Unit 3- Let's Be Rational- Review #1

Name_____ Group_____

Unit 3 Test Study Guide:

- Estimation
- Adding/Subtracting/Multiplying/Dividing Fractions, Whole Numbers and Mixed Numbers
- Writing Algorithms
- Fact Families
- Solving Word Problems

A. WORD PROBLEMS

For each of the Questions below, do the following.

- Decide which operation you need to find an answer by underlining or highlighting key words.
- Write the number sentence you use and solve.

Key words in word problems

Addition (sum) Together total	Subtraction (difference) Left How many more...?
Multiplication (product) Every Of Each weeks	Division (quotient) How many...? sections, pieces, parts etc.

1.

Jimarcus plans to build a fence $5\frac{1}{3}$ yards long at the back of his garden. How many $\frac{2}{3}$-yard sections of fence will he need? (Division)

$5\frac{1}{3} \div \frac{2}{3}$

$\frac{16}{3} \div \frac{2}{3}$

$\frac{16}{3} \cdot \frac{3}{2}$ He will need

$\frac{48}{6} =$ 8 sections.

OR

$5\frac{1}{3} \div \frac{2}{3}$

$\frac{16}{3} \div \frac{2}{3}$

$\frac{\cancel{16}^{8}}{\cancel{3}_{1}} \cdot \frac{\cancel{3}^{1}}{\cancel{2}_{1}}$ He will need

$\frac{8}{1} =$ 8 sections

2.

Sasha bought $3\frac{1}{2}$ pints of blueberries to make jelly. She ate $\frac{3}{4}$ of a pint of berries on her way home. How many pints of berries does she have left to make jelly? (subtraction)

$\frac{1}{2} = \frac{2}{4}$

$3\frac{1}{2} - \frac{3}{4}$

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

$2\frac{6}{4} - \frac{3}{4}$

She has $2\frac{3}{4}$ pints left.

$3\frac{2}{4} = 2\frac{4}{4} + \frac{2}{4} = 2\frac{6}{4}$

OR

$3\frac{1}{2} - \frac{3}{4}$

$\frac{7}{2} - \frac{3}{4}$

$\frac{14}{4} - \frac{3}{4}$ She has

$\frac{11}{4} =$ $2\frac{3}{4}$ pints left

$\frac{7}{2} = \frac{14}{4}$

3.

Judi uses $2\frac{3}{4}$ pounds of potatoes every week. How many pounds of potatoes does she use in $3\frac{1}{2}$ weeks? (Multiplication)

$2\frac{3}{4} \cdot 3\frac{1}{2}$

$\frac{11}{4} \cdot \frac{7}{2}$

$\frac{77}{8}$

Judi uses $9\frac{5}{8}$ pounds of potatoes in $3\frac{1}{2}$ weeks.

Extra Credit Question:
What is Mrs. B's favorite thing to do during the holidays?

4.

At a bake sale, Leslie sold $2\frac{1}{2}$ dozen sweet rolls. Christie sold sweet rolls but did not keep track of what she sold. She started with 5 dozen sweet rolls and had $1\frac{2}{3}$ dozen left at the end of the sale. Who sold more sweet rolls? How many more did she sell? (subtraction)

Part #1

Christie

$5 - 1\frac{2}{3}$

borrow $4\frac{3}{3} - 1\frac{2}{3}$ OR

$\frac{5}{1} - \frac{5}{3}$

$\frac{15}{3} - \frac{5}{3}$

Christie sold $3\frac{1}{3}$ dozen

$\frac{10}{3} = 3\frac{1}{3}$ dozen

Christie sold $3\frac{1}{3}$ dozen

Part #2

Christie: $3\frac{1}{3} - 2\frac{1}{2}$

borrow $3\frac{2}{6} - 2\frac{3}{6}$ OR

$2\frac{8}{6} - 2\frac{3}{6}$

$\frac{5}{6}$ dozen more

Leslie: $3\frac{1}{3} - 2\frac{1}{2}$

$\frac{10}{3} - \frac{5}{2}$

$\frac{20}{6} - \frac{15}{6}$

$\frac{5}{6}$ dozen more

Christie sold $\frac{5}{6}$ dozen more than Leslie.

5.

Mrs. Larnell is making snack packs for a class picnic. She puts $\frac{1}{4}$ pound of apples, $\frac{1}{8}$ pound of nut mix, and $\frac{1}{16}$ pound of chocolate in each student's pack. There are 24 students in the class. What is the total weight of the snack packs? Is there more than one way to solve this problem? (Multiplication & Addition)

Part #1

Apples: $\frac{1}{4} \cdot 24$

$\frac{1}{4} \cdot \frac{24}{1}$

$\frac{24}{4}$

6 pounds

nut mix: $\frac{1}{8} \cdot 24$

$\frac{1}{8} \cdot \frac{24}{1}$

$\frac{24}{8}$

3 pounds

Chocolate: $\frac{1}{16} \cdot 24$

$\frac{1}{16} \cdot \frac{24}{1}$

$\frac{24}{16}$

$1\frac{8}{16} = 1\frac{1}{2}$ pounds

Part #2

$6 + 3 + 1\frac{1}{2}$

$10\frac{1}{2}$ pounds

The total weight of the snack packs is $10\frac{1}{2}$ pounds.

B. Solve for N. (Hint: Find the equation in the fact family that is the easiest to solve!)

1. Fact Family

① $N + \frac{3}{5} = 7$ ② $\frac{3}{5} + N = 7$ ③ $7 - N = \frac{3}{5}$ ④ $7 - \frac{3}{5} = N$

$\frac{7}{1} - \frac{3}{5} = N$

$\frac{35}{5} - \frac{3}{5} = N$

$\frac{32}{5} = N$

$6\frac{2}{5} = N$

OR $6\frac{5}{5} - \frac{3}{5} = N$

$6\frac{2}{5} = N$

2. FACT FAMILY

① $1 + N = \frac{15}{8}$ ② $N + 1 = \frac{15}{8}$ ③ $\frac{15}{8} - N = 1$ ④ $\frac{15}{8} - 1 = N$

$\frac{15}{8} - \frac{1}{1} = N$

$\frac{15}{8} - \frac{8}{8} = N$

$\frac{7}{8} = N$

OR $\frac{7}{8} = N$

3. FACT FAMILY

① $N - \frac{5}{2} = 3$ ② $N - 3 = \frac{5}{2}$ ③ $\frac{3}{4} + \frac{5}{2} = N$ ④ $\frac{5}{2} + \frac{3}{4} = N$

$\frac{10}{4} + \frac{3}{4} = N$

$\frac{13}{4} = N$

$3\frac{1}{4} = N$

4. FACT FAMILY

① $N - \frac{11}{6} = \frac{37}{6}$ ② $N - \frac{37}{6} = \frac{11}{6}$ ③ $\frac{37}{6} + \frac{11}{6} = N$ ④ $\frac{11}{6} + \frac{37}{6} = N$

$\frac{48}{6} = N$

$8 = N$

5. FACT FAMILY

① $\frac{6}{7} \div N = \frac{18}{49}$ ② $\frac{6}{7} \div \frac{18}{49} = N$ ③ $\frac{18}{49} \cdot N = \frac{6}{7}$ ④ $N \cdot \frac{18}{49} = \frac{6}{7}$

126 · 2 / 252

$\frac{6}{7} \div \frac{18}{49} = N$

$\frac{6}{7} \cdot \frac{49}{18} = N$

$\frac{294}{126} = N$

$2\frac{42}{126} = N$

$2\frac{1}{3} = N$

OR $\frac{6}{7} \div \frac{18}{49} = N$

$\frac{7}{3} = N$

$2\frac{1}{3} = N$

6. FACT FAMILY

① $\frac{11}{16} \div N = \frac{1}{32}$ ② $\frac{11}{16} \div \frac{1}{32} = N$ ③ $\frac{1}{32} \cdot N = \frac{11}{16}$ ④ $N \cdot \frac{1}{32} = \frac{11}{16}$

$\frac{11}{16} \div \frac{1}{32} = N$

$\frac{11}{16} \cdot \frac{32}{1} = N$

$\frac{352}{16} = N$

$22 = N$

KEEP CHANGE FLIP

OR $\frac{11}{16} \div \frac{1}{32} = N$

$\frac{11}{16} \cdot \frac{32}{1} = N$

$\frac{22}{1} = N$

$22 = N$

7. FACT FAMILY

① $N \cdot \frac{3}{8} = \frac{15}{8}$ ② $\frac{3}{8} \cdot N = \frac{15}{8}$ ③ $\frac{15}{8} \div N = \frac{3}{8}$ ④ $\frac{15}{8} \div \frac{3}{8} = N$

$\frac{15}{8} \div \frac{3}{8} = N$

$\frac{15}{8} \cdot \frac{8}{3} = N$

$\frac{120}{24} = N$

$5 = N$

OR $\frac{15}{8} \div \frac{3}{8} = N$

$\frac{15}{8} \cdot \frac{8}{3} = N$

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

$5 = N$

8. FACT FAMILY

① $N \cdot \frac{3}{5} = \frac{1}{2}$ ② $\frac{3}{5} \cdot N = \frac{1}{2}$ ③ $\frac{1}{2} \div N = \frac{3}{5}$ ④ $\frac{1}{2} \div \frac{3}{5} = N$

$\frac{1}{2} \div \frac{3}{5} = N$

$\frac{1}{2} \cdot \frac{5}{3} = N$

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

NOT ON TEST

Unit 3- Let's Be Rational- Review #2

Name _____ Group _____ Date _____

A. Define the following terms.

1. Reciprocal: the product of a reciprocal & the original number is 1. Used in dividing fractions. (can be a whole #, mixed # or fraction)
2. Algorithm: the set of steps for performing a procedure, used for all operations

Operation of...

3. Sum: Addition 4. Difference: Subtraction 5. Quotient: Division 6. Product: Multiplication

B. Fill in the blank.

- When you Add or subtract fractions, you MUST have a common denominator.
- When you multiply or divide fractions, you MUST put all numbers in fractional form.
- The 3 word algorithm of division of fractions is 1. KEEP (1st fraction) 2. CHANGE (operation ÷ → ·) and 3. FLIP (to its reciprocal.)

C. Solve each equation. Simplify when necessary. (Remember: Addition and Subtraction MUST HAVE a common denominator!)

1. $5\frac{1}{2}+6\frac{4}{7}=$

$=5\frac{1}{2}+6\frac{4}{7}$

$=\frac{11}{2}+\frac{46}{7}$

$=\frac{77}{14}+\frac{92}{14}$

$=\frac{169}{14}=\boxed{12\frac{1}{14}}$

OR $5\frac{7}{14}+6\frac{8}{14}=11\frac{15}{14}=\boxed{12\frac{1}{14}}$

2. $\frac{10}{7}+5=$

$\frac{10}{7}+\frac{5}{1}=$

$\frac{10}{7}+\frac{35}{7}=$

$\frac{45}{7}=\boxed{6\frac{3}{7}}$

3. $\frac{11}{9}+\frac{2}{3}=$

$\frac{33}{27}+\frac{18}{27}=$

$\frac{51}{27}=1\frac{24}{27}=\boxed{1\frac{8}{9}}$

4. $\frac{8}{5}+\frac{3}{10}=$

$=\frac{16}{10}+\frac{3}{10}$

$=\frac{19}{10}=\boxed{1\frac{9}{10}}$

5. $\frac{5}{2}-\frac{1}{6}=$

$=\frac{30}{12}-\frac{2}{12}$

$=\frac{28}{12}=2\frac{4}{12}=\boxed{2\frac{1}{3}}$

6. $\frac{9}{4}-\frac{7}{10}=$

$=\frac{45}{20}-\frac{14}{20}$

$=\frac{31}{20}=\boxed{1\frac{11}{20}}$

7. $\frac{15}{8}-1=$

$=\frac{15}{8}-\frac{8}{8}$

$=\boxed{\frac{7}{8}}$

8. $\frac{16}{7}-\frac{1}{14}=$

$=\frac{32}{14}-\frac{1}{14}$

$=\frac{31}{14}=\boxed{2\frac{3}{14}}$

9. $\frac{6}{7}-\frac{5}{8}=$

$=\frac{48}{56}-\frac{35}{56}$

$=\boxed{\frac{13}{56}}$

10. $\frac{6}{7}\cdot\frac{10}{3}=$

$=\frac{60}{21}$

$=2\frac{18}{21}=\boxed{2\frac{6}{7}}$

11. $9\frac{1}{3}\cdot2\frac{1}{4}=$

$=\frac{28}{3}\cdot\frac{9}{4}$

$=\frac{252}{12}$

$=\boxed{21}$

OR

$=9\frac{1}{3}\cdot2\frac{1}{4}$

$=\frac{28}{3}\cdot\frac{9}{4}$

$=\frac{21}{1}$

$=\boxed{21}$

12. $\frac{6}{7}\div\frac{14}{12}=$

$=\frac{6}{7}\cdot\frac{12}{14}$

$=\frac{72}{98}$

$=\boxed{\frac{36}{49}}$

Extra credit Answer: Mrs. B's favorite thing to do during the holidays is spend time with family, watch christmas movies, go to NYC to see the windows & tree.

13. $7+\frac{5}{6}=$

$=\frac{7}{1}+\frac{5}{6}$

$=\frac{42}{6}+\frac{5}{6}$

$=\frac{47}{6}=\boxed{7\frac{5}{6}}$

14. $\frac{3}{5}+\frac{1}{2}=$

$=\frac{6}{10}+\frac{5}{10}$

$=\frac{11}{10}$

$=\boxed{1\frac{1}{10}}$

15. $\frac{12}{16}\div\frac{10}{20}=$ $=\frac{12}{16}\div\frac{10}{20}$

$=\frac{12}{16}\cdot\frac{20}{10}$ OR $=\frac{\cancel{12}^{3}}{\cancel{16}_{4}}\cdot\frac{\cancel{20}^{5}}{\cancel{10}_{5}}$

$=\frac{240}{160}$ $=\frac{30}{20}$

$=1\frac{80}{160}=\boxed{1\frac{1}{2}}$ $=1\frac{10}{20}=\boxed{1\frac{1}{2}}$

16. $1\frac{7}{8}\div\frac{9}{6}=$ $=\frac{7}{8}\div\frac{9}{6}$

$=\frac{15}{8}\div\frac{9}{6}$ $=\frac{15}{8}\div\frac{9}{6}$

$=\frac{15}{8}\cdot\frac{6}{9}$ OR $=\frac{\cancel{15}^{5}}{\cancel{8}_{4}}\cdot\frac{\cancel{6}^{3}}{\cancel{9}_{3}}$

$=\frac{90}{72}$ $=\frac{15}{12}$

$=1\frac{18}{72}=\boxed{1\frac{1}{4}}$ $=1\frac{3}{12}=\boxed{1\frac{1}{4}}$

17. $\frac{13}{25}\div\frac{13}{35}=$ $=\frac{13}{25}\div\frac{13}{35}$

$=\frac{13}{25}\cdot\frac{35}{13}$ $=\frac{\cancel{13}}{\cancel{25}_{5}}\cdot\frac{\cancel{35}^{7}}{\cancel{13}_{1}}$

$=\frac{455}{325}$ OR $=\frac{7}{5}$

$=1\frac{130}{325}$ $=\boxed{1\frac{2}{5}}$

$=1\frac{26}{65}=\boxed{1\frac{2}{5}}$

18. $=4\frac{6}{7}\div\frac{17}{7}=$ $=4\frac{6}{7}\div\frac{17}{7}$

$=\frac{34}{7}\cdot\frac{7}{17}$ OR $=\frac{\cancel{34}^{2}}{\cancel{7}_{1}}\cdot\frac{\cancel{7}^{1}}{\cancel{17}_{1}}$

$=\frac{238}{119}$ $=\frac{2}{1}$

$=\boxed{2}$ $=\boxed{2}$

19. $\frac{26}{13}\div\frac{2}{12}=$ $=\frac{26}{13}\div\frac{2}{12}$

$=\frac{26}{13}\cdot\frac{12}{2}$ OR $=\frac{\cancel{26}^{13}}{\cancel{13}_{1}}\cdot\frac{12}{\cancel{2}_{1}}$

$=\frac{312}{26}$ $=\frac{156}{13}$

$=\boxed{12}$ $=\boxed{12}$

20. $\frac{7}{9}\bullet 2\frac{6}{7}=$ $=\frac{7}{9}\cdot 2\frac{6}{7}$

$=\frac{7}{9}\cdot\frac{20}{7}$ $=\frac{\cancel{7}^{1}}{9}\cdot\frac{20}{\cancel{7}_{1}}$ OR

$=\frac{140}{63}$ $=\frac{20}{9}$

$=2\frac{14}{63}$ $=\boxed{2\frac{2}{9}}$

$=\boxed{2\frac{2}{9}}$

21. $=4\bullet 9\frac{1}{3}=$

$=\frac{4}{1}\cdot\frac{28}{3}$

$=\frac{112}{3}$

$=\boxed{37\frac{1}{3}}$

22. $=\frac{5}{6}\bullet 2\frac{3}{5}=$ $=\frac{5}{6}\cdot 2\frac{3}{5}$

$=\frac{5}{6}\cdot\frac{13}{5}$ OR $=\frac{\cancel{5}^{1}}{6}\cdot\frac{13}{\cancel{5}_{1}}$

$=\frac{65}{30}$ $=\frac{13}{6}$

$=2\frac{5}{30}=\boxed{2\frac{1}{6}}$ $=\boxed{2\frac{1}{6}}$

23. $=\frac{9}{8}\bullet 12=$ $=\frac{9}{8}\cdot 12$

$=\frac{9}{8}\cdot\frac{12}{1}$ $=\frac{9}{\cancel{8}_{2}}\cdot\frac{\cancel{12}^{3}}{1}$

$=\frac{108}{8}$ OR $=\frac{27}{2}$

$=13\frac{4}{8}=\boxed{13\frac{1}{2}}$ $=\boxed{13\frac{1}{2}}$

24. $=4\frac{1}{8}\bullet\frac{14}{3}=$ $=4\frac{1}{8}\cdot\frac{14}{3}$

$=\frac{33}{8}\cdot\frac{14}{3}$ OR $=\frac{\cancel{33}^{11}}{\cancel{8}_{4}}\cdot\frac{\cancel{14}^{7}}{\cancel{3}_{1}}$

$=\frac{462}{24}$ $=\frac{77}{4}$

$=19\frac{6}{24}=\boxed{19\frac{1}{4}}$ $=\boxed{19\frac{1}{4}}$

25. How many bows can you make from $3\frac{2}{3}$ meters of ribbon if $\frac{1}{4}$ of a meter of ribbon makes one bow?

(division)

$=3\frac{2}{3}\div\frac{1}{4}$

$=\frac{11}{3}\div\frac{1}{4}$

$=\frac{11}{3}\cdot\frac{4}{1}$

$=\frac{44}{3}$

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

you can make $14\frac{2}{3}$ bows from $3\frac{2}{3}$ meters of ribbon if $\frac{1}{4}$ of a meter makes one bow.