

# 10 Working with numbers

integer 135

significant figures 0.234

trailing zero 0.50

leading zero 0.5

rounding 0.887 → 0.89

## Get ready!

1 Before you read the passage, talk about these questions.

- 1 When do engineers work with numbers?
- 2 How do you avoid making mistakes with numbers?

## Reading

2 Read this email from a supervisor to her employees. Then, choose the correct answers.

- 1 What is the email mostly about?  
A a way to avoid future calculation errors  
B an incorrectly formed machine part  
C a new way to express quantities  
D the need to improve manufacturing precision
- 2 Which of the following is NOT a convention?  
A rounding to three significant figures  
B expressing integers as decimals  
C making trailing zeros significant  
D using scientific notation
- 3 What can be inferred about the machine-part?  
A It was made 4.5 centimeters too long.  
B It was thrown away because it was useless.  
C It was not actually made by the company.  
D Its ordering was approved by D. Baker.

From: dbaker@gbaassociates.com  
To: staff@gbaassociates.com  
Subject: Decimals

All,

There's been an issue with some of our **calculations**. Specifically, one of our engineers left off a **leading zero** and a decimal point on a machine part order. As a result, we almost made a part that was 5 centimeters long instead of 0.5 centimeters. That's one **order of magnitude** larger than it's supposed to be! These types of errors keep us from doing our work properly. So let's go through a few of the **conventions** you all need to keep in mind.

Always round to three **significant figures**. This ensures that everything is kept to the same standard and avoids **rounding errors**. Don't forget that **trailing zeros** are always considered significant if you are using decimal notation for **integers**. Also, every time you're expressing very large or small **quantities**, use **scientific notation**. That keeps things precise. When you're doing this, don't forget that every **digit** is significant!

Thank you all for your cooperation.  
Diana

calculation

## Vocabulary

3 Check (✓) the sentence that uses the underlined parts correctly.

- 1  A Negative and positive numbers can be integers.  
 B Quantities are not considered significant.
- 2  A Place calculations before decimal points.  
 B Round the answer to four significant figures.
- 3  A The digit system shows small numbers.  
 B Decimals can include trailing zeros.
- 4  A Using conventions reduces confusion.  
 B Computers perform notations faster than humans.
- 5  A Decimals less than one need a leading zero.  
 B Improper rounding leads to an order of magnitude.
- 6  A Adding numbers often creates a rounding error.  
 B Use scientific notation to express large numbers.