Worksheet: Review of Significant Digits

1. All digits from 1 – 9 and zeroes in the middle of a measured value are significant digits.

1.667 cm	__4__ sig digs	61 m/s	__2__ sig digs	3.506 miles	__4__ sig digs
307 mm	__3__ sig digs	3.1428571	__8__ sig digs	10006 km	__5__ sig digs

2. "Leading zeroes" (zeroes at the beginning of a measured value) are not significant.

0.00667 cm	__3__ sig digs	0.002004 m/s	__4__ sig digs	0.506 miles	__3__ sig digs
00307.2 cm	__4__ sig digs	0.03 m	__1__ sig digs	000005.2 s	__2__ sig digs

3. "Trailing zeroes" (zeroes at the end of a measured value) are significant **ONLY IF** the number contains a decimal point.

16.00 ounces	__4__ sig digs	42 000 km	__2__ sig digs	0.6090 mm	__4__ sig digs
100 g	__1__ sig digs	0.0310 m	__3__ sig digs	500.20 s	__5__ sig digs

4. Counted values and conversion factors are considered to have an infinite number of sig. digs.

1000 m in a km	__∞__ sig digs	12 eggs per dozen	__∞__ sig digs	1 g = 1000 mg	__∞__ sig digs
60 s per minute	__∞__ sig digs	33 students	__∞__ sig digs	1 marble	__∞__ sig digs

5. When multiplying and/or dividing numbers, the answer must have the same number of significant digits as the measurement with the fewest number of significant digits.

1.5224 x 173 = 263	(3 sd)	100.0 ÷ 33 = 3.0	(2 sd)
1701 ÷ 288.76 = 5.891	(4 sd)	1200 ÷ 2974 = 0.40	(2 sd)
3.2 x 10.1 = 32	(2 sd)	30.75 x 000.822 = 25.3	(3 sd)

6. When adding and subtracting measured values, the answer must have the same number of decimal places as the measured number with the fewest number of decimal places.

15.224 + 173.6 = 188.8	(1 decimal place)	100 – 33 = 67	(no decimal place)
2500.2 – 389.753 = 2110.4	(1 decimal place)	200.5 + 29.498 = 230.0	(1 decimal place)
3.1428571 – 12 = - 9	(no decimal place)	10 – 62.344 = - 52	(no decimal place)

7. Complete the following calculations and round your answer to the correct number of sig.digs:

a) 22.4 h x 0.1 km/h = 2 km   (1 sd)

f) $\frac{465 \text{ km}}{5.21 \text{ h}}$ = 89.2514395 km/h

     = 89.3 km/h   (3 sd)

b) 18 cm³ x 1.10 g/cm³ = 19.8 g

              = 2.0 x 10¹ g   (2 sd)

g) 72.5 m/s x 45.9 s = 3327.75 m

              = 3330 m   (or 3.33 x 10³ m)

c) 17.5 mL + 95 mL + 8.25 mL = 120.75 mL

              = 121 mL

h) 32.1 m + 960 m + 20.02 m = 1012.12 m

              = 1012 m

d) 0.2 cm + 23.91 cm + 0.62 cm = 24.73 cm

              = 24.7 cm

i) 13.63 h - 0.5 h = 13.13 h

              = 13.1 h   (1 decimal place)

e) $\frac{567 \text{ m}}{86 \text{ s}}$ = 6.593023256 m/s

     = 6.6 m/s   (2 sd)

j) 15.9994 μ + 1.00794 μ + 65.39 μ = 82.39734 μ

              = 82.40 μ