

## Sig Fig Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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**Which of the following digits is always considered significant?**

undefined. A) Leading zeros

undefined. B) Trailing zeros in a whole number without a decimal

**undefined. C) Non-zero digits ✓**

undefined. D) Placeholder zeros

Non-zero digits are always significant.

**Which of the following digits is always considered significant?**

undefined. A) Leading zeros

undefined. B) Trailing zeros in a whole number without a decimal

**undefined. C) Non-zero digits ✓**

undefined. D) Placeholder zeros

Non-zero digits are always considered significant.

**Select all the rules that apply to identifying significant figures.**

**undefined. A) All non-zero digits are significant. ✓**

undefined. B) Leading zeros are significant.

**undefined. C) Trailing zeros in a decimal number are significant. ✓**

**undefined. D) Zeros between significant digits are significant. ✓**

The rules include that all non-zero digits are significant, leading zeros are not, and trailing zeros in a decimal are significant.

**Select all the rules that apply to identifying significant figures.**

undefined. **A) All non-zero digits are significant. ✓**

undefined. B) Leading zeros are significant.

undefined. **C) Trailing zeros in a decimal number are significant. ✓**

undefined. **D) Zeros between significant digits are significant. ✓**

All non-zero digits, trailing zeros in a decimal, and zeros between significant digits are significant.

**Explain why significant figures are important in scientific measurements.**

**Significant figures are important because they convey the precision of measurements and help communicate the uncertainty in scientific data.**

**Explain why significant figures are important in scientific measurements.**

**Significant figures indicate the precision of measurements and help communicate the uncertainty in scientific data.**

**List the rules for determining significant figures in a number. Provide a brief explanation for each rule.**

1. Rule 1: All non-zero digits are significant.

**This means digits 1-9 count as significant.**

2. Rule 2: Leading zeros are not significant.

**Leading zeros only serve as placeholders.**

3. Rule 3: Trailing zeros in a decimal are significant.

**These zeros indicate precision in the measurement.**

4. Rule 4: Zeros between significant digits are significant.

**These zeros are part of the measurement.**

Rules include: 1) All non-zero digits are significant; 2) Leading zeros are not significant; 3) Trailing zeros in a decimal are significant; 4) Zeros between significant digits are significant.

## **Part 2: Comprehension and Application**

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**If you have the number 0.00450, how many significant figures does it have?**

undefined. A) 2

**undefined. B) 3 ✓**

undefined. C) 4

undefined. D) 5

The number 0.00450 has three significant figures.

**If you have the number 0.00450, how many significant figures does it have?**

undefined. A) 2

**undefined. B) 3 ✓**

undefined. C) 4

undefined. D) 5

The number 0.00450 has three significant figures.

**Which of the following numbers have four significant figures?**

undefined. A) 0.00456

**undefined. B) 45.60 ✓**

undefined. C) 4560

**undefined. D) 0.04560 ✓**

The numbers 45.60 and 0.04560 have four significant figures.

**Which of the following numbers have four significant figures?**

undefined. A) 0.00456

**undefined. B) 45.60 ✓**

undefined. C) 4560

**undefined. D) 0.04560 ✓**

The numbers 45.60 and 0.04560 have four significant figures.

**Describe how significant figures affect the precision of a measurement. Provide an example to illustrate your explanation.**

**Significant figures indicate the precision of a measurement; for example, a measurement of 12.3 grams is more precise than 12 grams.**

**Describe how significant figures affect the precision of a measurement. Provide an example to illustrate your explanation.**

**Significant figures indicate the precision of a measurement, affecting how results are interpreted and communicated.**

**When adding 12.11 and 0.0234, what is the correct result in terms of significant figures?**

undefined. A) 12.1334

**undefined. B) 12.13 ✓**

undefined. C) 12.134

undefined. D) 12.1

The correct result is 12.13, rounded to the appropriate number of decimal places.

**When adding 12.11 and 0.0234, what is the correct result in terms of significant figures?**

undefined. A) 12.1334

**undefined. B) 12.13 ✓**

undefined. C) 12.134

undefined. D) 12.1

The correct result is 12.13, rounded to the appropriate number of decimal places.

**You are multiplying 6.38 by 2.0. Which of the following results correctly reflects the number of significant figures?**

undefined. A) 12.76

**undefined. B) 12.8 ✓**

undefined. C) 13

undefined. D) 12.760

The result should be 12.8, reflecting the least number of significant figures from the factors.

**You are multiplying 6.38 by 2.0. Which of the following results correctly reflects the number of significant figures?**

undefined. A) 12.76

**undefined. B) 12.8 ✓**

undefined. C) 13

undefined. D) 12.760

The result should be 12.8, reflecting the least number of significant figures from the factors.

**A scientist measures a sample and records the mass as 0.00780 grams. Explain how many significant figures are in this measurement and why.**

**The measurement has three significant figures, as the trailing zero is significant in a decimal.**

**A scientist measures a sample and records the mass as 0.00780 grams. Explain how many significant figures are in this measurement and why.**

**The measurement has three significant figures due to the trailing zeros after the decimal.**

### Part 3: Analysis, Evaluation, and Creation

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**In the context of significant figures, which of the following operations is most likely to affect the precision of a result?**

**undefined. A) Addition ✓**

undefined. B) Subtraction

undefined. C) Multiplication

undefined. D) Division

Addition is most likely to affect precision due to decimal place considerations.

**In the context of significant figures, which of the following operations is most likely to affect the precision of a result?**

**undefined. A) Addition ✓**

undefined. B) Subtraction

undefined. C) Multiplication

undefined. D) Division

Addition is most likely to affect the precision of a result due to decimal place considerations.

**Analyze the following numbers and select those that have the same number of significant figures.**

undefined. A) 0.0560 ✓

undefined. B) 5600

undefined. C) 5.600 ✓

undefined. D) 0.00560 ✓

The numbers 0.0560, 5.600, and 0.00560 all have three significant figures.

**Analyze the following numbers and select those that have the same number of significant figures.**

undefined. A) 0.0560 ✓

undefined. B) 5600

undefined. C) 5.600 ✓

undefined. D) 0.00560 ✓

The numbers 0.0560, 5.600, and 0.00560 all have three significant figures.

**Consider the numbers 3.456 and 0.0456. Analyze and compare their significant figures. Discuss how their precision differs.**

**3.456 has four significant figures, while 0.0456 has four significant figures as well, but the leading zeros indicate less precision in context.**

**Consider the numbers 3.456 and 0.0456. Analyze and compare their significant figures. Discuss how their precision differs.**

**3.456 has four significant figures, while 0.0456 has three, indicating different levels of precision.**

**Evaluate the following statements and select those that correctly describe the role of significant figures in scientific calculations.**

undefined. A) They help ensure accuracy in measurements. ✓

undefined. B) They limit the precision of calculated results. ✓

undefined. C) They are used to indicate the uncertainty in measurements. ✓

undefined. D) They are only important in addition and subtraction.

Correct statements include that significant figures help ensure accuracy and indicate uncertainty in measurements.

**Evaluate the following statements and select those that correctly describe the role of significant figures in scientific calculations.**

undefined. **A) They help ensure accuracy in measurements. ✓**

undefined. **B) They limit the precision of calculated results. ✓**

undefined. **C) They are used to indicate the uncertainty in measurements. ✓**

undefined. D) They are only important in addition and subtraction.

Significant figures help ensure accuracy and indicate uncertainty in measurements.

**Create a real-world scenario where understanding and applying significant figures is crucial. Describe the scenario and explain how significant figures would be used to ensure accurate results.**

**In engineering, precise measurements are critical; for example, when designing a bridge, significant figures ensure that load capacities are accurately calculated.**

**Create a real-world scenario where understanding and applying significant figures is crucial. Describe the scenario and explain how significant figures would be used to ensure accurate results.**

**In scientific experiments, significant figures are crucial for reporting measurements accurately and ensuring reliable results.**