

Chapter 5 Review Questions



Studying for a chapter examination is a personal process, one which nobody else can do for you. Simply take the time to review what you have done. Here are the new terms in Chapter 5.

Abelian group [5.6]	Factor [5.2]	Natural numbers [5.1]
Absolute value [5.3]	Factor tree [5.2]	Number line [5.6]
Addition [5.1]	Factoring [5.2]	Numerator [5.4]
Additive identity [5.6]	Field [5.6]	One [5.6]
Additive inverse [5.6]	Fundamental property of fractions [5.4]	Opposites [5.6]
Algebra [5.7]	Fundamental theorem of arithmetic [5.2]	Perfect square [5.5]
Associative property [5.1]	g.c.f. [5.2]	π [5.5]
Canonical form [5.2]	Greatest common factor [5.2]	Positive square root [5.5]
Ciphertext [5.8]	Group [5.6]	Prime factorization [5.2]
Closed for addition [5.1]	Hypotenuse [5.5]	Prime number [5.2]
Closed for multiplication [5.1]	Identity for addition [5.6]	Proper fraction [5.4]
Closed set [5.1]	Identity for multiplication [5.6]	Pythagorean theorem [5.5]
Closure property [5.1]	Improper fraction [5.4]	Radical form [5.5]
Commutative group [5.6]	Integers [5.3]	Radicand [5.5]
Commutative property [5.1]	Inverse for addition [5.6]	Rational number [5.4]
Composite number [5.2]	Inverse for multiplication [5.6]	Real number line [5.6]
Congruent modulo m [5.7]	Irrational number [5.5]	Real numbers [5.6]
Counting numbers [5.1]	Laws of square roots [5.5]	Reciprocal [5.6]
Cryptography [5.8]	l.c.m. [5.2]	Reduced fraction [5.4]
Decoding key [5.8]	Least common denominator [5.4]	Relatively prime [5.2]
Denominator [5.4]	Least common multiple [5.2]	Repeating decimal [5.6]
Dense set [5.6]	Leg of a triangle [5.5]	Rules of divisibility [5.2]
Discrete mathematics [5.7]	Modular codes [5.8]	Sieve of Eratosthenes [5.2]
Distributive property [5.1]	Modulo 5 [5.7]	Square number [5.5]
Divides [5.2]	Multiple [5.2]	Square root [5.5]
Divisibility [5.2]	Multiplication [5.1; 5.7]	Subtraction [5.1; 5.7]
Division [5.3; 5.7]	Multiplicative identity [5.6]	Terminating decimal [5.6]
Division by zero [5.3]	Multiplicative inverse [5.6]	Unit distance [5.6]
Divisor [5.2]		Whole numbers [5.4]
e [5.5]		Zero [5.6]
Encoding key [5.8]		Zero multiplication [5.7]
Encrypt [5.8]		

If you can describe the term, read on to the next one; if you cannot, then look it up in the text (the section number is shown in brackets). Next, review the types of problems in Chapter 5.

TYPES OF PROBLEMS

- Demonstrate the definition of multiplication. [5.1]
- Determine whether a given set with a given operation is closed. [5.1]
- Recognize and distinguish the commutative and associative properties.[5.1]
- Apply the distributive property with a variety of operations. [5.1]
- Determine whether a given number is prime or not. [5.2]
- Tell whether one number divides another number. [5.2]
- Find the prime factorization and write the answer in canonical form. [5.2]
- Find the least common multiple of a set of numbers. [5.2]
- Find the greatest common factor of a set of numbers. [5.2]
- Show that there is no largest prime number. [5.2]
- Use problem-solving techniques to solve applied problems. [5.2-5.8]
- Find the absolute value of a number. [5.3]
- Carry out operations with integers. [5.3]
- Reduce fractions using the fundamental property of fractions. [5.4]
- Carry out operations with fractions. [5.4]
- Use the definition of square root to simplify radical expressions. [5.5]
- Classify numbers as rational or irrational. [5.5]
- Determine into which of the following sets that a given number belongs: \mathbb{N} (natural numbers), \mathbb{Z} (integers), \mathbb{Q} (rational numbers), \mathbb{Q}' (irrational numbers), or \mathbb{R} (real numbers). [5.6]
- Express a rational number as a decimal. [5.6]
- Express a terminating decimal as a fraction. [5.6]
- Use the order of operations to simplify real numbers. [5.6]
- Find a rational number or an irrational number between each of a given pair of numbers. [5.6]
- Recognize and distinguish examples of the closure, associative, commutative, identity, and inverse properties.[5.6]
- Know and be able to describe each of the field properties. [5.6]
- Carry out operations in modular arithmetic. [5.7]
- Solve modular equations. [5.7]
- Decide if a given set and operation forms a group. [5.7]
- Decide if a given set and two operations forms a field. [5.7]
- Encode and decode simple phrases.[5.8]
- Break a simple code. [5.8]

Once again, see if you can verbalize (to yourself) how to do each of the listed types of problems.

Work all of Chapter 5 Review Questions (whether they are assigned or not). Work through all of the problems before looking at the answers, and *then* correct each of the problems. The entire solution is shown in the answer section at the back of the text. If you worked the problem correctly, move on to the next problem, but if you did not work it correctly (or you did not know what to do), look back in the chapter to study the procedure, or ask your instructor.

Finally, go back over the homework problems you have been assigned. If you worked a problem correctly, move on to the next problem, but if you missed it on your homework, then you should look back in the book or talk to your instructor about how to work the problem.

If you follow these steps, you should be successful with your review of this chapter.