

Rounding:

Round to the nearest representable value.

E.g. let us round to tenths.

$$3.43 \approx 3.4$$

$$3.46 \approx 3.5$$

Question: What to do about 5? How do we round 3.45 to tenths? We have to be fair, and rounding up is not fair!

Round to even:

$$3.45 \approx 3.4$$

$$3.55 \approx 3.6$$

In one case we rounded down, the other we rounded up. This is fair!

Why not round to odd? $3.55 \approx 3.5$?

Answer: Suppose we wanted to round it again. We would get $3.55 \approx 3$, as we round 3.5 to odd. This is clearly wrong, as $|4 - 3.55| < |3.55 - 3|$.

Rounding to even: $3.55 \approx 3.6 \approx 4$, as it should.

This avoids the 5, and so avoids the double rounding error.

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