



Applied Surveying



Significant Figures, Rounding Off

Building and Construction Eng.

Technology Department

Senior Lecturer Alia Haider Alwardy

Outline of lecture

Significant figures

Rounding Off

Scales



Significant figures

Significant figures Rule -1

- ▶ **All non zero digits are ALWAYS** significant
- ▶ How many significant digits are in the following numbers?

- 274

•3 Significant Figures

- 25.632

•5 Significant Digits

- 8.987

•4 Significant Figures

Rule -2

- ▶ **All zeros between significant digits are ALWAYS significant**

504

3 Significant Figures

60002

5 Significant Digits

9.077

4 Significant Figures

Rule -3

- ▶ All **FINAL** zeros to the right of the decimal **ARE** significant
- ▶ How many significant digits are in the following numbers?

32.0

3 Significant Figures

19.000

5 Significant Digits

105.0020

7 Significant Figures

Rule -4

- ▶ All zeros that act as place holders are **NOT** significant

6.02 x 10²³

3 Significant Digits

100.000

6 Significant Digits

150000

2 Significant Digits

800

1 Significant Digit

Rounding Off

Rules Rounding Significant Digits

Rule -1

- ▶ If the digit to the immediate right of the last significant digit **is less than 5**, do not round up the last significant digit.
- ▶ For example, let's say you have the number **43.82** and you **want 3 significant digits**
- ▶ The last number that you want is the 8 – 43.82
- ▶ The number to the right of the 8 is a 2
- ▶ Therefore, you would not round up & the number would be 43.8

Rounding Rule -2

- ▶ If the digit to the immediate right of the last significant digit is **greater than a 5**, you round up the last significant figure
- ▶ Let's say you have the number **234.87** and you **want 4 significant digits**
- ▶ 234.87 – The last number you want is the 8 and the number to the right is a 7
- ▶ Therefore, you would round up & get **234.9**

Rounding Rule -3

- ▶ If the number to the immediate right of the last significant is a 5, round up

- ▶ 78.657 (**you want 3 significant digits**)

- ▶ The number you want is the 6

- ▶ The 6 is followed by a 5

Therefore, you round up

78.6



Rounding Rule -4

- ▶ If the number to the immediate right of the last significant is a 5,
- ▶ **2.535** (want 3 significant digits)
- ▶ The number to the right of the digit you want is a 5
- ▶ Therefore you want the final digit to be even
- ▶ **2.54**



Let's try these examples...

200.99 (want 3 SF) 201

18.22 (want 2 SF) 18

135.50 (want 3 SF) 136

0.00299 (want 1 SF) 0.003

98.59 (want 2 SF) 99

End of lecture...
Questions and Answers?

