

# MATH 250: DAILY PREPARATION

For Tuesday 01/12

## Overview

In our next meeting, we will continue to think about what it means for a sentence to be a *mathematical statement* and what it means to *prove* or *disprove* such a statement.

## Basic learning objectives

These are the tasks you should be able to perform with reasonable fluency **when you arrive at our next class meeting**. Important new vocabulary words are indicated *in italics*.

- Understand what it means for a mathematical sentence to be a *statement* and identify statements and non-statements.
- Recognize conditional statements and, for any conditional statement, identify its *hypothesis* and *conclusion*.
- Know the truth table for the conditional statement  $P \implies Q$ .
- Know the standard number sets and their abbreviations ( $\mathbb{N}$ ,  $\mathbb{Z}$ ,  $\mathbb{Q}$ ,  $\mathbb{R}$ ), as well as what it means to say things like “the set of all integers,  $\mathbb{Z}$ , is *closed* under multiplication.”

## Advanced learning objectives

In addition to mastering the basic objectives, here are the tasks you should be able to perform in the near future **with practice and further study**:

- Recognize “hidden” conditional statements such as “The square of every rational number is a rational number” and rewrite the statement in the form “If  $P$ , then  $Q$ .”
- Understand how we demonstrate that a conditional statement is false.
- Understand how we demonstrate that a conditional statement is true.

## Resources

*Reading*: Read Section 1.1 pages 1-11 and Section 1.2 pages 17-26

*Watching*: Here are some additional resources that have been developed to support your learning:

- Screencast 1.1.1: <http://gvsu.edu/s/qb> (5:38)
- Screencast 1.1.2: <http://gvsu.edu/s/qc> (6:54)
- Screencast 1.1.3: <http://gvsu.edu/s/qg> (5:33)

## Questions

Respond to the following questions on separate paper, as explained in the document that describes guidelines and expectations for daily preparatory assignments. You should be prepared to show me your responses at the start of class; I will review yours briefly sometime before the end of class.

1. Complete Progress Check 1.7 on p. 11.
2. Complete Progress Check 1.10 on p. 26.
3. What is one idea, concept, or topic from Sections 1.1 and 1.2 that doesn't make sense to you? Write at least one sentence to try to clearly identify your source of confusion.