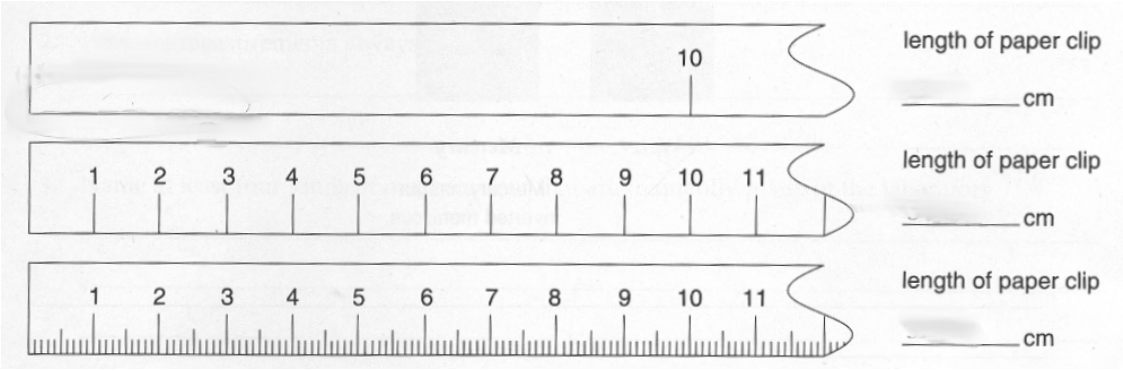
Name: Answer Key **And You Think You Have Significant Problems?**
Date: _____ **Significant Figure Rules & Practice**
Period: _____

Important Ideas

- Measurements (3.25 cm) are different than numbers (3.14159252).
- Measurements consist of a number and units.
- Measurements are an action by someone with a measuring instrument.
- Measurements have built-in uncertainty; no measurement is exact.

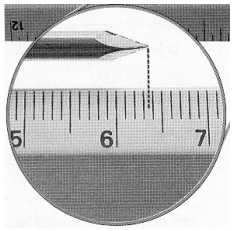
PAPER CLIP:

1. Estimate the length of your paperclip using each of the rulers given below…

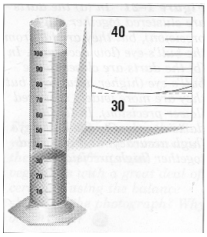


LENGTH:

1. In the picture at right, the scale on the ruler reads to the nearest tenths. This means that we can reasonably estimate to the hundredths place. Therefore, we might say that the length of this nail is 6.36 cm.



VOLUME:



2. In the picture at left, the scale on the graduated cylinder reads to the nearest ones. This means that we can reasonably estimate to the tenths place. Therefore, we might say that the volume of water shown here is 31.7 mL.

Significant Figure Rules

1. Numbers other than zero are always significant!
2. Zeros between significant figures are always significant!
3. Any final zero used after (to the right of) the decimal point is significant!
4. Zeros used solely as place holders (for the decimal point) are **NOT** significant!
5. When we **ADD/SUBTRACT**, your answer is rounded to the smallest/least decimal place.
6. When we **MULTIPLY/DIVIDE**, your answer is rounded to the fewer number of sig. figs.

I. Determine the number of significant figures in each measurement.

1.) 6.751 g
4

2.) 0.157 kg
3

3.) 28.0 nm
3

4.) 2500 m
2

5.) 700. g
3

6.) 30.07 g
4

7.) 0.106 cm
3

8.) 0.0067 g
2

9.) 0.0230 cm
3

10.) 26.509 g
5

11.) 54.52 cm^3
4

12.) 0.1209 m
4

13.) 2.690 g
4

14.) 43.07 cm
4

15.) 635200l g
7

II. Add/Subtract the following, and write your answer with the correct number of significant figures. DON'T FORGET ABOUT UNITS!!!!

RULE: When we add/subtract, your answer is rounded to smallest decimal place.

16.) 16.5 cm + 8 cm + 4.37 cm
28.87 rounds to 29 cm

17.) 13.25 g + 10.00 g + 9.6 g
32.85 g rounds to 32.9 g

18.) 2.36 m + 3.38 m + 0.355 m + 1.06 m
7.155 rounds to 7.16 m

19.) 0.0853 g + 0.0547 g + 0.037 g + 0.00387 g
0.18087 g rounds to 0.181 g

20.) 23.27 km - 12.058 km
11.212 rounds to 11.21 km

21.) 13.57 g - 6.3 g
7.27 rounds to 7.3 g

22.) 350.0 m – 200 m
150 rounds to 150 m

23.) 27.68 cm –14.369 cm
13.311 rounds to 13.31 cm

III. Multiply/Divide the following, and write your answer with the correct number of significant figures. PLEASE BE CAREFUL ABOUT YOUR UNITS!!!

RULE: When we multiply/divide, your answer is rounded to the fewer # of sig. figs.

24.) 2.6 cm x 3.78 cm
9.828 rounds to 9.8 cm^2

25.) 6.54 m x 0.37 m
2.4198 rounds to 2.4 m^2

26.) 0.036 m x 0.0002 m
0.0000072 rounds to 0.000007 m^2

27.) 3.08 km x 5.2 km
16.016 rounds to 16 km^2

28.) 35 cm^2 ÷ 0.62 cm
56.4516 rounds to 56 cm

29.) 39 g ÷ 24.2 g
1.611570 rounds to 1.6

30.) 0.58 dm^3 ÷ 2.15 dm
0.26976 rounds to 0.27 dm^2

31.) 40.8 m^2 ÷ 5.050 m
8.079207 rounds to 8.08 m