

Significant figures - Support route

Try each question first. Show each step. Use only if assigned the Support route.

Department / teacher instructions:

Editable toolkit / reminders:

Name: _____ Class: _____ Date: _____

A. Conversions

1.	Round 4,763 to 1 significant figure.
	Prompt: Keep the first non-zero digit.
2.	Round 4,763 to 2 significant figures.
	Prompt: Look at the next digit.
3.	Round 0.047 to 1 significant figure.
	Prompt: Zeros before 4 do not count.
4.	Round 0.047 to 2 significant figures.
	Prompt: Keep 4 and 7.
5.	Round 5,608 to 2 significant figures.
	Prompt: The third digit is 0.
6.	How many significant figures are in 5.60?
	Prompt: Zeros after a decimal can count.
7.	How many significant figures are in 0.040?
	Prompt: Start counting at 4.

B. Rounding and precision

1.	Round 7,495 to 1 significant figure.
	Prompt: Check the second digit.
2.	Round 7,495 to 2 significant figures.
	Prompt: The third digit is 9.
3.	Round 0.004827 to 2 significant figures.
	Prompt: First digits are 4 and 8.
4.	Round 0.09996 to 2 significant figures.
	Prompt: The third significant digit is 9.
5.	Round 6.784 to 2 significant figures.
	Prompt: Keep 6 and 7.
6.	Round 36,500 to 2 significant figures.
	Prompt: Look at the third digit.
7.	Round 0.006384 to 2 significant figures.
	Prompt: Next digit is 8.
8.	Round 2.50 to 2 significant figures.
	Prompt: Zeros after the decimal can show precision.

Support route continued

Complete the remaining work if time allows. Show enough working for another person to follow your method.

C. Explain and check

1.	Is 0.4 written to 1 significant figure?
	Prompt: Count from the first non-zero digit.
2.	A pupil says 45,000 has 2 significant figures. Explain.
	Prompt: The zeros may be ambiguous.
3.	Which is more precise: 6.4 or 6.40?
	Prompt: Count the written significant figures.
4.	Explain why 0.00450 has 3 significant figures.
	Prompt: Leading zeros do not count.
5.	Round 5,499 to 2 significant figures.
	Prompt: The third digit is 9.
6.	How can you check a rounding answer?
	Prompt: Compare its size with the original.

D. Mixed practice

1.	Round 3,600,000 to 2 significant figures.
	Prompt: Keep 3 and 6.
2.	Round 0.0008 to 1 significant figure.
	Prompt: The first non-zero digit is 8.
3.	Round 6,384 to 3 significant figures.
	Prompt: Look at the fourth digit.
4.	Round 0.09996 to 3 significant figures.
	Prompt: Keep 9, 9 and 9.
5.	Which is closer to 10,000: 9,500 or 10,600?
	Prompt: Find each distance.
6.	Write one sentence explaining significant figures.
	Prompt: They show the precision of a measurement.

Support route answers

Answers are grouped by section. Accept equivalent correct methods and explanations.

A: 5,000; 4,800; 0.05; 0.047; 5,600; 3 s.f.; 2 s.f.

B: 7,000; 7,500; 0.0048; 0.10; 6.8; 37,000; 0.0064; 2.5.

C: yes; zeros may be placeholders; 6.40; leading zeros do not count; 5,500; compare size.

D: 3,600,000; 0.0008; 6,380; 0.100; 10,600; answers vary.

Significant figures - Core route

Work independently. Use this worksheet only if your teacher assigned the Core route.

Department / teacher instructions:

Editable toolkit / reminders:

Name: _____ Class: _____ Date: _____

A. Conversions

1.	Round 58,763 to 2 significant figures.
2.	Round 0.004827 to 2 significant figures.
3.	Round 7,495 to 3 significant figures.
4.	Round 0.09996 to 3 significant figures.
5.	How many significant figures are in 0.04050?
6.	A length is 6.784 m. Give it to 2 significant figures.

B. Rounding calculations

1.	Round 3,650 to 2 significant figures.
2.	Round 0.000739 to 2 significant figures.
3.	Round 849,500 to 3 significant figures.
4.	Round 0.005049 to 3 significant figures.
5.	Round 2.995 to 3 significant figures.
6.	Round 0.9996 to 3 significant figures.
7.	A mass is 4.683 g. Give it to 3 significant figures.
8.	A distance is 0.006784 km. Give it to 2 significant figures.

Complete the remaining work if time allows. Show enough working for another person to follow your method.

C. Compare and reason

1.	Which is more precise: 4.5 or 4.50? Explain.
2.	Explain why 72,000 is not always clear to a reader.
3.	A pupil rounds 0.00056 to 5.6×10^{-4} . Is this 2 significant figures?
4.	Find a number that rounds to 7,000 to 1 significant figure.
5.	Give the greatest and least possible values of 4.6 correct to 2 s.f.
6.	Explain why 0.00450 has more precision than 0.0045.

D. Mixed and check

1.	Round 36,500 to 2 significant figures.
2.	Round 0.00396 to 1 significant figure.
3.	Round 49,950 to 3 significant figures.
4.	Round 0.000684 to 2 significant figures.
5.	Which is closer to 1: 0.96 or 1.04?
6.	Create a measurement that rounds to 12.0 to 3 significant figures.

Core route answers

Answers are grouped by section. Accept equivalent correct methods and explanations.

A: 59,000; 0.0048; 7,500; 0.100; 4 s.f.; 6.8 m.

B: 3,700; 0.00074; 850,000; 0.00505; 3.00; 1.00; 4.68 g; 0.0068 km.

C: 4.50; zeros may be ambiguous; yes; answers vary; $4.55 \leq x < 4.65$; 0.00450 records more precision.

D: 37,000; 0.004; 50,000; 0.00068; equal distance; answers vary.

Significant figures - Stretch route

Choose efficient methods. Use this worksheet only if your teacher assigned the Stretch route.

Department / teacher instructions:

Editable toolkit / reminders:

Name: _____ Class: _____ Date: _____

A. Flexible conversion

1.	Round 0.0007396 to 2 significant figures.
2.	Round 999,500 to 3 significant figures.
3.	Find the greatest and least possible values of 4.6 correct to 2 s.f.
4.	A pupil says 0.00450 has 2 significant figures. Explain.
5.	Which is more accurate: 6.4 or 6.40? Explain.
6.	Create a number that rounds to 7,000 to 1 significant figure.

B. Applied accuracy

1.	A population is 4,683,000. Give a sensible answer to 3 significant figures.
2.	A measurement is 0.000684 m. Give it to 2 significant figures.
3.	Round 2.995 to 3 significant figures and explain the carry.
4.	A calculator gives 0.09996. Give a suitable answer to 2 significant figures.
5.	Explain when writing trailing zeros is important.
6.	Compare 3.0 and 3.00 in terms of precision.

Complete the remaining work if time allows. Show enough working for another person to follow your method.

C. Reasoning

1.	Without calculating exactly, decide whether 4.6×3.2 is closer to 10 or 20.
2.	Which is closer to 10^6 : 9.8×10^5 or 1.2×10^6 ?
3.	A pupil gives 0.00032 as 3.2×10^{-5} . Explain the mistake.
4.	Why must the first significant digit be non-zero?
5.	Find two numbers that round to 500 to 1 significant figure.
6.	Explain how rounding affects the accuracy of a calculation.

D. Challenge

1.	A length is 12.46 cm correct to 4 s.f. Give an interval.
2.	A mass is 0.0350 kg correct to 3 s.f. Give an interval.
3.	A pupil says 6.40 and 6.4 are identical measurements. Discuss.
4.	Find the smallest number that rounds to 70,000 to 1 significant figure.
5.	Create a number that rounds to 0.0050 to 2 significant figures.
6.	Write a general rule for rounding to n significant figures.

Stretch route answers

Answers are grouped by section. Accept equivalent correct methods and explanations.

A: 0.00074; 1,000,000; $4.55 \leq x < 4.65$; it has 3 s.f.; 6.40 is more precise; answers vary.

B: 4,680,000; 0.00068 m; 3.00; 0.100; trailing zeros communicate precision; 3.00 is more precise.

C: closer to 10; 9.8×10^5 ; decimal place error; first digit defines scale; answers vary; rounding loses some detail.

D: $12.455 \leq x < 12.465$; $0.03495 \leq x < 0.03505$; they show different precision; 65,000; answers vary; keep first n significant digits and inspect the next digit.