Mid-Unit Review

Unit 3 Pg 121

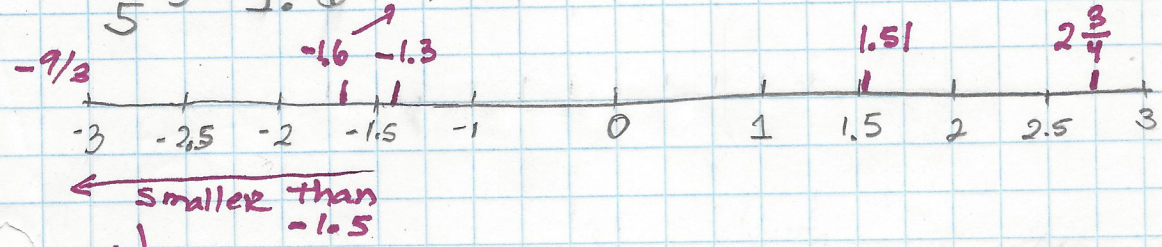
Grade 9

(1) a) $-1.3 \quad 2\frac{3}{4} \quad 1.51 \quad -\frac{8}{5} \quad -\frac{9}{3}$

- To compare numbers always makes sure they are all either decimals or fractions.

$2\frac{+3}{\times 4} = \frac{11}{4} = 2.75$ $\qquad -\frac{9}{3} = -3$

$-\frac{8}{5} = -1.6$ $\quad -8/5$



b) On the negative side of a number line, numbers decrease in value as they get further away from 0.

Therefore, any number on the left side of -1.5 is smaller than -1.5

$$-\frac{9}{3} < -\frac{8}{5} < -1.5$$

(2) Least to greatest

$-\frac{6}{5}, \quad 1.2, \quad -\frac{1}{4}, \quad 0.2, \quad -1\frac{+3}{\times 8} \rightarrow \frac{11}{8}$

$-1.2, \quad 1.2, \quad -0.25, \quad 0.2, \quad 0.125$

- Negative numbers are bigger the closer they are to 0.

$-1.2 < -0.25$

So $\rightarrow$ $-1.2 < -0.25 < 0.125 < 0.2 < 1.2$

$-6/5 \quad -1/4 \quad 1\frac{3}{8}$

- Positive numbers are always greater than negative number

And greater go as they go away from 0.

- Always compare numbers in same place

10^{TH}, 100^{TH}, etc

(3) a) $-\frac{2}{3} > -\frac{3}{4}$

$\downarrow$ $\downarrow$

$-0.\overline{6} > -0.75$

- EITHER MAKE THEM INTO FRACTIONS WITH A COMMON DENOMINATOR

OR

- COMPARE THEIR DECIMAL VALUES

(negative numbers closer to 0 are 'greater')

b) $-\frac{8}{3} < -\frac{9}{4}$

$\downarrow$

$-2.\overline{6} < -2.25$

c) $-2.5 \quad 0.5$

$-2.5 < 0.5$

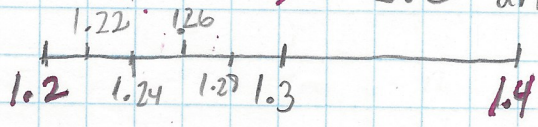
d) $-\frac{4}{5} > -0.9$

$\downarrow$ $\downarrow$

$-0.8 > -0.9$

(4)

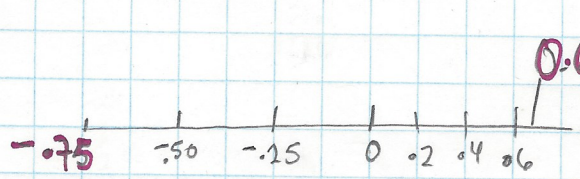
a) 1.2, 1.4 ⇝ 1.3 and 1.22



b) $-\frac{3}{4}$, $\frac{5}{8}$

$\downarrow$ $\downarrow$

$-0.75 \quad 0.625$

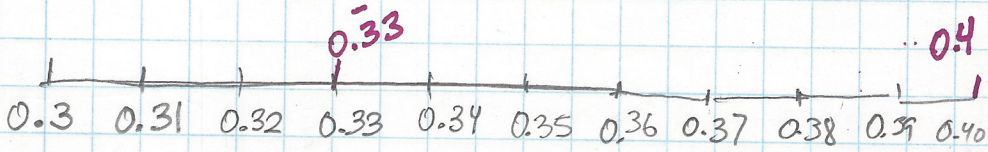


$\therefore -0.5, 0.4$

c) $0.4, \frac{1}{3}$

$\downarrow$

$0.\overline{3}$

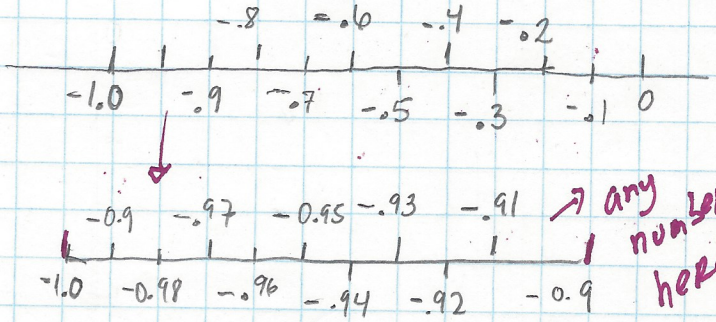


$\therefore 0.34, -0.36$

d) $-1.05, -\frac{9}{10}$

$\downarrow$

-0.9



(5) a) • If the added numbers are both positive, the sign of the sum will be positive

• If the added numbers are both negative, the sign of the sum will be negative

• When Two numbers have opposite signs, the sum will have the sign of the number with the greatest value.

b) i) $2.35 + 3.47 \rightarrow (+)$ both are positive

ii) $-5.783 + (-0.247) \rightarrow (-)$ both are negative

iii) $-\frac{2}{3} + (-1\frac{1}{8}) \rightarrow (-)$ both are negative

iv) $-5.27 + 6.58 \rightarrow (+)$ the positive number is the biggest

v) $-\frac{17}{5} + \frac{4}{9} \rightarrow -3.4 + 0.44 \rightarrow (-)$

↳ 3.4 is bigger than 0.44, and since it is negative, the answer is (-).

vi) $0.085 + (-0.125) \rightarrow (-)$

↳ 0.125 is greater than 0.085

(6) a) $8.37 + 0.58 = 8.95$

$$\begin{array}{r} {\scriptstyle 1} \\ 8.37 + \\ 0.58 \\ \hline 8.95 \end{array}$$

b) $-21.25 + (-36.57) = -57.82$

$$\begin{array}{r} {\scriptstyle 1} \\ -21.25 + \\ -36.57 \\ \hline -57.82 \end{array}$$

c) $-157.4 + 32.7 = -124.7$

$$\begin{array}{r} 157.4 - \\ 32.7 \\ \hline 124.7 \end{array}$$

d) $\frac{5}{8} \times \frac{9}{9} \quad \left(-\frac{1}{9}\right) \times \frac{8}{8}$

$$\frac{45}{72} + \left(\frac{-8}{72}\right) = \frac{45-8}{72} = \frac{37}{72}$$

e) $-8\frac{1}{4} + 5\frac{1}{5} \longrightarrow -\frac{33}{4} + \frac{26}{5}$

$-\frac{33\times5}{4\times5} + \frac{26\times4}{5\times4} = \frac{-165}{20} + \frac{104}{20} = \boxed{-\frac{61}{20}}$

f) $-\frac{5}{3} + \left(-\frac{23}{7}\right) \longrightarrow -\frac{5\times7}{3\times7} + \left(-\frac{23\times3}{7\times3}\right)$

$-\frac{35}{21} + \left(-\frac{69}{21}\right) = \frac{-35-69}{21} = \boxed{\frac{-104}{21}}$

(7) -16.1 to -14.7

a) i) $-14.7 + X = -16.1$ $\quad \boxed{+1.4^\circ C}$

$X = (-16.1) + 14.7 = -1.4^\circ C$ temperature change

ii) Since -14.7 is closer to 0, it means the change Represents an increase

b) $-14.7 + X = -3.8^\circ C$

$X = (-3.8^\circ C) + 14.7^\circ C = 10.9^\circ$

$\boxed{X = \text{change} = 10.9^\circ C}$

(8) a) $40.25 - 63.10 = \boxed{-22.85}$

b) $-112.2 - (-14.8) = -112.2 + 14.8 = \boxed{-97.4}$

c) $\frac{2}{5} - \frac{9}{10} = \frac{2\times2}{5\times2} - \frac{9}{10} = \frac{4}{10} - \frac{9}{10} = \frac{4-9}{10} = \boxed{-\frac{5}{10} = -\frac{1}{2}}$

d) $-4\frac{+4}{\times9} - 3\frac{+5}{\times6} = -\frac{40\times2}{9\times2} \frac{23\times3}{6\times3} = \frac{-80-69}{18} = \boxed{-\frac{149}{18}} = -8\frac{5}{18}$

e) $-1.8 - 4.3 = \boxed{-6.1}$

f) $\frac{23}{8} - \left(-\frac{7}{2}\right) = \frac{23}{8} + \frac{7\times4}{2\times4} = \frac{23}{8} + \frac{28}{8} = \boxed{\frac{51}{8}} = 6\frac{3}{8}$

(9) $-86\ m \rightarrow$ Death Valley

$+6193.7\ m \rightarrow$ Mt. McKinley

to calculate the distance:

$$(6193.7\ m) - (-86)m = \boxed{6279.7\ m}$$

(10) a) When using the "add the opposite" strategy we convert a subtraction into an addition. In an addition, the sign of the greatest absolute number is the sign of the answer

b) i) $62.4 - 53.7 \rightarrow \boxed{+\ 8.7}$

ii) $-0.54 - 1.98 \rightarrow -0.54 + (-1.98) \rightarrow \boxed{-2.52}$

iii) $\frac{1}{12} \times \frac{10}{10} - \frac{9}{10} \times \frac{12}{12} \rightarrow \frac{10}{120} - \frac{108}{120} = \frac{10-108}{120} = -\frac{98}{120}$

$$\boxed{-\frac{49}{60}}$$

iv) $5\frac{2}{3} - (-7\frac{1}{2}) \rightarrow \frac{17}{3} \times \frac{2}{2} + \frac{15}{2} \times \frac{3}{3} = \frac{34}{6} + \frac{45}{6}$

$$\boxed{\frac{79}{6}} \quad \boxed{+\ 13\frac{1}{6}}$$