Grade 9 Math – Unit 3 Test – Rational Numbers – PRACTICE!

Name: _____ Total: /40

Multiple Choice - Place the letter of the best response in the blank to the left.

_____ 1. Which is a rational number?

(A) $\sqrt{9}$

(B) $0.51367\ldots$

(C) $2.167\ldots$

(D) π

_____ 2. What is the reciprocal of $-3\frac{3}{4}$? $= \frac{-15}{4} \rightarrow \frac{-4}{15}$

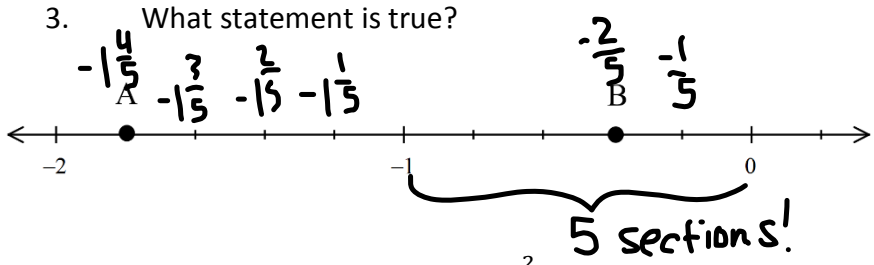
(A) $-3\frac{4}{3}$

(B) $-\frac{15}{4}$

(C) $-\frac{4}{9}$

(D) $-\frac{4}{15}$

_____ 3. What statement is true?



(A) $A = -1.4$ $B = -\frac{2}{5}$

(B) $A = -2.2$ $B = -\frac{2}{5}$

(C) $A = -1\frac{4}{5}$ $B = -0.2$

(D) $A = -1\frac{4}{5}$ $B = -0.4$

_____ 4. Which rational number is **smallest**? → think of vertical # line, which # is lowest.

(A) $\frac{-11}{5} = -2.2$

(B) $-\frac{7}{2} = -3.5$

(C) $\frac{8}{-3} = -2.\overline{6}$

(D) $\frac{-13}{6} = -2.1\overline{6}$

_____ 5. What is the fraction form of -3.6?

(A) $-\frac{18}{5}$

(B) $-\frac{9}{2}$

(C) $\frac{9}{2}$

(D) $\frac{18}{5}$

$-3\frac{6}{10} = -3\frac{3}{5} = -\frac{18}{5}$

_____ 6. Which rational number is between -0.28 and -0.27?

~~(A)~~ -0.261

(B) -0.273

(C) -0.282

(D) -0.294

-0.280 and -0.270

_____ 7. Which statement is equivalent to $\left(+\frac{3}{5}\right) - \left(-\frac{2}{3}\right)$?

(A) $\left(+\frac{3}{5}\right) + \left(-\frac{2}{3}\right)$

(B) $\left(+\frac{3}{5}\right) + \left(+\frac{2}{3}\right)$

(C) $\left(-\frac{3}{5}\right) - \left(+\frac{2}{3}\right)$

(D) $\left(-\frac{3}{5}\right) + \left(+\frac{2}{3}\right)$

$\frac{3}{5} + \left(+\frac{2}{3}\right)$

"add the opposite."

Keep, Change, Change

1st fraction

Subtraction to add

2nd fraction to opposite

_____ 8. What number needs to go in the blank to make the statement true?

$$(-4.2) \div \_\_\_ = (-1.5)$$

$\frac{-4.2}{x} = \frac{-1.5}{1}$

(A) -6.3

(B) -2.8

(C) 2.8

(D) 6.3

_____ 9. Which step needs to be completed first using Order of Operations?

$$(-9.2) - \underbrace{4.3 \times 2.5} \div 5.3 + (-7.2)$$

(A) $(-9.2) - 4.3$

(B) 4.3×2.5

(C) $2.5 \div 5.3$

(D) $5.3 + (-7.2)$

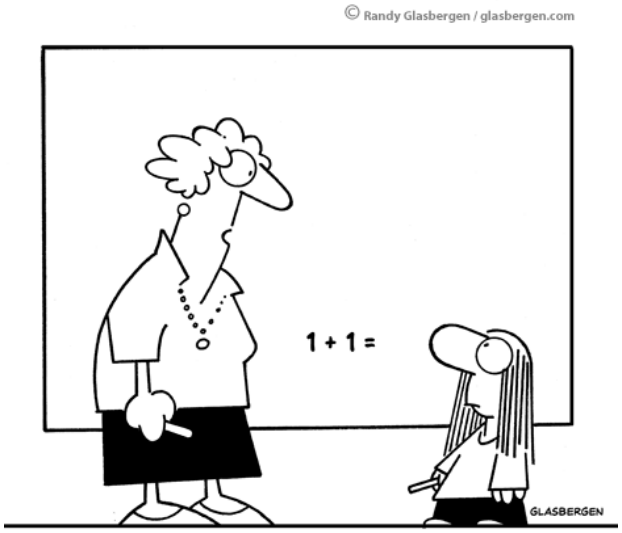
_____ 10. Determine the sum: $-\frac{1}{3} + 0.5$ $= \frac{-1}{3} + \frac{5}{10} = \frac{-1}{3}\frac{\times 2}{\times 2} + \frac{1}{2}\frac{\times 3}{\times 3} = \frac{-2}{6} + \frac{3}{6} = \frac{1}{6}$

(A) $-\frac{5}{6}$

(B) $-\frac{1}{6}$

(C) $\frac{1}{6}$

(D) $\frac{5}{6}$



"Yes, this will be useful to you later in life."

Constructed Response – Answer all questions and show all workings in the space provided.

11. Using equivalent fractions, find **2 fractions** between $\left(-\frac{3}{4}\right)$ and $\left(-\frac{2}{3}\right)$. Show all work. (2 marks)

$\left(-\frac{3}{4}\right)$ $\times 3$ $\times 3$ $\left(-\frac{2}{3}\right)$ $\times 4$ $\times 4$

$-\frac{9}{12}$ $\times 10$ $\times 10$ and $-\frac{8}{12}$ $\times 10$ $\times 10$

*make sure your answer is clear!!!

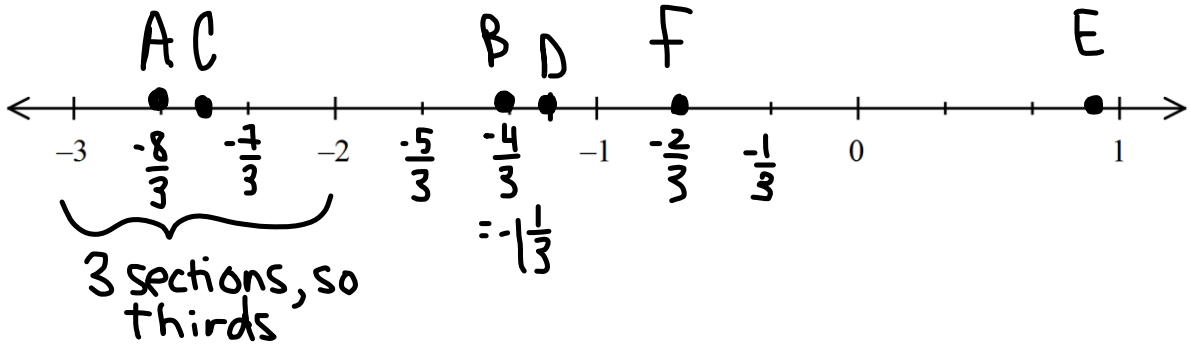
So any # between $-\frac{90}{120}$ and $-\frac{80}{120}$

Such as $-\frac{81}{120}, -\frac{82}{120}, \ldots -\frac{88}{120}, -\frac{89}{120}$

12. Place each rational number on the number line below. (3 marks)

A. $-\frac{8}{3}$ B. $-1.\overline{3}$ C. $-2\frac{1}{2}$ D. $-\frac{7}{6}$ E. 0.9 F. $-\frac{2}{3}$

$= -1\frac{1}{3}$ $= -1\frac{1}{6}$



13. Evaluate. (4 marks)

(A) $-4.3 - 7.2$

-11.5

(B) $(-0.8) \times (-3.1)$

2.48

(C) $5.2 - (-2.5)$

7.7

(D) $(3.52) \div (-2.2)$

-1.6

14. Evaluate. Show all necessary work and **express answer in lowest terms** for full marks.

(12 marks)

(A) $-2\frac{3}{4}+\frac{1}{3}$

$= \frac{-11\times3}{4\times3} + \frac{1\times4}{3\times4}$

$= \frac{-33}{12} + \frac{4}{12}$

$= \frac{-29}{12} = -2\frac{5}{12}$

(B) $-\frac{13}{5}\times\frac{6}{6} - \frac{5}{6}\times\frac{5}{5} = \frac{-78}{30} - \frac{25}{30}$

$= \frac{-103}{30}$

$= -3\frac{13}{30}$

(C) $\frac{21}{8}\times-\frac{16}{9}$

$\frac{-336}{72}$ OR $\frac{\cancel{21}^{7}}{\cancel{8}_{1}} \times \frac{-\cancel{16}^{2}}{\cancel{9}_{3}}$

$-4\frac{2}{3}$

$\frac{-14}{3} = -4\frac{2}{3}$

(D) $-2\frac{1}{3}\times\frac{11}{14}$

$\frac{-7}{3}\times\frac{11}{14}$

$\frac{-77}{42}$

$-1\frac{5}{6}$

$\frac{-\cancel{7}^{1}}{3}\times\frac{11}{\cancel{14}_{2}} = \frac{-11}{6} = -1\frac{5}{6}$

(E) $\frac{18}{-5}\div\frac{-12}{10}$

$= \frac{-18}{5}\times\frac{-10}{12}$

$= \frac{180}{60}$

$= 3$

$\frac{-\cancel{18}^{3}}{\cancel{5}_{1}}\times\frac{-\cancel{10}^{2}}{\cancel{12}_{2}}$

$= \frac{6}{2}$

$= 3$

(F) $2\frac{2}{5}\div(-2)$

$= \frac{12}{5} \div \frac{-2}{1}$

$= \frac{12}{5}\times\frac{-1}{2}$

$= \frac{-12}{10}$

$= \frac{-6}{5}$

$= -1\frac{1}{5}$

15. The product of 2 numbers is $(-\frac{5}{8})$. If one number is $\left(-\frac{1}{2}\right)$ what is the other number?

(2 marks)

$\boxed{X}\times\frac{-1}{2} = \frac{-5}{8}$

Answer: $1\frac{1}{4}$

So, $X = \frac{-5}{8}\div\frac{-1}{2} = \frac{-5}{8}\times\frac{-2}{1} = \frac{10}{8} = \frac{5}{4} = 1\frac{1}{4}$

16. Evaluate each expression. Show all workings. (6 marks)

① $-\frac{3}{5} \times -\frac{10}{9} = \frac{30}{45} = \frac{2}{3}$

(A) $-\frac{3}{5} \div \left(-\frac{9}{10}\right) - 2\frac{1}{2} \times \left(\frac{-3}{10}\right)$

$= \underbrace{-\frac{3}{5} \div \left(-\frac{9}{10}\right)} - \underbrace{\frac{5}{2} \times -\frac{3}{10}}$

$\frac{2\times4}{3\times4} - \frac{3\times3}{4\times3}$

$\frac{8}{12} - \frac{9}{12}$

$\frac{-1}{12}$

② $\frac{5}{2} \times \frac{3}{10}$

$\frac{15}{20}$

$\frac{3}{4}$

(B) $\left(\frac{2}{3}\right)^2 \div \left(-\frac{4}{3}\right) - \left[\frac{1}{2} - \frac{5}{6}\right]$

$\left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right)$

$= \frac{4}{9}$

$\underbrace{\frac{4}{9} \div \left(-\frac{4}{3}\right)} - \left[-\frac{1}{3}\right]$

$-\frac{1}{3} - \left(-\frac{1}{3}\right)$

0

$\frac{1\times3}{2\times3} - \frac{5}{6}$

$\frac{3}{6} - \frac{5}{6}$

$-\frac{2}{6} = -\frac{1}{3}$

$\frac{4}{9} \div -\frac{4}{3} = \frac{4}{9} \times -\frac{3}{4} = \frac{-12}{36} = \frac{-1}{3}$

17. A student completed a test question as indicated. **Circle and explain their mistake**; then redo the problem correctly. (3 marks)

they subtracted before division and multiplication.

$-\left(\frac{1}{2}\right) \div \frac{5}{6} - \frac{3}{6} \times \frac{-12}{5}$

$= -\left(\frac{1}{2}\right) \div \frac{2}{6} \times \frac{-12}{5}$

$= -\left(\frac{1}{2}\right) \times \frac{6}{2} \times \frac{12}{5}$

$= -\left(\frac{6}{4}\right) \times \frac{12}{5}$

$= -\frac{18}{5}$

$\underbrace{-\frac{1}{2} \div \frac{5}{6}} - \frac{3}{6} \times -\frac{12}{5}$

$-\frac{3}{5} - \underbrace{\frac{3}{6} \times -\frac{12}{5}}$

$-\frac{3}{5} - -\frac{6}{5}$

$\frac{3}{5}$

① $-\frac{1}{\cancel{2}_1} \times \frac{\cancel{6}^3}{5}$

$-\frac{3}{5}$

② $\frac{3}{\cancel{6}_1} \times -\frac{\cancel{12}^2}{5}$

$-\frac{6}{5}$