

# Rounding Estimation

KS3 Maths · Follows the national curriculum

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## 1. Worked example

### Round 4.382 to 2 decimal places

Step 1 · Underline to 2 decimal places

4.38|2

Step 2 · Look at the next digit (the 'decider'): 2

$2 < 5 \rightarrow$  round DOWN (leave 2nd dp unchanged)

Step 3 · Write the answer

4.38

**Answer: 4.38**

Check: 4.382 is between 4.38 and 4.39, and closer to 4.38 ✓

## 2. Now try one with the steps

### Round 0.05473 to 3 significant figures

Step 1 · Identify the first non-zero digit (leading zeros are NOT significant)

\_\_\_\_\_

Step 2 · Count 3 sig figs: 5, 4, 7 — the next digit is 3

\_\_\_\_\_

Step 3 · Write the answer (keep the leading zeros to maintain place value)

\_\_\_\_\_

**Answer:**

\_\_\_\_\_

## 3. Practice

Show your working. The marks tell you how much is expected.

1. Round 7.384 to 1 decimal place. [1]

\_\_\_\_\_  
\_\_\_\_\_

2. Round 0.07492 to 2 significant figures. [1]

\_\_\_\_\_  
\_\_\_\_\_

3. Estimate:  $29.4 \times 4.1 \div 5.9$  [2]

\_\_\_\_\_  
\_\_\_\_\_

4. A length is measured as 8.3 cm to the nearest mm. Write the error interval. [2]
- 
- 
5. Round 5.995 to 2 decimal places. [2]
- 
- 
6. Estimate  $\sqrt{(39.5 \times 1.98)}$  [2]
- 
- 
7. Round 63.257 to 1 decimal place. [1]
- 
- 
8. Round 48,612 to 2 significant figures. [1]
- 
- 
9. Round 0.3046 to 2 decimal places. [1]
- 
- 
10. Round 3.14159 to 3 significant figures. [1]
- 
- 
11. Round 0.0008362 to 1 significant figure. [1]
- 
- 
12. Estimate  $412 \times 0.49$  by rounding each number to 1 significant figure. [2]
- 
- 
13. Estimate  $(61.2 + 38.9) \div 0.52$  by rounding each number to 1 significant figure. [2]
- 
- 
14. Estimate the cost of 19 cinema tickets at £38.75 each. [2]
- 
-

15. A mass is 450 g to the nearest 10 g. Write the error interval for the mass, m. [2]

---

---

16. The crowd at a football match was 23,000 to 2 significant figures. What is the smallest the crowd could have been? [2]

---

---

17. Round 99.96 to 1 decimal place. [2]

---

---

#### 4. Before you hand it in

##### **Rounding 7.35 to 1dp as 7.3 (not rounding up when decider = 5)**

The rule: if the next digit is 5 or more, round UP.  $7.35 \rightarrow$  look at 2nd dp =  $5 \geq 5 \rightarrow 7.4$ .

##### **0.0073 to 2sf = 0.0070 (treating the zeros)**

Leading zeros (before the first non-zero digit) are NEVER significant. 0.0073 has 2 sig figs: 7 and 3. So 0.0073 to 2sf is 0.0073 (already 2sf).

##### **Error interval for 5.2 (1dp): $5.15 \leq x \leq 5.25$ (using $\leq$ at the upper bound)**

5.25 would round UP to 5.3, so it can't be in the interval. Use strict  $<$ :  $5.15 \leq x < 5.25$ .

##### **Estimating $29.7 \times 4.8$ as $30 \times 5 = 150$ , but actual $\approx 143$ — calling this a bad estimate**

Estimation is about getting a sensible approximation quickly. 150 is a good estimate of 143 (within 5%). The point is speed and checking, not accuracy.