

Scientific Notation (Non-Calc)

Write each number in scientific notation.

1) ~~63100000~~

6.31×10^7

2) 0.59×10^2

5.9×10^1

3) ~~480~~

4.8×10^2

4) ~~63.7~~

6.37×10^1

5) ~~0.087~~

8.7×10^{-2}

6) ~~52300000~~

5.23×10^7

Write each number in standard notation.

7) 5×10^7

50,000,000

8) 4×10^{-6}

0.000004

9) 6×10^4

60,000

10) 8.5×10^{-8}

0.000000085

11) 12×10^8

120,000,000

12) 4.4×10^{-1}

0.44

Simplify. Write each answer in scientific notation using proper amount of significant figures.

(1) sig fig
13) $(3 \cdot 10^{-2})(69.4 \cdot 10^4)$
 $208.2 \times 10^2 + 2$
 2.082×10^4
 2×10^4

(2) sig fig
5) $(1.12 \cdot 10^{-5})(9.1 \cdot 10^{-4})$
 $10.192 \times 10^{-9} + 1$
 1.0192×10^{-8}
 1.0×10^{-8}

(2) sig fig
14) $(8.7 \cdot 10^4)(7.31 \cdot 10^5)$
 $63.597 \times 10^9 + 1$
 6.3597×10^{10}
 6.4×10^{10}

(1) sig fig
16) $(9.22 \times 10^{-2})(5 \times 10^{-6})$
 $46.1 \times 10^{-8} + 1$
 4.61×10^{-7}
 5×10^{-7}

$$17) (930 \times 10^2)(6.9 \times 10^{-1})$$

$$(2) \quad \begin{array}{l} 6417 \times 10^{1+3} \\ 6.417 \times 10^4 \\ \boxed{6.4 \times 10^4} \end{array}$$

$$19) (3.4 \times 10^{-3})(4.4 \times 10^{-4})$$

$$(2) \quad \begin{array}{l} 14.96 \times 10^{-7+1} \\ 1.496 \times 10^{-6} \\ \boxed{1.5 \times 10^{-6}} \end{array}$$

$$21) (4.44 \times 10^{-2})(4.1 \times 10^0)$$

$$(2) \quad \begin{array}{l} 18.204 \times 10^{-2+1} \\ 1.8204 \times 10^{-1} \\ \boxed{1.8 \times 10^{-1}} \end{array}$$

$$23) \frac{0.61 \times 10^{-4}}{82 \times 10^{-1}} \quad -4+1$$

$$(2) \quad \begin{array}{l} .007439 \times 10^{-3-3} \\ \boxed{7.4 \times 10^{-6}} \end{array}$$

$$25) \frac{6.87 \times 10^{-2}}{7.9 \times 10^{-1}} \quad -2+1$$

$$(2) \quad \begin{array}{l} .869 \times 10^{-1-1} \\ \boxed{8.7 \times 10^{-2}} \end{array}$$

$$27) \frac{5.5 \times 10^5}{8.23 \times 10^1}$$

$$(2) \quad \begin{array}{l} .668 \times 10^{4-1} \\ \boxed{6.7 \times 10^3} \end{array}$$

$$(3) 29) \frac{1.84 \times 10^3}{2.23 \times 10^{-1}} \quad 3+1$$

$$\begin{array}{l} .8251 \times 10^{4-1} \\ \boxed{8.25 \times 10^3} \end{array}$$

$$(1) 31) \frac{3 \times 10^{-3}}{4 \times 10^5} \quad -3-5$$

$$\begin{array}{l} .75 \times 10^{-8-1} \\ 7.5 \times 10^{-9} \\ \boxed{8 \times 10^{-9}} \end{array}$$

$$(3) 18) (5.85 \times 10^5)(0.422 \times 10^{-2})$$

$$\begin{array}{l} 2.4687 \times 10^3 \\ \boxed{2.47 \times 10^3} \end{array}$$

$$(2) 20) (1.1 \times 10^0)(3.4 \times 10^{-3})$$

$$\begin{array}{l} 3.74 \times 10^{-3} \\ \boxed{3.7 \times 10^{-3}} \end{array}$$

$$(2) 22) (8.47 \times 10^1)(3.3 \times 10^2)$$

$$\begin{array}{l} 27.951 \times 10^{3+1} \\ 2.7951 \times 10^4 \\ \boxed{2.8 \times 10^4} \end{array}$$

$$(2) 24) \frac{4.9 \times 10^{-4}}{7.2 \times 10^{-2}} \quad -4+2$$

$$\begin{array}{l} .6805 \times 10^{-2-1} \\ 6.805 \times 10^{-3} \\ \boxed{6.8 \times 10^{-3}} \end{array}$$

$$(3) 26) \frac{4.91 \times 10^{-2}}{7.54 \times 10^1} \quad -2-1$$

$$\begin{array}{l} .65119 \times 10^{-3-1} \\ 6.5119 \times 10^{-4} \\ \boxed{6.51 \times 10^{-4}} \end{array}$$

$$(2) 28) \frac{0.39 \times 10^{-6}}{2.01 \times 10^{-4}} \quad -6+4$$

$$\begin{array}{l} .394 \times 10^{-2-1} \\ 1.94 \times 10^{-3} \\ \boxed{1.9 \times 10^{-3}} \end{array}$$

$$(1) 30) \frac{3.7 \times 10^4}{6 \times 10^{-2}} \quad 4+2$$

$$\begin{array}{l} .616 \times 10^{6-1} \\ 6.16 \times 10^5 \\ \boxed{6 \times 10^5} \end{array}$$

$$(1) 32) \frac{14 \times 10^{-3}}{2 \times 10^4} \quad -3-4$$

$$\boxed{7 \times 10^{-7}}$$

Name: Key Date _____

How many significant figures do the following numbers have?

- | | | |
|-----------------------|-------------------------------------|--------------------------------------|
| 1) 1234 <u>4</u> | 8) 3.4×10^4 <u>2</u> | 15) 918.010 <u>6</u> |
| 2) 0.023 <u>2</u> | 9) 9.0×10^{-3} <u>2</u> | 16) 0.0001 <u>1</u> |
| 3) 890 <u>2</u> | 10) 9.010×10^{-2} <u>4</u> | 17) 0.00390 <u>3</u> |
| 4) 91010 <u>4</u> | 11) 0.00030 <u>2</u> | 18) 8120 <u>3</u> |
| 5) 9010.0 <u>5</u> | 12) 1020010 <u>6</u> | 19) 7.991×10^{-10} <u>4</u> |
| 6) 1090.0010 <u>8</u> | 13) 780_x <u>2</u> | 20) 72 <u>2</u> |
| 7) 0.00120 <u>3</u> | 14) 1000 <u>1</u> | 21) 005678 <u>4</u> |

Perform the following calculations and round your answer to the appropriate amount of sig figs. *+/- is lowest decimal*

- | | | |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <p>(0) dec. 1) $8.20 + 2 = 10.20$
 $\boxed{10}$</p> | <p>(0) dec. 2) $13.59 + 23.25 + 20 = 56.84$
 $\boxed{57}$</p> | <p>(3) dec. 3) $42.828 + 67.4629 = 110.2909$
 $\boxed{110.291}$</p> |
| <p>(0) dec. 4) $53.4028 - 14 = 39.4028$
 $\boxed{39}$</p> | <p>(1) dec. 5) $39.3 - 0.804 = 38.496$
 $\boxed{38.5}$</p> | <p>(1) dec. 6) $91.68 - 19.1 = 72.58$
 $\boxed{72.3}$</p> |
| <p>(2) s.f. 7) $7.6 \times 21.9 = 166.44$
 $\boxed{170}$</p> | <p>(1) s.f. 8) $2.15 \times 3.1 \times 100 = 666.5$
 $\boxed{700}$</p> | <p>(1) s.f. 9) $5.00009 \times 0.06 = 0.3000054$
 $\boxed{.3}$</p> |
| <p>(0) dec. 10) $334.54 + 198 = 532.54$
 $\boxed{533}$</p> | <p>(2) s.f. 11) $34.1 / 1.1 = 31$
 $\boxed{31}$</p> | <p>(2) s.f. 12) $(2.11 \times 10^3) / 34 = 62.0588$
 $\boxed{62}$</p> |
| <p>(2) dec. 13) $0.0010 - 0.11 = -0.109$
 $\boxed{-0.11}$</p> | <p>(0) dec. 14) $349 + 1.10 + 100 = 450.1$
 $\boxed{450}$</p> | <p>(2) s.f. 15) $450 / 114 = 3.947368$
 $\boxed{3.9}$</p> |
| <p>(2) dec. 16) $298.01 + 34.112 = 332.122$
 $\boxed{332.12}$</p> | <p>(2) s.f. 17) $84 \times 31.221 = 2622.564$
 $\boxed{2600}$</p> | <p>(2) s.f. 18) $23.7 \times 3.8 = 90.06$
 $90 \rightarrow \boxed{9.0 \times 10^1}$</p> |

must write like this for 2 sig figs

Calculate the following. Give the answer in correct scientific notation using the appropriate amount of significant figures.

1) $(4.53 \times 10^5) + (2.2 \times 10^6)$ (2)

$$2.653 \times 10^6$$

$$\boxed{2.65 \times 10^6}$$

3) $(2.34 \times 10^{23}) + (1.92 \times 10^{24})$ (3)

$$2.154 \times 10^{24}$$

$$\boxed{2.15 \times 10^{24}}$$

~~5) $(9.10 \times 10^3) + (2.2 \times 10^6)$~~

2) $1913.0 - (4.6 \times 10^3)$

$$-2.687 \times 10^3$$

$$\boxed{-2.69 \times 10^3}$$

4) $(2.130 \times 10^3) - (6.6 \times 10^2)$

$$1.47 \times 10^3$$

~~6) $(1113.0) - (14.6 \times 10^2)$~~

~~7) $(6.18 \times 10^{-45}) + (4.72 \times 10^{-44})$~~

~~8) $(4.25 \times 10^{-3}) - (1.6 \times 10^{-2})$~~

9) $(3.95 \times 10^2) / (1.5 \times 10^6)$ (2)

$$2.63 \times 10^{-4}$$

$$\boxed{2.6 \times 10^{-4}}$$

11) $(4.44 \times 10^7) / (2.25 \times 10^5)$ (3)

$$1.973 \times 10^2$$

$$\boxed{1.97 \times 10^2}$$

~~13) $(1.05 \times 10^{-26}) / (4.2 \times 10^{56})$~~

10) $(3.5 \times 10^2)(6.45 \times 10^{10})$ (2)

$$2.257 \times 10^{13}$$

$$\boxed{2.3 \times 10^{13}}$$

12) $(4.50 \times 10^{-12})(3.67 \times 10^{-12})$ (3)

$$1.6515 \times 10^{-23}$$

$$\boxed{1.65 \times 10^{-23}}$$

~~14) $(2.5 \times 10^9)(6.45 \times 10^4)$~~

~~15) $(6.022 \times 10^{23}) / (3.011 \times 10^{-56})$~~

~~16) $(6.88 \times 10^2)(3.45 \times 10^{-10})$~~

For each pair of measurements, state which one is more accurate and which one is more precise.

1) Your true height is 70.50 inches. A tape measure that can be read to the nearest $\frac{1}{8}$ inch give your height as 70 ($\frac{3}{8}$) inches. A new laser device at the doctor's office that gives readings to the nearest 0.05 inch gives your height at 70.90 inches.

A: tape measure $70\frac{3}{8}$ in

P: laser 70.90 in

2) Your true height is 62.50 inches. A tape measure that can be read to the nearest $\frac{1}{8}$ inch gives your height as 62 ($\frac{5}{8}$) inches. A new laser device at the doctor's office that gives readings to the nearest 0.05 inch gives your height as 62.50 inches.

A: laser 62.50 in

P: laser 62.50 in

3) Your weight is 52.55 kilograms. A scale at a health clinic that gives your weight measurement to the nearest half kilogram gives your weight as 53 kilograms. A digital scale at the gym gives readings to the nearest 0.01 kilogram gives your weight as 52.88 kilograms.

A: gym 52.88 kg

P: gym 52.88 kg

4) Your weight is 52.55 kilograms. A scale at a health clinic that gives weight measurements to the nearest half kilogram gives your weight at 52.5 kilograms. A digital scale at the gym gives readings to the nearest 0.01 kilogram gives your weight as 51.48 kilograms.

A: clinic 52.5 kg

P: gym 51.48 kg

5) true value = 25

Set: 19, 21, 20, 18

✓ Precise (all close together)

X Accurate (not close)