ANSWERS

1. +17
2. -12.25
3. -98
4. Square, $\sqrt{6889} = 83$
5. Not Square
6. Not Square
7. +5.5
8. -20
9. +34
10. -.5
11. -4
12. +400
13. +1078
14. -960
15. -3600

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BASIC MATH

The Complete Course
Lesson Seventeen

Multiplication & Division of Integers

KA8417

Teaching Guide & Worksheet

HOW TO USE THE VIDEO AND TEACHING GUIDE

1. The "STOP TO THINK" signal means pause to think.
2. The "STOP TO WORK" signal means work the problem(s).
3. Rewind the tape and watch the lesson again if the concept is not clear.
4. Use “Learning Strategies” section of the Teachers Guide as memory aids and topics for classroom discussion.
5. Students should complete the exercises on the worksheet to confirm their understanding of this lesson.

LEARNING STRATEGIES

MULTIPLYING INTEGERS

A. Looking for a pattern using what we already know about multiplication
   1. +3 x +4 = +12
   2. +3 x -4 = -12
   3. -4 x +3 = -12
   4. -4 x -3 = ?
B. Multiplying by a positive: keep the sign and multiply
C. Multiplying by a negative: change the sign and multiply

DIVIDING INTEGERS

A. Using the definition of division as the opposite of multiplication to find rules for division of integers
   1. -24 ÷ -6 = ?
   2. -6 x ? = -24
   3. ? = +4
   4. -32 ÷ +4 = ?
   5. +4 x ? = -32
   6. ? = -8
B. The rules for division are the same as the rules for multiplication of integers
   1. + ÷ + = +
   2. - ÷ - = +
   3. + ÷ - = -
   4. - ÷ + = -

ORDER OF OPERATIONS WITH INTEGERS

A. The rule is the same as for whole numbers—PEMDAS
B. Applying the rule in various problems

THE SQUARE ROOT

A. Using what we know about addition, subtraction, multiplication, and division to show that the opposite of squaring is finding the square root
   1. 8 + 3 = 11
   2. 11 - 3 = 8
   3. 7 x 5 = 35
   4. 35 ÷ 7 = 5
   5. $6^2 = 36$
   6. $\sqrt{36} = 6$
B. Patterns in square roots
   1. Knowing what a number ends in (ones place), identify what its square ends in
   2. Using this pattern to find what a square root of a number must end in
   3. Introduction to irrational numbers
   4. Showing that the square root of 8 is irrational
   5. What are square numbers?
   6. Round square numbers: square numbers that end in 00
   7. Using round square numbers to determine the tens-place digit for the square root of any number between 0 and 10,000
   8. Using the patterns to find the square root of a number if the number is square

WORKSHEET STRATEGIES

Solve the following:

1. -3 + -4 x +7 ÷ -2 - -6 = _____

2. (-3 + -4) x +7 ÷ (-2 - -6) = _____

3. -8 - +4 x -12 ÷ +3 x -5 + -10 = _____

For questions 4-6, use the method shown in lesson 17 to determine if each of these numbers is a square number (do not use a calculator). If the number is square, indicate its square root.

4. 6889

5. 4783

6. 1414

7. -14 x _____ = -77

8. -23 x _____ = +460

9. -17 ÷ _____ = -.5

10. -48 ÷ _____ = +96

11. +30 ÷ _____ = -7.5

12. +120 ÷ _____ = +.3

13. ____ ÷ -7 = -154

14. ____ ÷ -8 = +120

15. ____ ÷ +15 = -240