

NON-GRADED DECIMALS SELF-ASSESSMENT -- ANSWERS

(1) In the following numbers, in what place is the "2"?

- (a) 1234.567 **hundreds**
- (b) 6352.74 **ones**
- (c) 15.4286 **hundredths**
- (d) 0.000002 **millionths**

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(2) Round each number to the indicated place:

- (a) 1234.567; tens **1230**
- (b) 1234.567; tenths **1234.6**
- (c) 765.4321; hundreds **800**
- (d) 765.4321; hundredths **765.43**

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(3) Use comparison symbols (<, >, or =) to compare the following:

- (a) 124.4 **>** 124.35
- (b) 0.12 **<** $\frac{1}{8}$ (**0.125**)
- (c) 0.171 **>** 0.17
- (d) 1.23 **=** 1.230

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(4) Place these numbers in order from smallest to largest:

0.071, 0.07, 0.069, 0.0701, 0.7

Write these numbers above each other and append zeros so they are the same length. Then it should be easy to compare (ignore the decimal dot).

0.0710 → 710 (4th)
0.0700 → 700 (2nd)
0.0690 → 690 (1st)
0.0701 → 701 (3rd)
0.7000 → 7000 (5th)

The numbers in order are:

0.069, 0.07, 0.0701, 0.071, 0.7

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(5) Add:

(a) $84 + 23.5$

(b) $19.3 + 0.93$

Write these numbers above each other while lining up place values (the decimal dots will automatically line up if place values are lined up). Append zeros so numbers line up on the right, and then add:

$$\begin{array}{r} 84.0 \\ + 23.5 \\ \hline 107.5 \end{array} \qquad \begin{array}{r} 19.30 \\ + 0.93 \\ \hline 20.23 \end{array}$$

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(6) Subtract:

(a) $84 - 23.5$

(b) $19.3 - 0.93$

Write these numbers above each other while lining up place values (the decimal dots will automatically line up if place values are lined up). Append zeros so numbers line up on the right, and then add:

$$\begin{array}{r} 84.0 \\ - 23.5 \\ \hline 60.5 \end{array} \qquad \begin{array}{r} 19.30 \\ - 0.93 \\ \hline 18.37 \end{array}$$

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(7) Multiply:

(a) 84×23.5

(b) 19.3×0.93

Write these numbers above each other without the dots while lining up the right-most digit. Multiply and then account for the total number of decimal places in the problem:

$$\begin{array}{r} 235 \\ \times 84 \\ \hline 940 \\ 18800 \\ \hline 19740 \end{array} \qquad \begin{array}{r} 193 \\ \times 93 \\ \hline 579 \\ 17370 \\ \hline 17949 \end{array}$$

$\rightarrow 1974.0$ $\rightarrow 17.949$

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(8) Divide:

(a) $10.08 \div 2.1$

(b) $16.32 \div 1.7$

Multiply both dividend and divisor by powers of 10 until the divisor is a whole number:

$$10.08(10) \div 2.1(10) = 100.8 \div 21$$

$$16.32(10) \div 1.7(10) = 163.2 \div 17$$

Now divide as with whole numbers and move the decimal point straight up in the quotient:

$$\begin{array}{r} 4.8 \\ 21 \overline{)100.8} \end{array} \qquad \begin{array}{r} 9.6 \\ 17 \overline{)163.2} \end{array}$$

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(9) Multiply by powers of 10:

(a) 6.35×10

(b) 6.35×10^3

(c) 6.35×10^{-2}

Because we use a Base 10 number system, each power of 10 is actually one place value. To multiply by powers of 10, you can merely move the decimal point on place value for each power of 10. Move the decimal point right for positive powers of 10; move the decimal point left for negative powers of 10:

(a) $6.35 \times 10 \rightarrow 63.5$ (1 place right)

(b) $6.35 \times 10^3 \rightarrow 6350.$ (3 places right)

(c) $6.35 \times 10^{-2} \rightarrow 0.0635$ (2 places left)



(10) Divide by powers of 10:

(a) $62.5 \div 10$

(b) $62.5 \div 10^3$

(c) $62.5 \div 10^{-2}$

Because we use a Base 10 number system, each power of 10 is actually one place value. To divide by powers of 10, you can merely move the decimal point on place value for each power of 10. Move the decimal point left for positive powers of 10; move the decimal point right for negative powers of 10:

(a) $62.5 \div 10 \rightarrow 6.25$ (1 place left)

(b) $62.5 \div 10^3 \rightarrow 0.0625$ (3 places left)

(c) $62.5 \div 10^{-2} \rightarrow 6250.$ (2 places right)



(11) Write these numbers using scientific notation:

(a) 123,000,000,000

(b) 0.000000123

Write these numbers in standard notation:

(c) 5.64×10^3

(d) 5.64×10^{-2}

For scientific notation, we multiply or divide by powers of 10 until the number is between 0 and 10. Then affix a power of 10 to indicate how many places we had to move the one's place decimal dot:

(a) $123,000,000,000 \rightarrow 1.23 \times 10^{11}$

(b) $0.000000123 \rightarrow 1.23 \times 10^{-7}$

(c) $5.64 \times 10^3 \rightarrow 5640.$

(d) $5.64 \times 10^{-2} \rightarrow 0.0564$

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(12) Complete the chart:

Decimal	Percentage	Fraction
0.56	56%	$\frac{56}{100} = \frac{14}{25}$
0.152	15.2%	$\frac{152}{1000} = \frac{19}{125}$
0.375	37.5%	$\frac{3}{8}$

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