Basic Rules

1) Any non-zero digit and zeros in between are significant

   705.001 6 significant digits (705.001)

2) The leading zeros are not significant

   0.00700 3 significant digits (700)
   0.052 2 significant digits (52)

3) A final zero and trailing zeros

   If you have a decimal point count zeros as significant

   10.0 3 significant digits (10.0)
   370. 3 significant digits (370)
   37,000. 5 significant digits (37000)

   If there is no decimal point - ambiguous - do not count trailing zeros

   37,000 2 significant digits (37)
   1,030 3 significant digits (103)

4) Example rewrite 56,000 with 3 significant digits

   56,000 => 5.60x10^4

Addition/Subtraction

1) Can only be as precise as the least precise (to right of decimal point) quantity that you are adding or subtracting

```
  1.26              420.              1.901
+ 2.3             +   3.51          + 2.09
------            --------          -------
  3.56 => 3.6       423.51   => 424     3.991 => 3.99
```

(2 sig digits) (3 sig digits) (3 sig digits)

```
   10.234
    5.2
+ 100.3234
----------
  115.7574 => 115.8
```

(3 sig digits)

2) Can only be as precise as the least precise (no decimal point) quantity that you are adding or subtracting

```
  45300                500
+   176.21           +   1.365
----------           ---------
  45476.21 => 45500    501.365 => 500
```

(3 sig digits) (1 sig digits)

350 ft measured to nearest 10 ft

8 ft measured to nearest ft

```
  350
+   8
-----
  358 => 360
```

(2 sig digits)

OR
350 ft measured to nearest 10 ft => 3.5x10^2ft
8 ft measured to nearest ft => 0.08x10^2ft
3.5x10^2ft + 0.08x10^2ft = 3.58x10^2 = 3.6x10^2

Multiplying/Dividing

1) Result can have only the significant digits as the quantity with the smallest significant digits

2.00 x 3.5 = 7.0 (2 sig digits)
2.05 x 3.5 = 7.175 => 7.18 (2 sig digits)
1.69 x 2.09 = 3.5321 => 3.53 (3 sig digits)

(1.235x10^5)(2.3x10^6) = (1.235x2.3)(10^5 x 10^6) = 2.8405x10^11 => 2.8x10^11 (2 sig digits)

Don't round until you are finished with all your calculations

1) Example: Bathroom floor

area of bathroom = 10.1ft x 12.07ft = 121.907ft^2 (3 sig digits)
area of tile = 1.07ft^2 (3 sig digits)
Least significant digits is 3
area of bathroom/area of tile = 121.907ft^2 / 1.07ft^2 = 113.9317757 =>114 tiles

2) Example

$$\frac{(1.296+5.62)}{2.3}=?$$

```
  1.296
+ 5.62
-------
  6.916 (3 sig digits)
```

$$\frac{6.916}{2.3}=3.0069565 \Rightarrow 3.0 \text{ (2 sig digits)}$$