1 course. Engineering. Unit 10. Working with numbers **Surname Name Group**

Task 1. Match the terms with their definitions.

1. Integers:	**a)** The process of adjusting a number to the nearest specified value, such as the nearest integer or decimal place.
2. Rounding Error:	**b)** A classification that indicates the size or scale of a value, typically expressed as a power of ten.
3. Scientific Notations:	**c)** A dot used in decimal notation to separate the whole number part from the fractional part of a number.
4. Round To:	**d)** The discrepancy that arises when a number is approximated to a simpler form, often leading to a loss of precision.
5. Decimal Point:	**e)** Whole numbers that can be positive, negative, or zero, without any fractional or decimal component.
6. **Digit**:	f) A method of writing numbers that are too large or too small using powers of ten, typically in the form of a×10na \times 10^na×10n, where 1≤a<101 \leq a < 101≤a<10.
7. Order of Magnitude:	**g)** Any single numeral from 0 to 9 used in number representation.

Task 2. Fill in the gaps with the correct word or collocation.

decimal points, leading zero, significant numbers, integers, round,

scientific notation, digit, rounding errors

1. "Please _____ the measurements to the nearest millimeter for simplicity."
2. "Make sure you double-check each _____ in the calculation, especially in complex equations."
3. "The software only accepts integers, so make sure not to include _____ in the input."
4. "We need to check for any _____ in our calculations to ensure the measurements are accurate."
5. "For very large values, use _____; it makes the numbers easier to read and compare."
6. "We need to keep four _____ here to maintain accuracy in our results."
7. While entering the measurements, I accidentally added _____ a to the weight, which caused an error in the final calculations.
8. During the testing phase, we used _____to define the temperature readings to avoid confusion with decimal values.

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Task 3. Determine whether the provided numbers contain leading zeros, decimal points, trailing zeros, or are integers.

	Leading Zero	Decimal Point	Trailing Zeros	Integer

0,009 - _____

75,13- _____

200 - _____

0,045 - _____

0.5000 - _____

1345 - _____

3,78 - _____

3.0400 - _____

0, 471 - _____

5789 - _____

Task 4. Read the statements and decide if they are TRUE or FALSE.

1. _____**:** A rounding error can occur when a number is approximated to fewer decimal places than its original value.
2. _____: The instruction "round to the nearest integer" means to adjust a decimal number to the closest whole number.
3. _____: The number **3.14** is an example of an integer.
4. _____: A trailing zero is a zero that appears before the decimal point in a number, such as in **0.00500**.
5. _____: The number **1000** can be expressed in scientific notation as **1 x 10^3**.

Task 5. Read the text and fill in the gaps with the correct word / collocation.

Engineering Problem: Precision in Measurement

decimal notations	**trailing zeros**	**order of magnitude**
leading zeros	**rounding error**	**integer**
digits	**decimal point**	**scientific notations**

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In the field of engineering, accurate measurements are crucial for the success of any project. Recently, a team of engineers faced a significant issue while designing a new bridge. They discovered a **(1)** _____ when calculating the load capacity of the bridge materials. Instead of rounding to the nearest **(2)** _____, some measurements were incorrectly approximated, leading to a potential safety hazard.

The materials selected for the bridge included steel and aluminum, which are known for their strength and durability. However, when recording the dimensions of these materials, the engineers relied on **(3)** _____, and several crucial **(4)** _____ were overlooked. For example, a measurement of 12.750 meters was mistakenly rounded to 12.7 meters, losing the significant numbers that could impact the overall structural integrity.

Furthermore, some of the measurements included **(5)** _____, which could lead to confusion when interpreting the data. To address this, the engineers implemented a strict protocol to ensure all digits, including **(6)** _____, were accurately reported and documented. They emphasized the importance of using **(7)** _____ when dealing with very large or very small values, such as 2.5 x 10^4 for material density.

To resolve the issue, the team conducted a thorough review of their calculations, ensuring that every **(8)** _____ was accurately placed and that the **(9)** _____ was properly considered. By correcting these measurement errors, the engineers could confidently proceed with the design, knowing that the bridge would be safe and reliable for public use. This experience underscored the importance of precision in engineering, where even minor mistakes in measurement can lead to significant consequences.

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