Error intervals: fact sheet

Planner week 10 · Learn these facts

Nearest whole number

128 mm to the nearest mm

127.5 ≤ l < 128.5

Half a unit below and above

± 0.5

1 decimal place

12.7 to 1 d.p.

12.65 ≤ d < 12.75

Half of 0.1 = 0.05

± 0.05

2 decimal places

4.76 to 2 d.p.

4.755 ≤ n < 4.765

Half of 0.01 = 0.005

± 0.005

Significant figures

4700 to 2 s.f.

4650 ≤ x < 4750

Rounded to the nearest 100: ± 50

Look at the last kept place

Truncation

display began 10.2

10.2 ≤ t < 10.3

Chopped off, not rounded

The real value can only be bigger

The signs

lower ≤ x < upper

≤ at the bottom, < at the top

The upper bound itself would round up

Number line



Filled at the lower bound, open at the upper

12.65 to 12.75

Half the unit

nearest 10	± 5
nearest 1	± 0.5
1 d.p.	± 0.05
2 d.p.	± 0.005

Key words

- **Error interval** the range the real value could be in
- **Lower bound** the smallest possible value
- **Upper bound** the value it must be below
- **Truncate** chop off the digits

Exam tips

- Find the unit it was rounded to, then halve it.
- Lower bound: subtract the half. Upper bound: add it.
- Use ≤ on the left and < on the right.
- Truncated: the lower bound is the number itself.
- Write the letter in the middle: 9.35 ≤ m < 9.45.
- Check: both bounds round back to the original.

Finding error intervals: fact sheet

Error intervals · Planner week 10 · Learn the method

Worked example

QUESTION

The mass, m kg, of a bag is 9.4 kg, rounded to 1 decimal place.
Complete the error interval for m.

ANSWER

1. It was rounded to the nearest 0.1. Half of 0.1 = 0.05
2. Lower: 9.4 − 0.05 = 9.35
3. Upper: 9.4 + 0.05 = 9.45

$9.35 \leq m < 9.45$

Half the unit below and half the unit above.

How to do it

1. What was it rounded to (nearest 1, 0.1, 100 …)?
2. Halve that unit.
3. Lower bound = value − half.
4. Upper bound = value + half.
5. Write: lower ≤ letter < upper.
6. Truncation: the value ≤ letter < the next value up.

Model answer:

$9.35 \leq m < 9.45$

Watch out

- Using ± 0.5 for a 1 d.p. number.
- Using ≤ at both ends.
- Treating truncation like rounding.