Do not use a calculator.

Unless instructed otherwise, give all fractional answers in simplest terms. This includes converting improper fractions to mixed numbers.

1. **Basic Operations**
   a. \(205 + 876\)  
   b. \(25 - 19\)  
   c. \(23 \times 68\)  
   d. \(870 \div 5\)

2. **Fractions**
   a. \(\frac{1}{2} + \frac{7}{8}\)  
   b. \(3 \times \frac{5}{6}\)  
   c. \(\frac{2}{3} - \frac{1}{4}\)  
   d. \(\frac{4}{7} \div \frac{5}{6}\)

3. **Decimals**
   a. \(1.56 + 8.6\)  
   b. \(23.5 - 0.6\)  
   c. \(22.5 \times 6\)  
   d. \(45.6 \div 3\)

4. **Miscellaneous** — Does the 3 in 4,350 represent 300, 30, or 3?
Grading

This test is designed to help determine if a student is ready to begin Book 1 of *Principles of Mathematics*.

If students get problems wrong on the placement test, check to see if they made a careless error or if they truly didn't understand a concept. It's okay if students make a few errors, but it's important that students are familiar with these concepts before beginning Book 1:

- addition
- subtraction
- multiplication
- division
- decimals (including adding, subtracting, multiplying, and dividing them)
- fractions (including adding, subtracting, multiplying, and dividing them)

Students also need to have the mental development to explore problem solving, which will be emphasized in Book 1.

*Note:* Book 1 will review addition, subtraction, multiplication, division, decimals, and fractions, so if students struggle with any of those concepts they will get practice and reinforcement; however, it should not be the first time they're encountering them.

**Answers**

1. a. 1,081  
   b. 6  
   c. 1,564  
   d. 174
2. a. \( \frac{4}{5} + \frac{7}{8} = \frac{11}{8} = 1\frac{3}{8} \)  
   b. \( \frac{15}{8} = 2\frac{3}{8} = 2\frac{1}{2} \)  
   c. \( \frac{8}{12} = \frac{3}{12} = \frac{1}{4} \)  
   d. \( \frac{4}{7} \cdot \frac{6}{5} = \frac{24}{35} \)
3. a. 10.16  
   b. 22.9  
   c. 135  
   d. 15.2
4. 300