has the greater absolute value, the answer is positive.
- b) If the negative number has the greater absolute value, the answer is negative.
- c) If the numbers have the same absolute value, the answer is 0.

An alternate statement: Disregard the signs of the numbers. Subtract the smaller from the larger as in arithmetic. If the result is 0, the sum of the numbers is 0. If not, the sum has the same sign as the larger number in the previous subtraction.

Suggest to your students that they recite the procedure each time they perform an addition until the process becomes as natural to them as adding positive numbers in arithmetic.

### Supplement Key Further Instruction and Practice for Your Students

Video	Audio cassette	MathMax CD-ROM	InterAct Math Online Exercises	Printed Test Bank/Instructor's Resource Guide	
				Exercises	Chapter Review
Tape 17	16A	Section 10.2		pp. 645 & 647	p. 756

## Section 10.3 Subtraction of Real Numbers

Some students might expect that subtracting real numbers will be difficult. You can reassure them that this is not the case.

### Subtracting by Adding an Opposite

Explain that they can write subtraction in terms of addition, and once this is done they simply follow the now-familiar procedure for adding real numbers. In class, practice subtracting by adding the opposite of the number being subtracted. Make a habit of rewriting the examples you do in this way.





That is, always rewrite  $a - b$  as  $a + (-b)$ . For example, if you were to select  $6 - 9$  as an in-class example, rewrite it as  $6 + (-9)$  and then apply the procedure for adding two real numbers with different signs. Similarly, rewrite an example like  $-5 - (-2)$  as  $-5 + 2$  and proceed.

Encourage your students to rewrite subtractions in the same way when they do their homework. Many will find that, after doing this repeatedly, they will be able to omit this step.

### Checking Subtraction

Point out that subtraction can always be checked by adding. Make a habit of checking your work in class and encourage your students to do the same when they do their homework.

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				Exercises	Chapter Review
Tape 17	16B	Section 10.3		pp. 646 & 647	p. 756