Unit 1B Study Guide: Operations with Rational Numbers

Name: __Key__   Date of Test: _____

1. Find these sums and differences.

a) $3.2 + (+1.7) =$

$$\begin{array}{r} 3.2 \\ +1.7 \\ \hline 4.9 \end{array}$$

$\boxed{4.9}$

b) $-14 + (+15)$

$$\begin{array}{r} 15 \\ -14 \\ \hline 1 \end{array}$$

$\boxed{1}$

c) $1.75 + (-.50) =$

$$\begin{array}{r} 1.75 \\ -0.50 \\ \hline 1.25 \end{array}$$

$\boxed{1.25}$

d) $-6 + (-2.5) =$

$$\begin{array}{r} 6.0 \\ +2.5 \\ \hline -8.5 \end{array}$$

$\boxed{-8.5}$

e) $-13 + 7$

$$\begin{array}{r} 13 \\ -7 \\ \hline -6 \end{array}$$

$\boxed{-6}$

f) $2.2 + (-16) + (-8) =$

$$\begin{array}{r} +16.0 \\ -02.2 \\ \hline -13.8 \end{array} \qquad \begin{array}{r} -13.8 \\ +-8.0 \\ \hline -21.8 \end{array}$$

$\boxed{-21.8}$

g) $\frac{3}{4} + \frac{7}{3}$

$\frac{3\times3}{4\times3} + \frac{7\times4}{3\times4}$

$\frac{9}{12} + \frac{28}{12} = \boxed{\frac{37}{12} \text{ or } 3\frac{1}{12}}$

h) $-\frac{6}{7} + \frac{-4}{5}$

$\frac{-6\times5}{7\times5} + \frac{-4\times7}{5\times7}$

$\frac{-30}{35} + \frac{-28}{35} = \boxed{\frac{-58}{35} \text{ or } -1\frac{23}{35}}$

i) $\frac{4}{3} + \left(-\frac{1}{2}\right) - \frac{3}{4}$

$\frac{4\times2}{3\times2} + \frac{-1\times3}{2\times3}$

$\frac{8}{6} + \frac{-3}{6} = \frac{5}{6}$

$\frac{5}{6} - \frac{3}{4} \rightarrow \frac{5\times4}{6\times4} + \frac{-3\times6}{4\times6}$

$\frac{20}{24} + \frac{-18}{24} = \boxed{\frac{2}{24}}$

or $\frac{1}{12}$

j) $2\frac{5}{8} + 9$

$\frac{21\times1}{8\times1} + \frac{9\times8}{1\times8}$

$\frac{21}{8} + \frac{72}{8} = \boxed{\frac{93}{8} \text{ or } 8\frac{5}{8}}$

k) $-\frac{4}{11} - 2$

$\frac{-4}{11} - \frac{2}{1} \rightarrow \frac{-4\times1}{11\times1} + \frac{-2\times11}{1\times11}$

$\frac{-4}{11} + \frac{-22}{11} = \boxed{\frac{-26}{11} \text{ or } -2\frac{4}{11}}$

8. Mary's has $400 in the bank. She made a deposit of $320.75, and then she withdrew $30.25 for gasoline. She paid a bill for $253. What is her new account balance?

$$\begin{array}{r} 400.00 \\ +320.75 \\ \hline 720.75 \end{array} \quad \begin{array}{r} 720.75 \\ -30.25 \\ \hline 690.50 \end{array} \quad \begin{array}{r} 690.50 \\ -253.00 \\ \hline 437.50 \end{array} \quad \boxed{\$437.50}$$

9. Janice left the mall with $13.42. She spent $42.89 on a pair of jeans, $7.23 on lunch, $17.45 on a shirt, and $28.93 on a purse. How much money did Janice start with?

$$\begin{array}{r} 13.42 \\ +42.89 \\ \hline 56.31 \end{array} \quad \begin{array}{r} 56.31 \\ +7.23 \\ \hline 63.54 \end{array} \quad \begin{array}{r} 63.54 \\ +17.45 \\ \hline 80.99 \end{array} \quad \begin{array}{r} 80.99 \\ +28.93 \\ \hline 109.92 \end{array} \quad \boxed{\$109.92}$$

10. Simplify the following expressions.

a. $1.3(-7)$

$$\begin{array}{r} {}^2 13 \\ \times\ 7 \\ \hline 91 \end{array}\ \boxed{-9.1}$$

b. $(-20) \div .4$

$$4\overline{)200}\quad =\ \boxed{-50}$$

c $1.27 \div (-.3) =$

$$3\overline{)1.3700}\quad \boxed{-4.2\overline{3}}$$

d. $\dfrac{-36}{-12} = 12\overline{)36}\ = \boxed{3}$

e. $.36 \div 1.8 =$

$$1.8\overline{)3.6}\ = \boxed{0.2}$$

f. $\frac{2}{3}\cdot\left(-\frac{5}{7}\right) = \boxed{-\dfrac{10}{21}}$

11. Convert to decimal

a. $\frac{5}{8}$ $8\overline{)5.00} = 0.625$ $\boxed{0.625}$

b. $\frac{7}{9}$ $9\overline{)7.00} = 0.77$ $\boxed{0.\overline{7}}$

c. $-\frac{3}{5}$ $5\overline{)3.0} = 0.6$ $\boxed{-0.6}$

d. $-3\frac{1}{9} = \dfrac{-28}{9}$ $9\overline{)28.00} = 3.11$ $\boxed{-3.\overline{1}}$

12. Sylvia found two worms in the yard and measured them with a ruler. One worm was $\frac{5}{13}$ inch long. The other worm was $\frac{3}{13}$ inch long. What is the difference in the lengths of the worms? $\dfrac{5}{13} - \dfrac{3}{13} = \boxed{\dfrac{2}{13}}$

13. Christopher collected $15\frac{2}{3}$ bins of glass bottles to recycle. Taylor collected $1\frac{1}{5}$ times as many bins as Christopher. How many bins of bottles did Taylor collect?

$$\left(15\frac{2}{3}\right)\left(1\frac{1}{5}\right) = \left(\frac{47}{3}\right)\left(\frac{6}{5}\right) = \boxed{\dfrac{282}{15}\ \text{or}\ 18\frac{12}{15}\ \text{or}\ 18\frac{4}{5}}$$

$$\begin{array}{r} 47 \\ \times\ 6 \\ \hline 282 \end{array}$$

14. It took Margaret 2 hours and 14 minutes to clean her room (including her closet). Write the time it took Margaret to clean her room as a mixed number in simplest form and as a decimal.

$$2\frac{14}{60} \rightarrow \frac{134}{60} \rightarrow \boxed{2.2\overline{3}}$$

60 minutes in 1 hour

$$60\overline{)134.000} = 2.233$$

Simplest Form

$$2\frac{7}{30}$$

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