Rounding and Estimation

Example: Rounding to Decimal Places

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Example: Rounding to More Decimal Places

When we round to a particular number of decimal places we just need to circle the corresponding rounding digit, and then we deciding digit is always the one immediately following.

Round 4.650712 to 4 decimal places:

$$4.650(7)\underline{1}2 \longrightarrow 4.6507$$

Test Your Understanding

1) Round 5.453 to 2 decimal places
2) Round 8.7915 to 3 decimal places
3) Round 0.99724 to 4 decimal places
4) Round 57.445945 to 3 decimal places
5) Round 2.264899 to 5 decimal places
6) Round 579.999 to 2 decimal places

Answers

1) 5.45
2) 8.792
3) 0.9972
4) 57.446
5) 2.26490
6) 580.00

Significant Figures

In a number like 27,593, each digit is worth a different amount:

- The 2 is worth 20,000
- The 7 is worth 7,000
- The 5 is worth 500
- The 9 is worth 90
- The 3 is worth 3

The first **significant figure** is 2, the second is 7 etc.

In a number like 4.678,

- The 4 is worth 4
- The 6 is worth $\frac{6}{10}$
- The 7 is worth $\frac{7}{100}$
- The 8 is worth $\frac{8}{1000}$

Example: Rounding to 1 Significant Figure

When rounding with siginificant figures, the way we round depends on the size of the number.

Round 647 to 1 s.f.

$$(6)\underline{4}7 \longrightarrow 600$$

In this case, we are rounding to the nearest hundred because the first significant figure is 6, which has a place value of 600.

Round 0.27 to 1 s.f.

$$0.(2)\underline{7} \longrightarrow 0.3$$

In this case, we are rounding to the nearest tenth (1 d.p.)
because the first significant figure is 2, which is worth 2 tenths.

Round 6,378,527 to 1 s.f.

$$(6)\underline{3}78527$$

In this case we are rounding to the nearest one million because the first significant figure is 6, which is worth 6 million.

Example: More than One Significant Figure

Round 647 to 2 s.f.

$$6(4)\underline{7} \longrightarrow 650$$

Round 0.5472 to 3 s.f.

$$0.54(7)\underline{2} \longrightarrow 0.547$$

Note

Initial zeros do not count as significant figures because they merely show the place value of the other digits. Zeros between non-zero digits **do** count, however.