Student Edition

Grade 5
Module 3

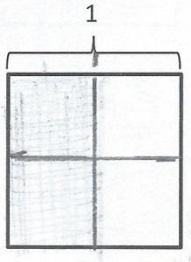
Eureka Math™
A Story of Units

Special thanks go to the Gordan A. Cain Center and to the Department of Mathematics at Louisiana State University for their support in the development of *Eureka Math*.

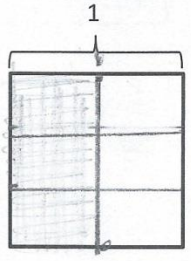
Name _____ Date _____

1. Use the folded paper strip to mark points 0 and 1 above the number line, and $\frac{0}{2}$, $\frac{1}{2}$, and $\frac{2}{2}$ below it.

Draw one vertical line down the middle of each rectangle, creating two parts. Shade the left half of each. Partition with horizontal lines to show the equivalent fractions $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$, and $\frac{5}{10}$. Use multiplication to show the change in the units.

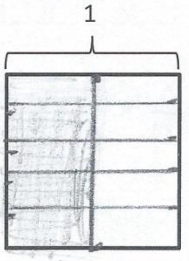


$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$



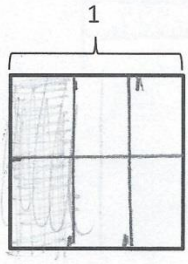
$\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$

$\frac{1}{2} = \frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$

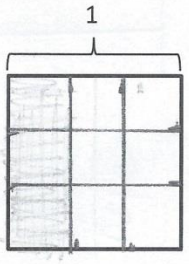


$\frac{1}{2} = \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$

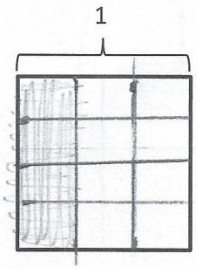
2. Use the folded paper strip to mark points 0 and 1 above the number line, and $\frac{0}{3}$, $\frac{1}{3}$, $\frac{2}{3}$, and $\frac{3}{3}$ below it. Follow the same pattern as Problem 1, but with thirds.



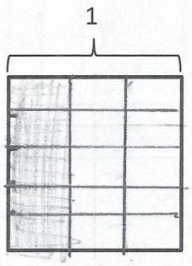
$\frac{1}{3} = \frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$



$\frac{1}{3} = \frac{1}{3} \times \frac{3}{3} = \frac{3}{9}$

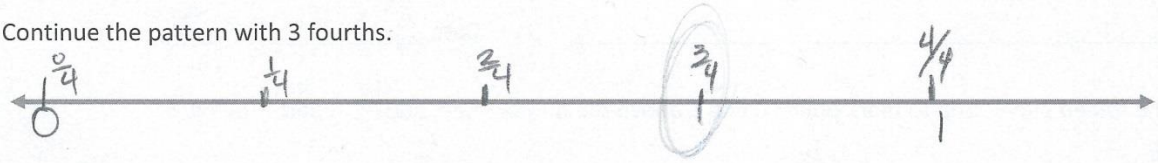


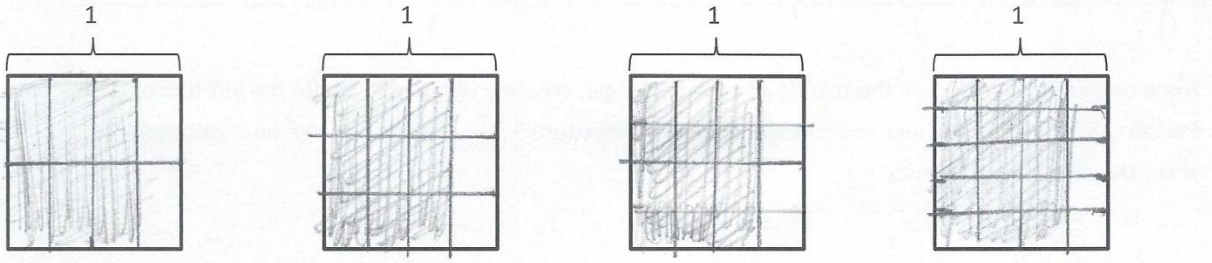
$\frac{1}{3} = \frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$



$\frac{1}{3} = \frac{1}{3} \times \frac{5}{5} = \frac{5}{15}$

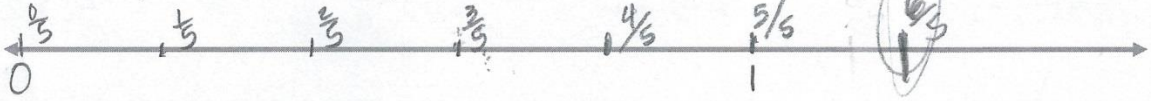
3. Continue the pattern with 3 fourths.





$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$ $\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$ $\frac{3}{4} \times \frac{4}{4} = \frac{12}{1}$ $\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$

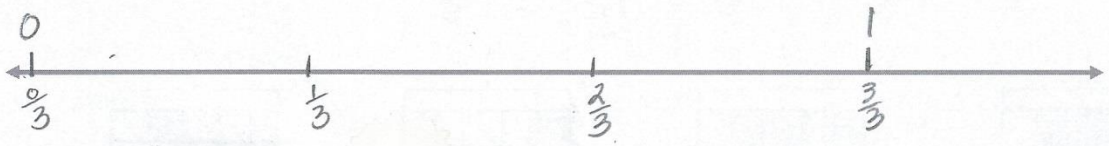
4. Continue the process and model 2 equivalent fractions for 6 fifths.



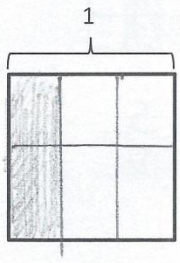
$\frac{6}{5} \times \frac{2}{2} \quad \frac{12}{10}$ $\frac{6}{5} \times \frac{5}{5} \quad \frac{30}{25}$

Name _____ Date _____

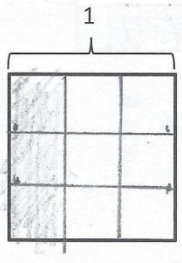
1. Use the folded paper strip to mark points 0 and 1 above the number line, and $\frac{0}{3}$, $\frac{1}{3}$, $\frac{2}{3}$, and $\frac{3}{3}$ below it.



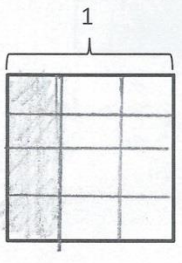
Draw two vertical lines to break each rectangle into thirds. Shade the left third of each. Partition with horizontal lines to show equivalent fractions. Use multiplication to show the change in the units.



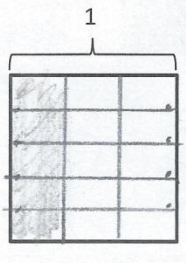
$\frac{1}{3} = \frac{1 \times 2}{3 \times 2} = \frac{2}{6}$



$\frac{1}{3} \times \frac{3}{3} = \frac{3}{9}$

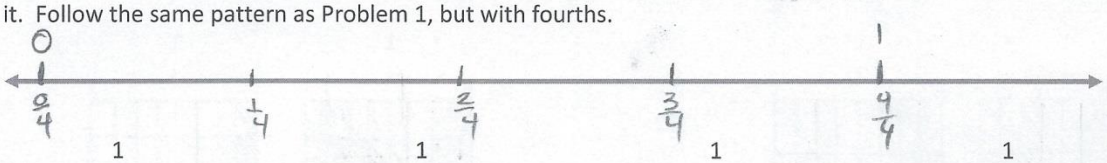


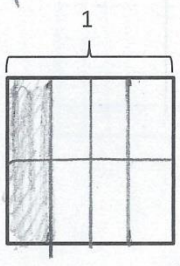
$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$



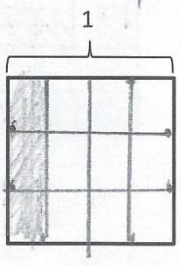
$\frac{1}{3} \times \frac{5}{5} = \frac{5}{15}$

2. Use the folded paper strip to mark points 0 and 1 above the number line, and $\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, and $\frac{4}{4}$ below it. Follow the same pattern as Problem 1, but with fourths.

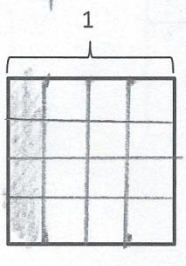




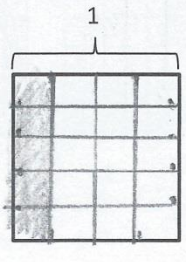
$\frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$



$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$

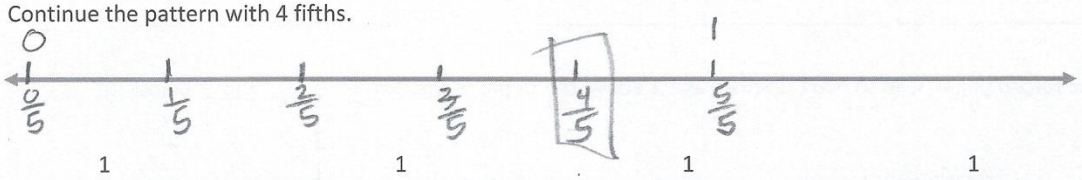


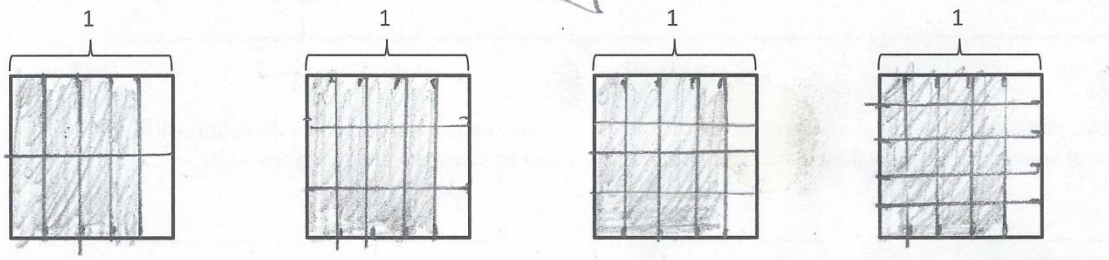
$\frac{1}{4} \times \frac{4}{4} = \frac{4}{16}$



$\frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$

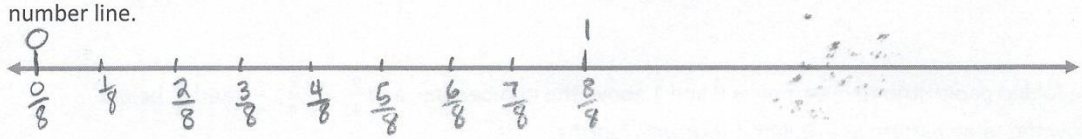
3. Continue the pattern with 4 fifths.





$\frac{4}{5} \times \frac{2}{2} = \frac{8}{10}$ $\frac{4}{5} \times \frac{3}{3} = \frac{12}{15}$ $\frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$ $\frac{4}{5} \times \frac{5}{5} = \frac{20}{25}$

4. Continue the process and model 2 equivalent fractions for 9 eighths. Estimate to mark the points on the number line.

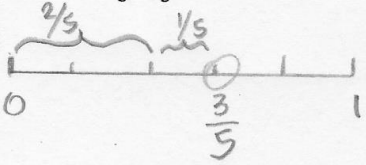


$\frac{9}{8} \times \frac{2}{2} = \frac{18}{16}$ $\frac{9}{8} \times \frac{5}{5} = \frac{45}{40}$

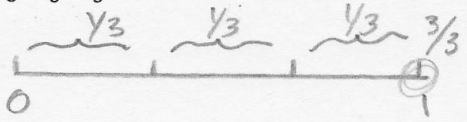
Name _____ Date _____

1. Show each expression on a number line. Solve.

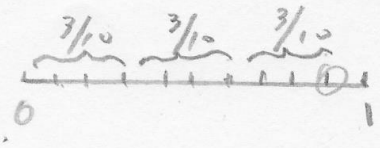
a. $\frac{2}{5}+\frac{1}{5}$



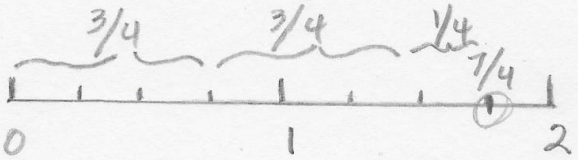
b. $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}$



c. $\frac{3}{10}+\frac{3}{10}+\frac{3}{10}$



d. $2 \times \frac{3}{4}+\frac{1}{4}$



2. Express each fraction as the sum of two or three equal fractional parts. Rewrite each as a multiplication equation. Show Part (a) on a number line.

a. $\frac{6}{7}$ $\frac{3}{7}+\frac{3}{7}=\frac{6}{7}$ $2 \times \frac{3}{7}=\frac{6}{7}$

b. $\frac{9}{2}$ $\frac{3}{2}+\frac{3}{2}+\frac{3}{2}$ $3 \times \frac{3}{2}=\frac{9}{6}$

c. $\frac{12}{10}$ $\frac{6}{10}+\frac{6}{10}$ $2 \times \frac{6}{10}=\frac{12}{10}$

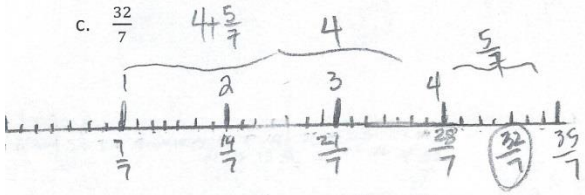
d. $\frac{27}{5}$ $\frac{9}{5}+\frac{9}{5}+\frac{9}{5}$ $3 \times \frac{9}{5}=\frac{27}{5}$

3. Express each of the following as the sum of a whole number and a fraction. Show Parts (c) and (d) on number lines.

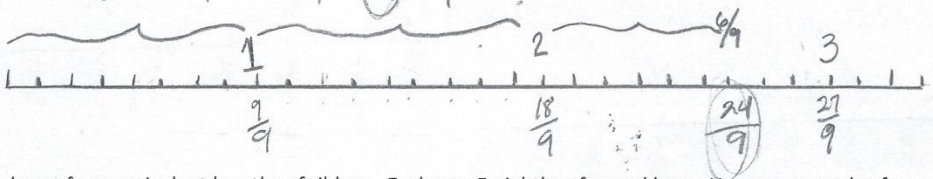
a. $\frac{9}{7}$ $1+\frac{2}{7}$

b. $\frac{9}{2}$ $4+\frac{1}{2}$

c. $\frac{32}{7}$ $4+\frac{5}{7}$

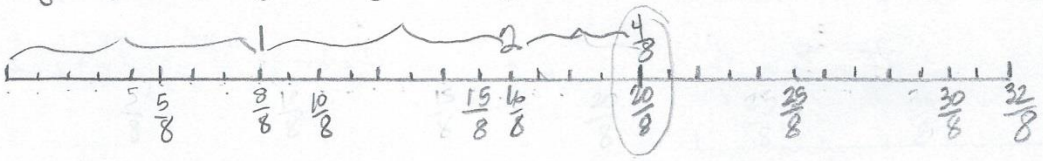


d. $\frac{24}{9}$ $2+\frac{6}{9}$



4. Marisela cut four equivalent lengths of ribbon. Each was 5 eighths of a yard long. How many yards of fabric did she cut? Express your answer as the sum of a whole number and the remaining fractional units. Draw a number line to represent the problem.

$\frac{5}{8}+\frac{5}{8}+\frac{5}{8}+\frac{5}{8}=\frac{20}{8}=2\frac{4}{8}=2\frac{1}{2}$

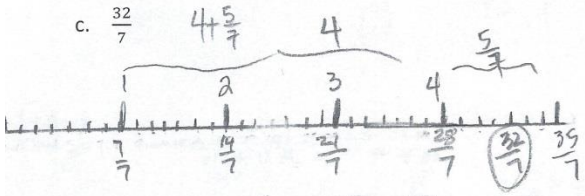


3. Express each of the following as the sum of a whole number and a fraction. Show Parts (c) and (d) on number lines.

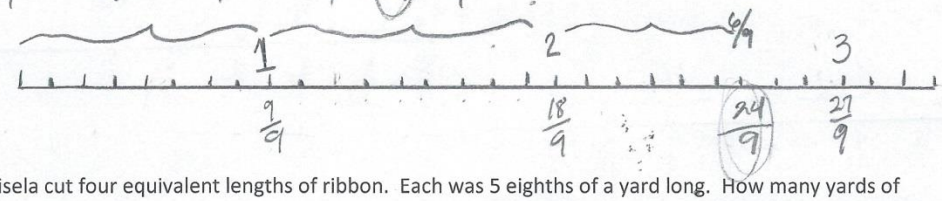
a. $\frac{9}{7}$ $1+\frac{2}{7}$

b. $\frac{9}{2}$ $4+\frac{1}{2}$

c. $\frac{32}{7}$ $4+\frac{5}{7}$

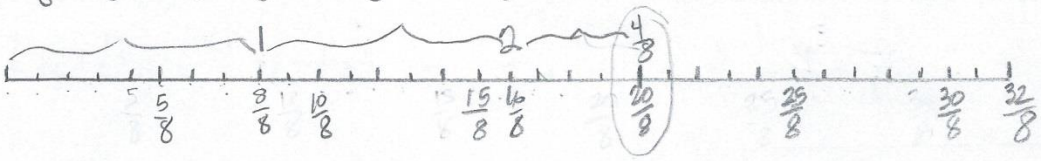


d. $\frac{24}{9}$ $2+\frac{6}{9}$



4. Marisela cut four equivalent lengths of ribbon. Each was 5 eighths of a yard long. How many yards of fabric did she cut? Express your answer as the sum of a whole number and the remaining fractional units. Draw a number line to represent the problem.

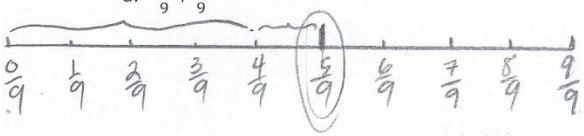
$\frac{5}{8}+\frac{5}{8}+\frac{5}{8}+\frac{5}{8}=\frac{20}{8}=2\frac{4}{8}=2\frac{1}{2}$



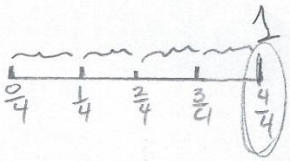
Name _____ Date _____

1. Show each expression on a number line. Solve.

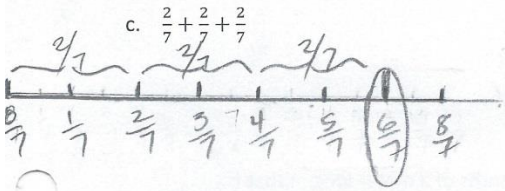
a. $\frac{4}{9}+\frac{1}{9}$



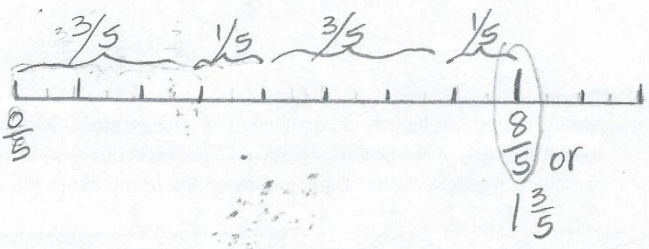
b. $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$



c. $\frac{2}{7}+\frac{2}{7}+\frac{2}{7}$



d. $2 \times \frac{3}{5}+\frac{1}{5}$



2. Express each fraction as the sum of two or three equal fractional parts. Rewrite each as a multiplication equation. Show Part (a) on a number line.

a. $\frac{6}{11}$ $\frac{3}{11}+\frac{3}{11}$

b. $\frac{9}{4}$ $\frac{3}{4}+\frac{3}{4}+\frac{3}{4}=$

c. $\frac{12}{8}$ $\frac{4}{8}+\frac{4}{8}+\frac{4}{8}$

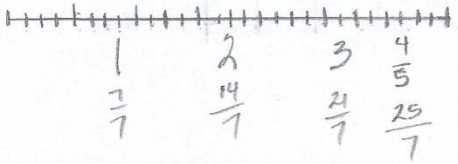
d. $\frac{27}{10}$ $\frac{9}{10}+\frac{9}{10}+\frac{9}{10}$

3. Express each of the following as the sum of a whole number and a fraction. Show Parts (c) and (d) on number lines.

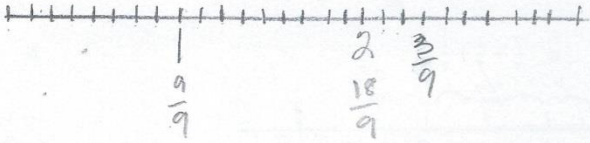
a. $\frac{9}{5}$ $1+\frac{4}{5}$

b. $\frac{7}{2}$ $3+\frac{1}{2}$

c. $\frac{25}{7}$ $3\frac{4}{5}$



d. $\frac{21}{9}$ $2\frac{3}{9}=2\frac{1}{3}$



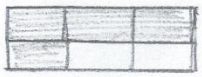
4. Natalie sawed five boards of equal length to make a stool. Each was 9 tenths of a meter long. What is the total length of the boards she sawed? Express your answer as the sum of a whole number and the remaining fractional units. Draw a number line to represent the problem.

$5 \times \frac{9}{10} = \frac{45}{10}$ $\frac{45}{10} = 4\frac{5}{10}$

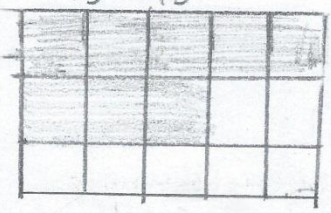
Name _____ Date _____

1. Draw a rectangular fraction model to find the sum. Simplify your answer, if possible.

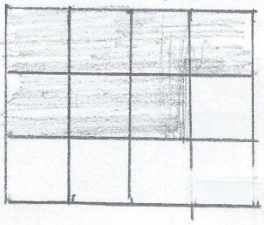
a. $\frac{1}{2}+\frac{1}{3}=$ $\frac{3}{6}+\frac{2}{6}=\frac{5}{6}$



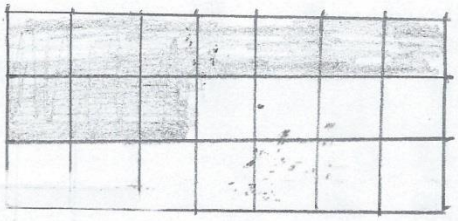
b. $\frac{1}{3}+\frac{1}{5}=$ $\frac{5}{15}+\frac{3}{15}$



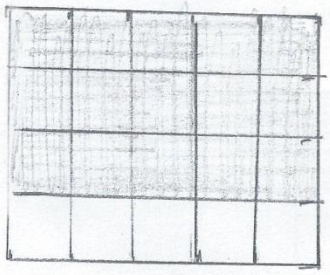
c. $\frac{1}{4}+\frac{1}{3}=$ $\frac{3}{12}+\frac{4}{12}$



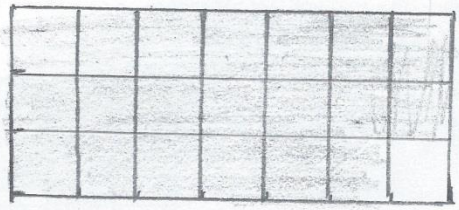
d. $\frac{1}{3}+\frac{1}{7}=$ $\frac{7}{21}+\frac{3}{21}$



e. $\frac{3}{4}+\frac{1}{5}=$ $\frac{15}{20}+\frac{4}{20}$



f. $\frac{2}{3}+\frac{2}{7}=$ $\frac{14}{21}+\frac{6}{21}$

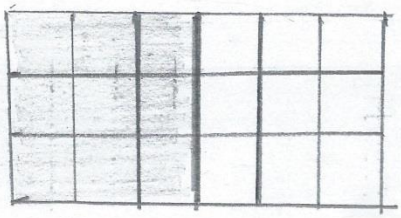


Solve the following problems. Draw a picture and write the number sentence that proves the answer. Simplify your answer, if possible.

2. Jamal used $\frac{1}{3}$ yard of ribbon to tie a package and $\frac{1}{6}$ yard of ribbon to tie a bow. How many yards of ribbon did Jamal use?

$\frac{1}{3} + \frac{1}{6} = \frac{6}{18} + \frac{3}{18} = \frac{9}{18}$

$\frac{9}{18} = \frac{1}{2}$

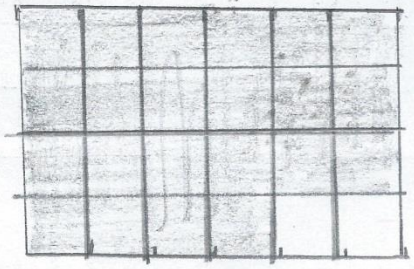


$\frac{9}{18} = \frac{1}{2}$

3. Over the weekend, Nolan drank $\frac{1}{6}$ quart of orange juice, and Andrea drank $\frac{3}{4}$ quart of orange juice. How many quarts did they drink together?

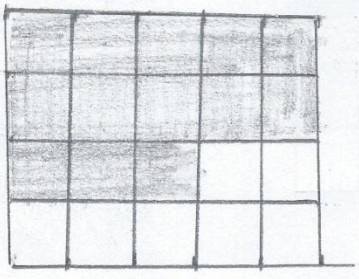
$\frac{1}{6} + \frac{3}{4} = \frac{4}{24} + \frac{18}{24} = \frac{22}{24}$

$\frac{22}{24} = \frac{11}{12}$



4. Nadia spent $\frac{1}{4}$ of her money on a shirt and $\frac{2}{5}$ of her money on new shoes. What fraction of Nadia's money has been spent? What fraction of her money is left?

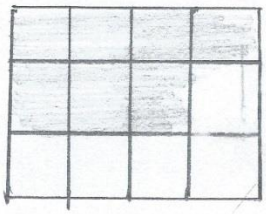
$\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20} = \frac{13}{20}$



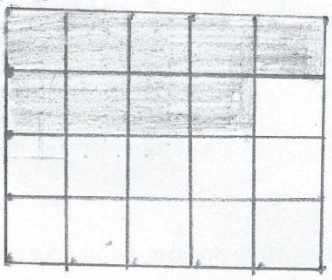
Name _____ Date _____

1. Draw a rectangular fraction model to find the sum. Simplify your answer, if possible.

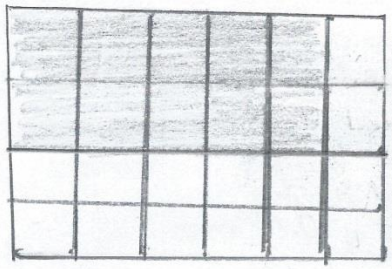
a. $\frac{1}{4}+\frac{1}{3}=$ $\frac{3}{12}+\frac{4}{12}=\frac{7}{12}$



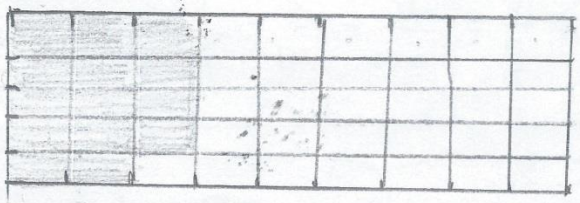
b. $\frac{1}{4}+\frac{1}{5}=$ $\frac{5}{20}+\frac{4}{20}=\frac{9}{20}$



c. $\frac{1}{4}+\frac{1}{6}=$ $\frac{6}{24}+\frac{4}{24}=\frac{10}{24}=\frac{5}{12}$

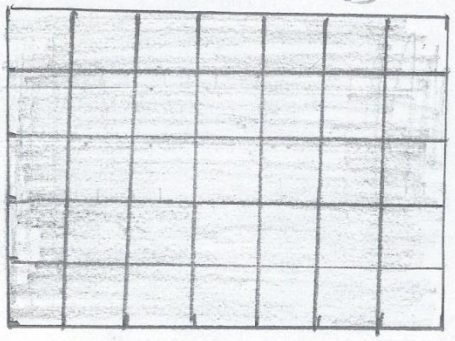


d. $\frac{1}{5}+\frac{1}{9}=$ $\frac{9}{45}+\frac{5}{45}=\frac{14}{45}$



e. $\frac{1}{4}+\frac{2}{5}=$ $\frac{5}{20}+\frac{8}{20}=\frac{13}{20}$

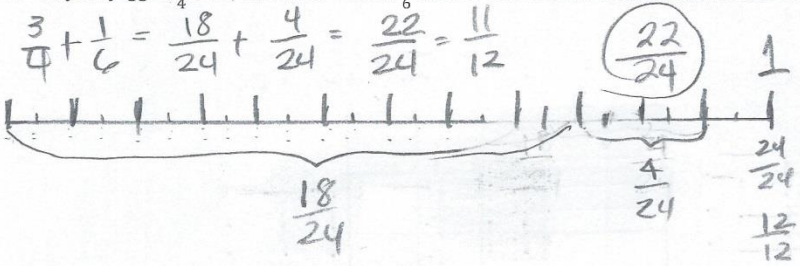
f. $\frac{3}{5}+\frac{3}{7}=$ $\frac{21}{35}+\frac{15}{35}=\frac{36}{35}=1\frac{1}{35}$



Solve the following problems. Draw a picture, and write the number sentence that proves the answer. Simplify your answer, if possible.

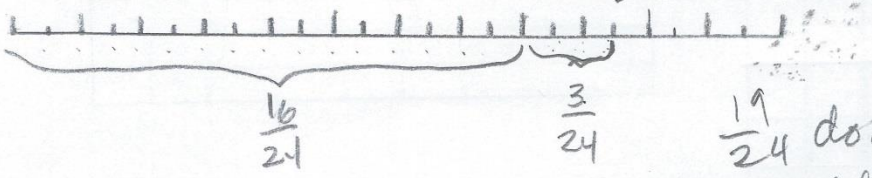
2. Rajesh jogged $\frac{3}{4}$ mile, and then walked $\frac{1}{6}$ mile to cool down. How far did he travel?

$\frac{3}{4} + \frac{1}{6} = \frac{18}{24} + \frac{4}{24} = \frac{22}{24} = \frac{11}{12}$



3. Cynthia completed $\frac{2}{3}$ of the items on her to-do list in the morning and finished $\frac{1}{8}$ of the items during her lunch break. What fraction of her to-do list is finished by the end of her lunch break? (Extension: What fraction of her to-do list does she still have to do after lunch?)

$\frac{2}{3} + \frac{1}{8} = \frac{16}{24} + \frac{3}{24} = \frac{19}{24}$

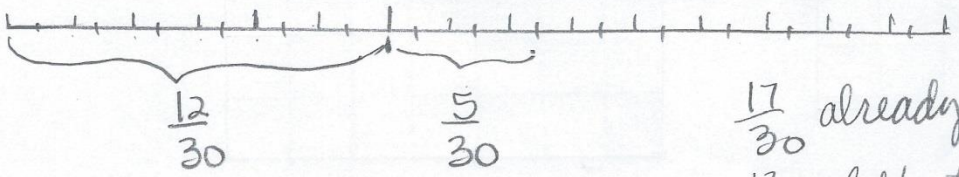


$\frac{19}{24}$ done

$\frac{5}{24}$ still have to do

4. Sam read $\frac{2}{5}$ of her book over the weekend and $\frac{1}{6}$ of it on Monday. What fraction of the book has she read? What fraction of the book is left?

$\frac{2}{5} + \frac{1}{6} = \frac{12}{30} + \frac{5}{30} = \frac{17}{30}$



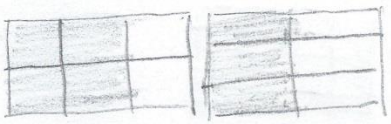
$\frac{17}{30}$ already read

$\frac{13}{30}$ left to read

Name _____ Date _____

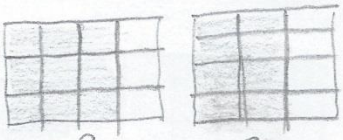
1. For the following problems, draw a picture using the rectangular fraction model and write the answer. When possible, write your answer as a mixed number.

a. $\frac{2}{3}+\frac{1}{2}=$ $\frac{4}{6}+\frac{3}{6}=\frac{7}{6}$



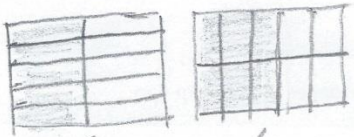
$\frac{4}{6}$ $\frac{3}{6}$

b. $\frac{3}{4}+\frac{2}{3}=$ $\frac{9}{12}+\frac{8}{12}=\frac{17}{12}$



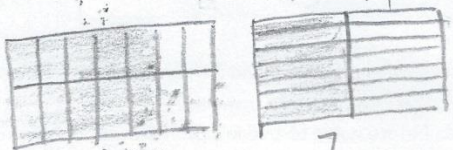
$\frac{9}{12}$ $\frac{8}{12}$

c. $\frac{1}{2}+\frac{3}{5}=$ $\frac{5}{10}+\frac{6}{10}=\frac{11}{10}$



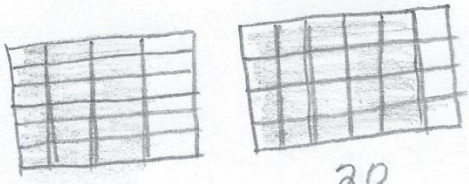
$\frac{5}{10}$ $\frac{6}{10}$

d. $\frac{5}{7}+\frac{1}{2}=$ $\frac{10}{14}+\frac{7}{14}=\frac{17}{14}$



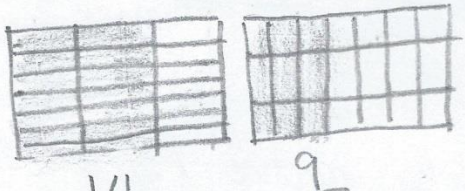
$\frac{10}{14}$ $\frac{7}{14}$

e. $\frac{3}{4}+\frac{5}{6}=$ $\frac{18}{24}+\frac{20}{24}=\frac{38}{24}$



$\frac{18}{24}$ $\frac{20}{24}$

f. $\frac{2}{3}+\frac{3}{7}=$ $\frac{14}{21}+\frac{9}{21}=\frac{23}{21}$

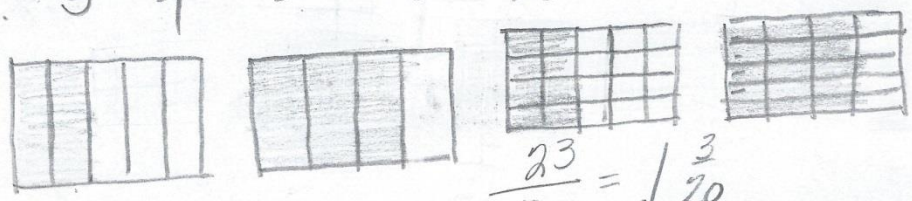


$\frac{14}{21}$ $\frac{9}{21}$

Solve the following problems. Draw a picture, and write the number sentence that proves the answer. Simplify your answer, if possible.

2. Penny used $\frac{2}{5}$ lb of flour to bake a vanilla cake. She used another $\frac{3}{4}$ lb of flour to bake a chocolate cake. How much flour did she use altogether?

$\frac{2}{5} + \frac{3}{4}$ $\frac{8}{20} + \frac{15}{20} = \frac{23}{20} = 1\frac{3}{20}$

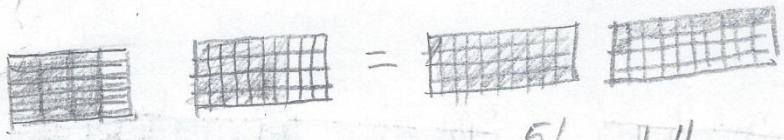


$\frac{23}{20} = 1\frac{3}{20}$

He used 1 and $\frac{3}{20}$ lb of flour.

3. Carlos wants to practice piano 2 hours each day. He practices piano for $\frac{3}{4}$ hour before school and $\frac{7}{10}$ hour when he gets home. How many hours has Carlos practiced piano? How much longer does he need to practice before going to bed in order to meet his goal?

$\frac{3}{4} + \frac{7}{10} = \frac{30}{40} + \frac{21}{40} = \frac{51}{40}$



$\frac{51}{40} = 1\frac{11}{40}$

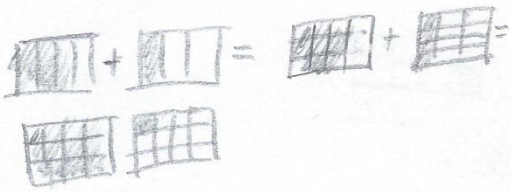
He has practice $1\frac{11}{40}$ hours

He needs to practice $\frac{29}{40}$ hours more

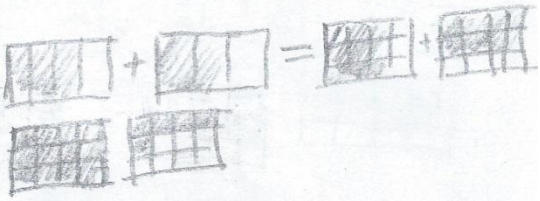
Name _____ Date _____

1. For the following problems, draw a picture using the rectangular fraction model and write the answer. When possible, write your answer as a mixed number.

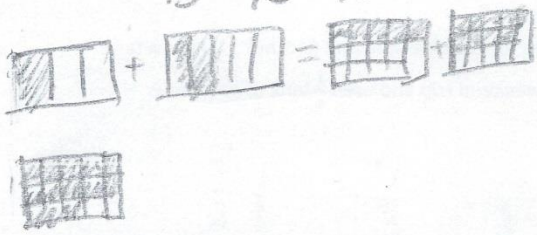
a. $\frac{3}{4}+\frac{1}{3}=$ $\frac{9}{12}+\frac{4}{12}=\frac{13}{12}=1\frac{1}{12}$



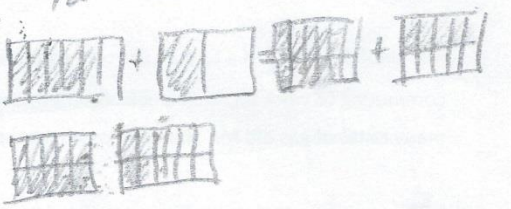
b. $\frac{3}{4}+\frac{2}{3}=$ $\frac{9}{12}+\frac{8}{12}=\frac{17}{12}=1\frac{5}{12}$



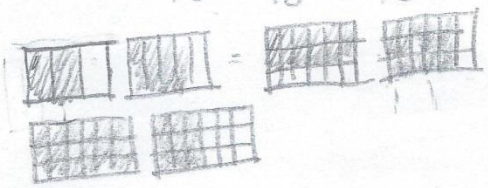
c. $\frac{1}{3}+\frac{3}{5}=$ $\frac{5}{15}+\frac{9}{15}=\frac{14}{15}$



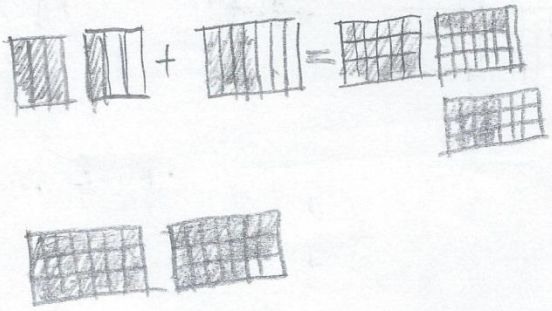
d. $\frac{5}{6}+\frac{1}{2}=$ $\frac{10}{12}+\frac{6}{12}=\frac{16}{12}=1\frac{4}{12}$ or $1\frac{1}{3}$



e. $\frac{2}{3}+\frac{5}{6}=$ $\frac{12}{18}+\frac{15}{18}=\frac{27}{18}=1\frac{9}{18}$ or $1\frac{1}{2}$



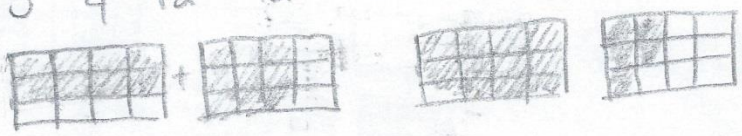
f. $\frac{4}{3}+\frac{4}{7}=$ $\frac{28}{21}+\frac{12}{21}=\frac{40}{21}=1\frac{19}{21}$



Solve the following problems. Draw a picture, and write the number sentence that proves the answer. Simplify your answer, if possible.

2. Sam made $\frac{2}{3}$ liter of punch and $\frac{3}{4}$ liter of tea to take to a party. How many liters of beverages did Sam bring to the party?

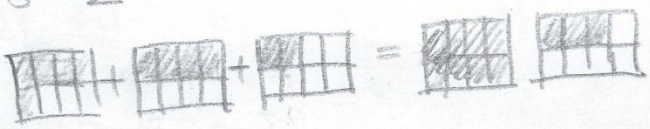
$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12}$ or $1\frac{5}{12}$



Sam brought $1\frac{5}{12}$ liters.

3. Mr. Sinofsky used $\frac{5}{8}$ of a tank of gas on a trip to visit relatives for the weekend and another 1 half of a tank commuting to work the next week. He then took another weekend trip and used $\frac{1}{4}$ tank of gas. How many tanks of gas did Mr. Sinofsky use altogether?

$\frac{5}{8} + \frac{1}{2} + \frac{1}{4} = \frac{5}{8} + \frac{4}{8} + \frac{2}{8} = \frac{11}{8} = 1\frac{3}{8}$

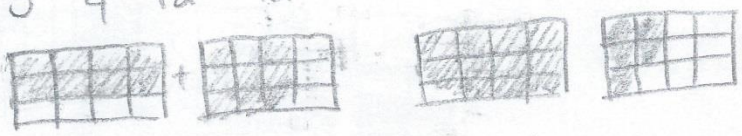


Mr Sinofsky used $1\frac{3}{8}$ tank of gas.

Solve the following problems. Draw a picture, and write the number sentence that proves the answer. Simplify your answer, if possible.

2. Sam made $\frac{2}{3}$ liter of punch and $\frac{3}{4}$ liter of tea to take to a party. How many liters of beverages did Sam bring to the party?

$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12}$ or $1\frac{5}{12}$



Sam brought $1\frac{5}{12}$ liters.

3. Mr. Sinofsky used $\frac{5}{8}$ of a tank of gas on a trip to visit relatives for the weekend and another 1 half of a tank commuting to work the next week. He then took another weekend trip and used $\frac{1}{4}$ tank of gas. How many tanks of gas did Mr. Sinofsky use altogether?

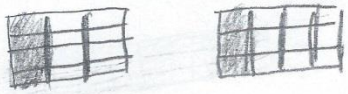
$\frac{5}{8} + \frac{1}{2} + \frac{1}{4} = \frac{5}{8} + \frac{4}{8} + \frac{2}{8} = \frac{11}{8} = 1\frac{3}{8}$

Mr Sinofsky used $1\frac{3}{8}$ tank of gas.

Name _____ Date _____

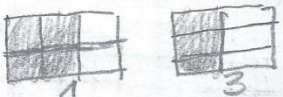
1. For the following problems, draw a picture using the rectangular fraction model and write the answer. Simplify your answer, if possible.

a. $\frac{1}{3}-\frac{1}{4}=$ $\frac{4}{12}-\frac{3}{12}=\frac{1}{12}$



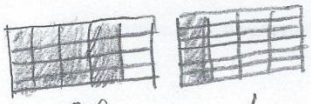
$\frac{4}{12}$ $\frac{3}{12}$

b. $\frac{2}{3}-\frac{1}{2}=$ $\frac{4}{6}-\frac{3}{6}=\frac{1}{6}$



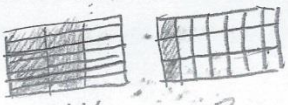
$\frac{4}{6}$ $\frac{3}{6}$

c. $\frac{5}{6}-\frac{1}{4}=$ $\frac{20}{24}-\frac{6\div 6=1}{24\div 6=4}=\frac{1}{4}$



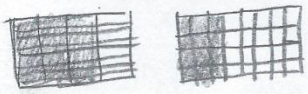
$\frac{20}{24}$ $\frac{1}{4}$

d. $\frac{2}{3}-\frac{1}{7}=$ $\frac{14}{21}-\frac{3}{21}=\frac{11}{21}$

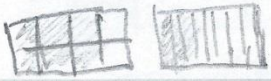


$\frac{14}{21}$ $\frac{3}{21}$

e. $\frac{3}{4}-\frac{3}{8}=$ $\frac{24}{32}-\frac{12}{32}=\frac{12\div 4=3}{32\div 4=8}=\frac{3}{8}$

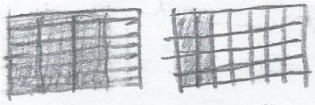


$\frac{24}{32}$ $\frac{12}{32}$ or



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

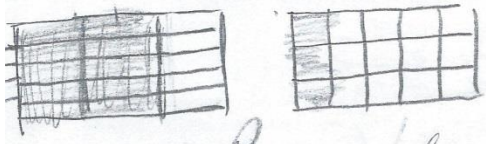
f. $\frac{3}{4}-\frac{2}{7}=$ $\frac{21}{28}-\frac{8}{28}=\frac{13}{28}$



$\frac{21}{28}$ $\frac{8}{28}$

2. Mr. Penman had $\frac{2}{3}$ liter of salt water. He used $\frac{1}{5}$ of a liter for an experiment. How much salt water does Mr. Penman have left?

$\frac{2}{3} - \frac{1}{5} = \frac{10}{15} - \frac{3}{15} = \frac{7}{15}$

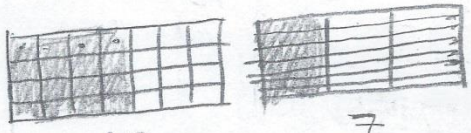


Mr Penman has $\frac{7}{15}$ of salt water left.

3. Sandra says that $\frac{4}{7} - \frac{1}{3} = \frac{3}{4}$ because all you have to do is subtract the numerators and subtract the denominators. Convince Sandra that she is wrong. You may draw a rectangular fraction model to support your thinking.

$\frac{4}{7} - \frac{1}{3} = \frac{3}{4}$ is wrong!

$\frac{4}{7} - \frac{1}{3} = \frac{12}{21} - \frac{7}{21}$



$\frac{12}{21}$ $\frac{7}{21}$

Sevenths and thirds are unlike fractions. To subtract these fractions we change them to like fractions. Sevenths and thirds become twenty-oneths

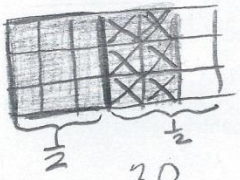
Name _____ Date _____

1. The picture below shows $\frac{3}{4}$ of the rectangle shaded. Use the picture to show how to create an equivalent fraction for $\frac{3}{4}$, and then subtract $\frac{1}{3}$.

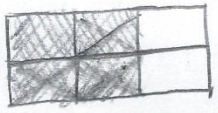
$\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12} = \frac{5}{12}$

2. Find the difference. Use a rectangular fraction model to find common denominators. Simplify your answer, if possible.

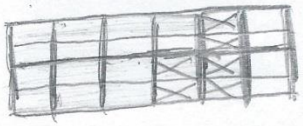
a. $\frac{5}{6} - \frac{1}{3} = \frac{15}{18} - \frac{6}{18} = \frac{9}{18} = \frac{1}{2}$ ÷9=1 ÷9=2



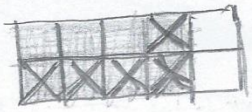
b. $\frac{2}{3} - \frac{1}{2} = \frac{4}{6} - \frac{3}{6} = \frac{1}{6}$



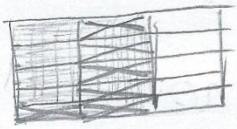
c. $\frac{5}{6} - \frac{1}{4} = \frac{20}{24} - \frac{6}{24} = \frac{14}{24} = \frac{7}{12}$ ÷2=7 ÷2=12



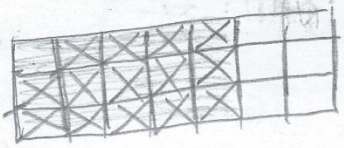
d. $\frac{4}{5} - \frac{1}{2} = \frac{8}{10} - \frac{5}{10} = \frac{3}{10}$



e. $\frac{2}{3} - \frac{2}{5} = \frac{10}{15} - \frac{6}{15} = \frac{4}{15}$

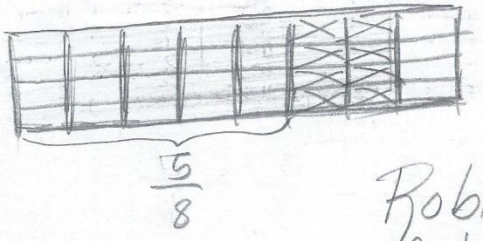


f. $\frac{5}{7} - \frac{2}{3} = \frac{15}{21} - \frac{14}{21} = \frac{1}{21}$



3. Robin used $\frac{1}{4}$ of a pound of butter to make a cake. Before she started, she had $\frac{7}{8}$ of a pound of butter. How much butter did Robin have when she was done baking? Give your answer as a fraction of a pound.

$\frac{7}{8} - \frac{1}{4} = \frac{28}{32} - \frac{8}{32} = \frac{20}{32} = \frac{20 \div 4 = 5}{32 \div 4 = 8} = \frac{5}{8}$

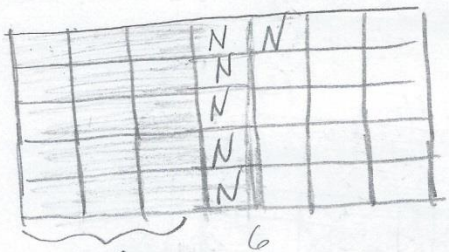


$\frac{5}{8}$

Robin had $\frac{5}{8}$ of a pound of butter when she was done baking.

4. Katrina needs $\frac{3}{5}$ kilogram of flour for a recipe. Her mother has $\frac{3}{7}$ kilogram of flour in her pantry. Is this enough flour for the recipe? If not, how much more will she need?

$\frac{3}{7} - \frac{3}{5} = \frac{15}{35} - \frac{21}{35}$



$\frac{15}{35}$ $\frac{6}{35}$

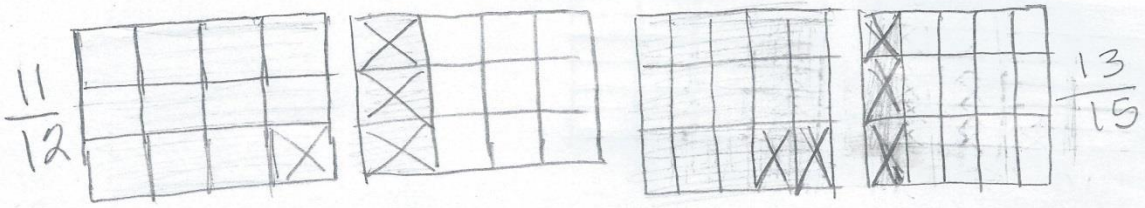
Katrina does not have enough. She needs $\frac{6}{35}$ kilogram of flour more.

Name _____ Date _____

1. For the following problems, draw a picture using the rectangular fraction model and write the answer. Simplify your answer, if possible.

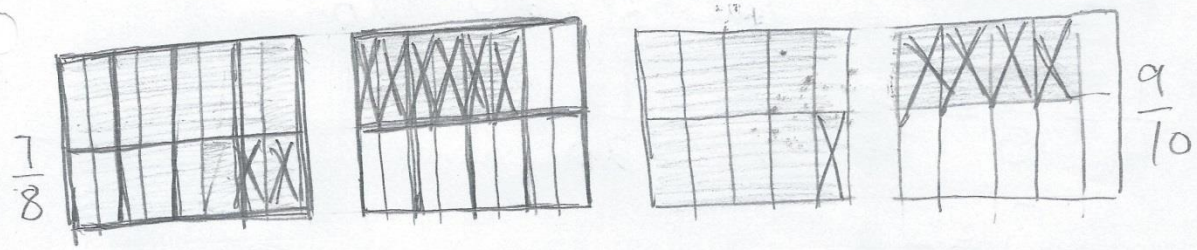
a. $1\frac{1}{4}-\frac{1}{3}=\frac{5}{4}-\frac{1}{3}=\frac{15}{12}-\frac{4}{12}=\frac{11}{12}$

b. $1\frac{1}{5}-\frac{1}{3}=\frac{6}{5}-\frac{1}{3}=\frac{18}{15}-\frac{5}{15}=\frac{13}{15}$



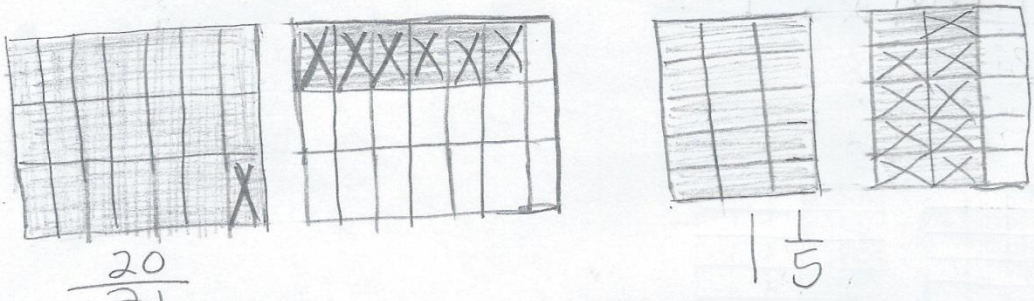
c. $1\frac{3}{8}-\frac{1}{2}=\frac{11}{8}-\frac{1}{2}=\frac{22}{16}-\frac{8}{16}=\frac{14}{16}=\frac{7}{8}$

d. $1\frac{2}{5}-\frac{1}{2}=\frac{7}{5}-\frac{1}{2}=\frac{14}{10}-\frac{5}{10}=\frac{9}{10}$



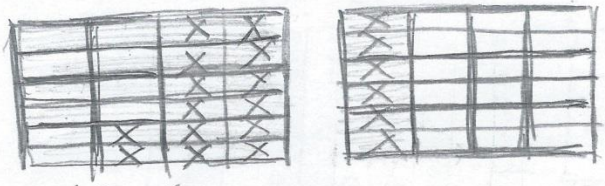
e. $1\frac{2}{7}-\frac{1}{3}=\frac{9}{7}-\frac{1}{3}=\frac{27}{21}-\frac{7}{21}=\frac{20}{21}$

f. $1\frac{2}{3}-\frac{3}{5}=\frac{5}{3}-\frac{3}{5}=\frac{25}{15}-\frac{9}{15}=\frac{16}{15}=1\frac{1}{15}$



2. Jean-Luc jogged around the lake in $1\frac{1}{4}$ hour. William jogged the same distance in $\frac{5}{6}$ hour. How much longer did Jean-Luc take than William in hours?

$1\frac{1}{4} - \frac{5}{6} = \frac{5}{4} - \frac{5}{6} = \frac{30}{24} - \frac{20}{24} = \frac{10}{24} \overset{\div 2 = 5}{=} \frac{5}{12}$



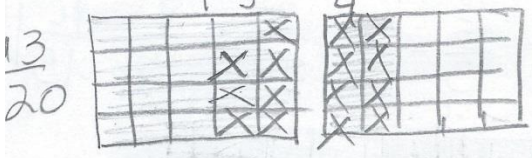
$\frac{16}{24} = \frac{5}{12}$

3. Is it true that $1\frac{2}{5} - \frac{3}{4} = \frac{1}{4} + \frac{2}{5}$? Prove your answer.

$1\frac{2}{5} - \frac{3}{4} = \frac{7}{5} - \frac{3}{4} = \frac{28}{20} - \frac{15}{20} = \frac{13}{20}$

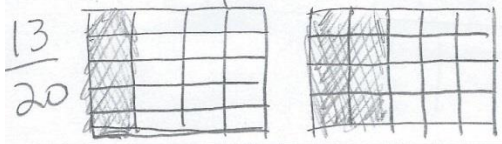
$\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20} = \frac{13}{20}$

$1\frac{2}{5} - \frac{3}{4}$



$\frac{13}{20}$

$\frac{1}{4} + \frac{2}{5}$



$\frac{13}{20}$

Name _____ Date _____

1. For the following problems, draw a picture using the rectangular fraction model and write the answer. Simplify your answer, if possible.

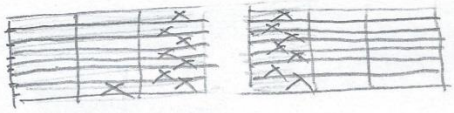
a. $1-\frac{5}{6}=$ $\frac{6}{6}-\frac{5}{6}=\frac{1}{6}$

$\frac{5}{6}$

b. $\frac{3}{2}-\frac{5}{6}=$ $\frac{3}{2}-\frac{5}{6}=\frac{18}{12}-\frac{10}{12}=\frac{8\div4}{12\div4}=\frac{2}{3}$

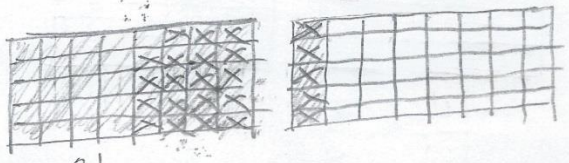
$\frac{8}{12}=\frac{2}{3}$

c. $\frac{4}{3}-\frac{5}{7}=$ $\frac{28}{21}-\frac{15}{21}=\frac{13}{21}$



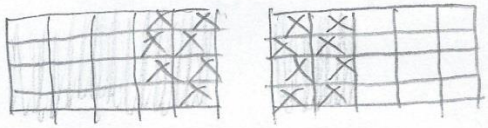
$\frac{13}{21}$

d. $1\frac{1}{8}-\frac{3}{5}=$ $\frac{9}{8}-\frac{3}{5}=\frac{45}{40}-\frac{24}{40}=\frac{21}{40}$



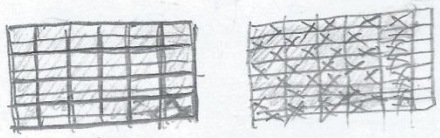
$\frac{21}{40}$

e. $1\frac{2}{5}-\frac{3}{4}=$ $\frac{7}{5}-\frac{3}{4}=\frac{28}{20}-\frac{15}{20}=\frac{13}{20}$



$\frac{13}{20}$

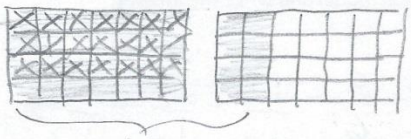
f. $1\frac{5}{6}-\frac{7}{8}=$ $\frac{11}{6}-\frac{7}{8}=\frac{88}{48}-\frac{42}{48}=\frac{46\div2}{48\div2}=\frac{23}{24}$



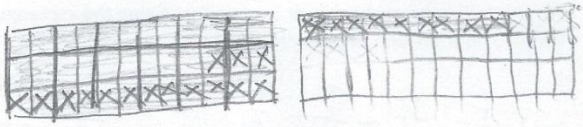
$\frac{46}{48}=\frac{23}{24}$

g. $\frac{9}{7} - \frac{3}{4} = \frac{9}{7} - \frac{3}{4} = \frac{36}{28} - \frac{21}{28} = \frac{15}{28}$

h. $1\frac{3}{12} - \frac{2}{3} = \frac{15}{12} - \frac{2}{3} = \frac{45}{36} - \frac{24}{36} = \frac{21}{36} = \frac{7}{12}$ (÷3, ÷3)



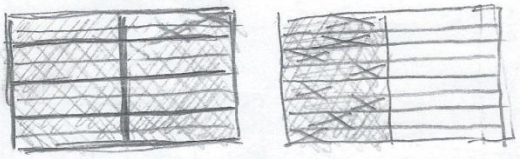
$\frac{15}{28}$



$\frac{21}{36} = \frac{7}{12}$

2. Sam had $1\frac{1}{2}$ m of rope. He cut off $\frac{5}{8}$ m and used it for a project. How much rope does Sam have left?

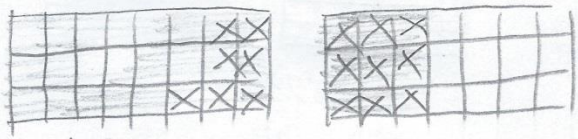
$1\frac{1}{2} - \frac{5}{8} = \frac{3}{2} - \frac{5}{8} = \frac{24}{16} - \frac{10}{16} = \frac{14}{16} = \frac{7}{8}$



$\frac{14}{16} = \frac{7}{8}$

3. Jackson had $1\frac{3}{8}$ kg of fertilizer. He used some to fertilize a flower bed and he only had $\frac{2}{3}$ kg left. How much fertilizer was used in the flower bed?

$1\frac{3}{8} - \frac{2}{3} = \frac{11}{8} - \frac{2}{3} = \frac{33}{24} - \frac{16}{24} = \frac{17}{24}$



$\frac{17}{24}$

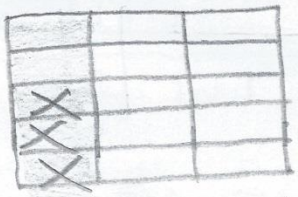
Read Draw Write

Name _____ Date _____

Solve the word problems using the RDW strategy. Show all of your work.

1. George weeded $\frac{1}{5}$ of the garden, and Summer weeded some, too. When they were finished, $\frac{2}{3}$ of the garden still needed to be weeded. What fraction of the garden did Summer weed?

$\frac{1}{3} - \frac{1}{5} = \frac{5}{15} - \frac{3}{5} = \frac{2}{15}$

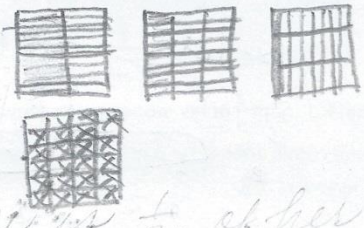


Summer weeded $\frac{2}{15}$

2. Jing spent $\frac{1}{3}$ of her money on a pack of pens, $\frac{1}{2}$ of her money on a pack of markers, and $\frac{1}{8}$ of her money on a pack of pencils. What fraction of her money is left?

$\frac{1}{2} + \frac{1}{3} + \frac{1}{8} = \frac{12}{24} + \frac{8}{24} + \frac{3}{24} = \frac{23}{24}$

(×12, ×8, ×3)

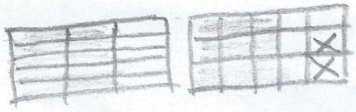


$1 - \frac{23}{24} = \frac{24}{24} - \frac{23}{24} = \frac{1}{24}$

There is $\frac{1}{24}$ of her money left.

3. Shelby bought a 2-ounce tube of blue paint. She used $\frac{2}{3}$ ounce to paint the water, $\frac{3}{5}$ ounce to paint the sky, and some to paint a flag. After that she has $\frac{2}{15}$ ounce left. How much paint did Shelby use to paint her flag?

$\frac{2}{3} + \frac{3}{5} = \frac{10}{15} + \frac{9}{15} = \frac{19}{15}$



$\frac{19}{15} + \frac{2}{15} = \frac{21}{15}$

$\frac{30}{15} - \frac{21}{15} = \frac{9}{15}$

Shelby used $\frac{9}{15}$ on her flag.

Another way!

$\frac{30}{15} - \frac{19}{15} = \frac{11}{15}$

$\frac{11}{15} - \frac{2}{15} = \frac{9}{15}$

4. Jim sold $\frac{3}{4}$ gallon of lemonade. Dwight sold some lemonade, too. Together, they sold $1\frac{5}{12}$ gallons. Who sold more lemonade, Jim or Dwight? How much more?

$1\frac{5}{12} - \frac{3}{4} = \frac{17}{12} - \frac{3}{4} = \frac{17}{12} - \frac{9}{12} = \frac{8}{12} = \frac{2}{3}$ ÷4 ÷4

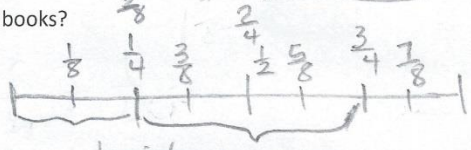
Total $1\frac{5}{12}$

$\frac{9}{12} - \frac{8}{12} = \frac{1}{12}$

$\frac{9}{12} > \frac{8}{12}$ or $\frac{3}{4} > \frac{2}{3}$

Jim sold more lemonade.
He sold $\frac{1}{12}$ gallon more

5. Leonard spent $\frac{1}{4}$ of his money on a sandwich. He spent 2 times as much on a gift for his brother as on some comic books. He had $\frac{3}{8}$ of his money left.* What fraction of his money did he spend on the comic books?



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

He spent $\frac{1}{2}$ of his money on comic books.

*Leonard could not have $\frac{3}{8}$ of his money left. He got $\frac{1}{4}$.

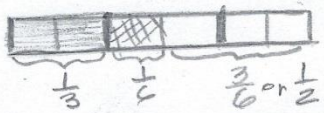
Name _____ Date _____

Solve the word problems using the RDW strategy. Show all of your work.

1. Christine baked a pumpkin pie. She ate $\frac{1}{6}$ of the pie. Her brother ate $\frac{1}{3}$ of it and gave the leftovers to his friends. What fraction of the pie did he give to his friends?

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

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

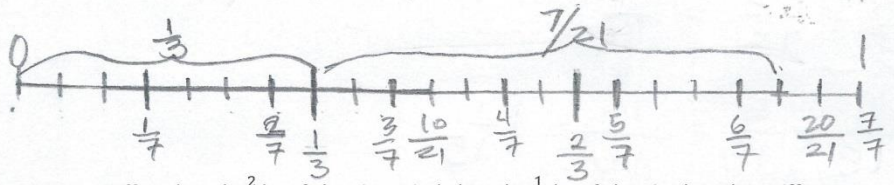


Christine gave $\frac{1}{2}$ to her friends

2. Liang went to the bookstore. He spent $\frac{1}{3}$ of his money on a pen and $\frac{4}{7}$ of it on books. What fraction of his money did he have left?

$\frac{1}{3} + \frac{4}{7} = \frac{7}{21} + \frac{12}{21} = \frac{19}{21}$

$1 - \frac{19}{21} = \frac{21}{21} - \frac{19}{21} = \frac{2}{21}$



Liang has $\frac{2}{21}$ of his money left.

3. Tiffany bought $\frac{2}{5}$ kg of cherries. Linda bought $\frac{1}{10}$ kg of cherries less than Tiffany. How many kilograms of cherries did they buy altogether?

$\frac{2}{5} - \frac{1}{10} = \frac{4}{10} - \frac{1}{10} = \boxed{\frac{3}{10}}$

$\frac{2}{5} + \frac{3}{10} = \frac{4}{10} + \frac{3}{10} = \frac{7}{10}$

Tiffany and Linda bought $\frac{7}{10}$ kg altogether.

4. Mr. Rivas bought a can of paint. He used $\frac{3}{8}$ of it to paint a bookshelf. He used $\frac{1}{4}$ of it to paint a wagon. He used some of it to paint a birdhouse and has $\frac{1}{8}$ of the paint left. How much paint did he use for the birdhouse?

$\frac{3}{8} + \frac{1}{4} + \frac{1}{8} = \frac{3}{8} + \frac{2}{8} + \frac{1}{8} = \frac{6}{8}$

$1 - \frac{6}{8} = \frac{8}{8} - \frac{6}{8} = \frac{2}{8} = \frac{1}{4}$

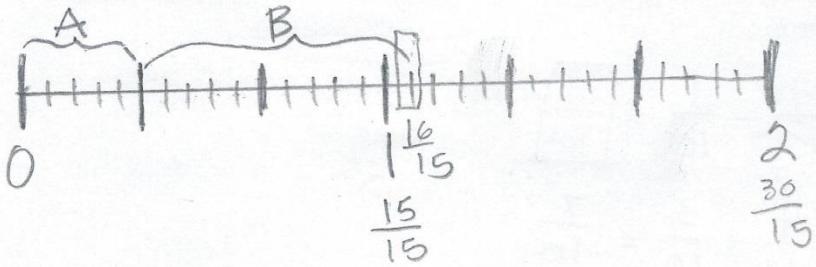
$\frac{1}{4}$ or $\frac{2}{8}$ $\quad \frac{3}{8} \quad \frac{1}{8} \quad \frac{2}{8}$ or $\frac{1}{4}$

Mr. Rivas used $\frac{1}{4}$ for the bird house.

5. Ribbon A is $\frac{1}{3}$ m long. It is $\frac{2}{5}$ m shorter than Ribbon B. What's the total length of the two ribbons?

$\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$

$\frac{11}{15} + \frac{1}{3} = \frac{11}{15} + \frac{5}{15} = \frac{16}{15} = 1\frac{1}{15}$



The two ribbons have a length of $1\frac{1}{15}$ m

Name _____ Date _____

1. Add or subtract.

a. $2+1\frac{1}{5}=$ $(2+1)+\frac{1}{5}=3\frac{1}{5}$

b. $2-1\frac{3}{8}=$ $\frac{16}{8}-\frac{11}{8}=\frac{5}{8}$

c. $5\frac{2}{5}+2\frac{3}{5}=$ $\frac{27}{5}+\frac{13}{5}=\frac{40}{5}=8$

$(5+2)+\frac{2}{5}+\frac{3}{5}=7+1=8$

d. $4-2\frac{2}{7}=$ $\frac{28}{7}-\frac{16}{7}=\frac{12}{7}=1\frac{5}{7}$

e. $9\frac{3}{4}+8=$ $\frac{39}{4}+\frac{32}{4}=\frac{71}{4}=17\frac{3}{4}$

$(9+8)+\frac{3}{4}=17\frac{3}{4}$

f. $17-15\frac{2}{3}=$ $\frac{51}{3}-\frac{47}{3}=\frac{4}{3}=1\frac{1}{3}$ or

$17-15=2$ then $2-\frac{2}{3}=1\frac{1}{3}$

g. $15+17\frac{2}{3}=$ $\frac{45}{3}+\frac{53}{3}-\frac{98}{3}=32\frac{2}{3}$

$(15+17)+\frac{2}{3}=32\frac{2}{3}$

h. $100-20\frac{7}{8}=$ $80\frac{7}{8}=79\frac{1}{8}$

2. Calvin had 30 minutes in time-out. For the first $23\frac{1}{3}$ minutes, Calvin counted spots on the ceiling. For the rest of the time, he made faces at his stuffed tiger. How long did Calvin spend making faces at his tiger?

$30-23\frac{1}{3}=30-23=7$ then $7-\frac{1}{3}=6\frac{2}{3}$

$30-23\frac{1}{3}=\frac{90}{3}-\frac{70}{3}=\frac{20}{3}=6\frac{2}{3}$

Calvin made faces for $6\frac{2}{3}$

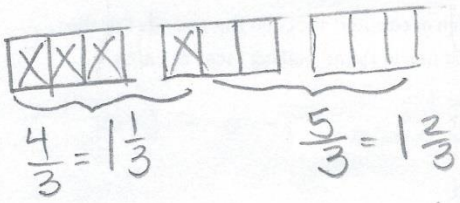
3. Linda planned to spend 9 hours practicing piano this week. By Tuesday, she had spent $2\frac{1}{2}$ hours practicing. How much longer does she need to practice to reach her goal?

$9 - 2\frac{1}{2} = \frac{18}{2} - \frac{5}{2} = \frac{13}{2} = 6\frac{1}{2}$

4. Gary says that $3 - 1\frac{1}{3}$ will be more than 2, since 3 – 1 is 2. Draw a picture to prove that Gary is wrong.

$3 - 1\frac{1}{3} > 2$ is wrong

$\frac{9}{3} - \frac{4}{3} = \frac{5}{3} = 1\frac{2}{3}$



$\frac{4}{3} = 1\frac{1}{3}$ $\frac{5}{3} = 1\frac{2}{3}$

Name _____ Date _____

1. Add or subtract.

a. $3 + 1\frac{1}{4} =$ $\frac{12}{4} + \frac{5}{4} = \frac{17}{4} = 4\frac{1}{4}$

$(3+1)+\frac{1}{4} = 4\frac{1}{4}$

b. $2 - 1\frac{5}{8} =$ $\frac{16}{8} - \frac{13}{8} = \frac{3}{8}$

c. $5\frac{2}{5} + 2\frac{3}{5} =$ $\frac{27}{5} + \frac{13}{5} = \frac{40}{5} = 8$

$(5+2)+\frac{2}{5}+\frac{3}{5} = 7+1 = 8$

d. $4 - 2\frac{5}{7} =$ $\frac{28}{7} - \frac{19}{7} = \frac{9}{7} = 1\frac{2}{7}$ or

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

e. $8\frac{4}{5} + 7 =$ $15\frac{4}{5}$

$8+7+\frac{4}{5} = 15\frac{4}{5}$

f. $18 - 15\frac{3}{4} =$ $3 - \frac{3}{4} = \frac{12}{4} - \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$

g. $16 + 18\frac{5}{6} =$ $34\frac{5}{6}$

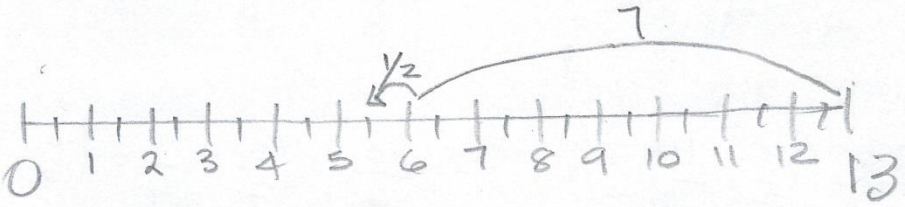
h. $100 - 50\frac{3}{8} =$ $50 - \frac{3}{8} = 49\frac{5}{8}$

2. The total length of two ribbons is 13 meters. If one ribbon is $7\frac{5}{8}$ meters long, what is the length of the other ribbon?

$13 - 7\frac{5}{8} = 6 - \frac{5}{8} = 5\frac{3}{8}$

3. It took Sandy two hours to jog 13 miles. She ran $7\frac{1}{2}$ miles in the first hour. How far did she run during the second hour?

$13 - 7\frac{1}{2} = 6 - \frac{1}{2} = 5\frac{1}{2}$



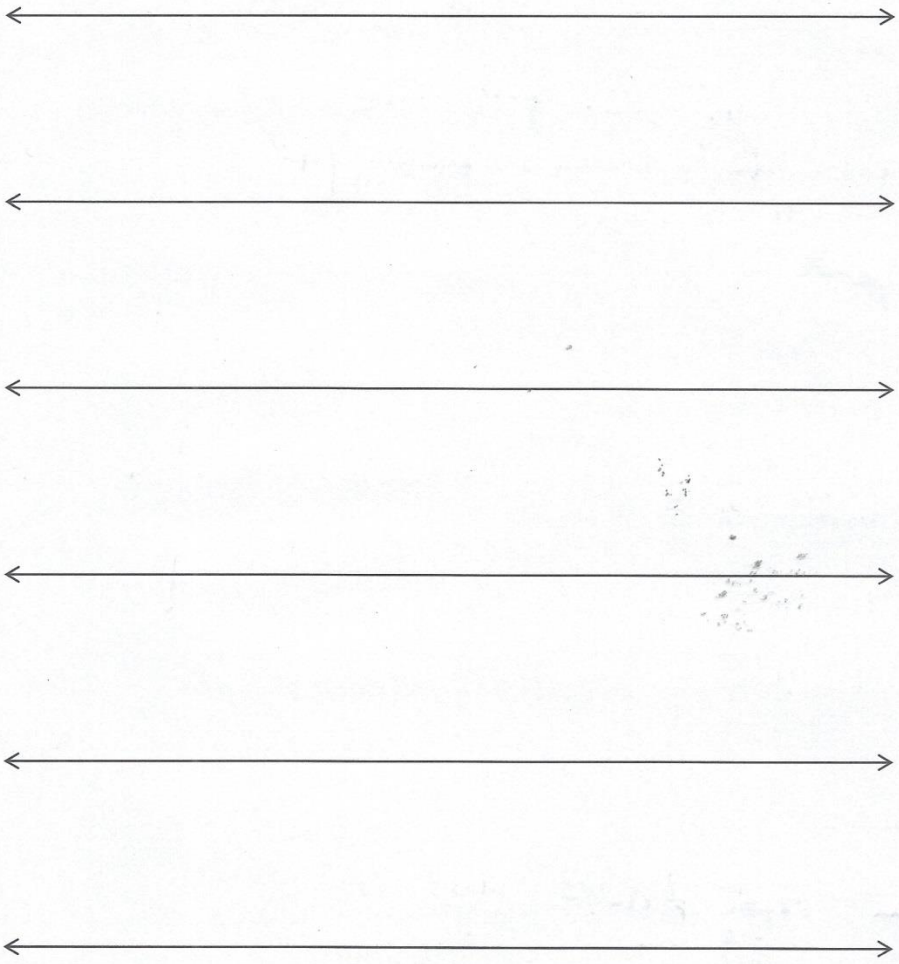
Sandy took $5\frac{1}{2}$ hour

4. Andre says that $5\frac{3}{4} + 2\frac{1}{4} = 7\frac{1}{2}$ because $7\frac{4}{8} = 7\frac{1}{2}$. Identify his mistake. Draw a picture to prove that he is wrong.

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

$5\frac{3}{4} + 2\frac{1}{4} = 7\frac{4}{4} = 8$

It seems that Andre subtracted instead of adding $\frac{3}{4}$ and $\frac{1}{4}$.



empty number line

Name _____ Date _____

1. First make like units, then add.

a. $\frac{3}{4}+\frac{1}{7}=\frac{21}{28}+\frac{4}{28}=\frac{25}{28}$

b. $\frac{1}{4}+\frac{9}{8}=\frac{2}{8}+\frac{9}{8}=\frac{11}{8}=1\frac{3}{8}$

c. $\frac{3}{8}+\frac{3}{7}=\frac{21}{56}+\frac{24}{56}=\frac{45}{56}$

d. $\frac{4}{9}+\frac{4}{7}=\frac{28}{63}+\frac{36}{63}=\frac{64}{63}=1\frac{1}{63}$

e. $\frac{1}{5}+\frac{2}{3}=\frac{3}{15}+\frac{10}{15}=\frac{13}{15}$

f. $\frac{3}{4}+\frac{5}{6}=\frac{9}{12}+\frac{10}{12}=\frac{19}{12}=1\frac{7}{12}$

$\times 3 \quad \times 2$

g. $\frac{2}{3}+\frac{1}{11}=\frac{22}{33}+\frac{3}{33}=\frac{25}{33}$

h. $\frac{3}{4}+1\frac{1}{10}=\frac{15}{20}+\frac{22}{20}=\frac{17}{20}=1\frac{17}{20}$

$\times 5 \quad \times 2$

2. Whitney says that to add fractions with different denominators, you always have to multiply the denominators to find the common unit; for example:

$$\frac{1}{4}+\frac{1}{6}=\frac{6}{24}+\frac{4}{24}$$

Show Whitney how she could have chosen a denominator smaller than 24, and solve the problem.

First, list the multiples of both denominators. Second, choose the smallest multiple that appear on both lists.

4 – 4 – 8 – 12 – 16 – 20 – 24 – 28

6 – 6 – 12 – 18 – 24 – 30 – 36 – 42

3. Jackie brought $\frac{3}{4}$ of a gallon of iced tea to the party. Bill brought $\frac{7}{8}$ of a gallon of iced tea to the same party. How much iced tea did Jackie and Bill bring to the party?

$\frac{3}{4_{x2}}+\frac{7}{8}=\frac{6}{8}+\frac{7}{8}=\frac{13}{8}=1\frac{5}{8}$.

They brought $1\frac{5}{8}$ gallons.

4. Madame Curie made some radium in her lab. She used $\frac{2}{5}$ kg of the radium in an experiment and had $1\frac{1}{4}$ kg left. How much radium did she have at first?
(Extension: If she performed the experiment twice, how much radium would she have left?)

$1\frac{1}{4}+\frac{2}{5}=1\frac{5}{20}+\frac{8}{20}=1\frac{13}{20}$

Madame Curie had $1\frac{13}{20}$ kg of radium

$1\frac{13}{20}-\frac{4}{5}=\frac{33}{20}-\frac{16}{20}=\frac{17}{20}$

She would have left $\frac{17}{20}$ kg of radium

Name _____ Date _____

1. Make like units, then add.

a. $\frac{3}{5}+\frac{1}{3}=\frac{9}{15}+\frac{5}{15}=\frac{14}{15}$

b. $\frac{3}{5}+\frac{1}{11}=\frac{33}{55}+\frac{5}{55}=\frac{38}{55}$

c. $\frac{2}{9}+\frac{5}{6}=\frac{4}{18}+\frac{15}{18}=\frac{19}{18}=1\frac{1}{19}$ ($\times 2$, $\times 3$)

d. $\frac{2}{5}+\frac{1}{4}+\frac{1}{10}=\frac{8+5+2}{20}=\frac{15}{20}=\frac{3}{4}$ ($\times 4$, $\times 5$, $\times 2$)

e. $\frac{1}{3}+\frac{7}{5}=\frac{5}{15}+\frac{21}{15}=\frac{26}{15}=1\frac{11}{15}$

f. $\frac{5}{8}+\frac{7}{12}=\frac{15+14}{24}=\frac{19}{24}$ ($\times 3$, $\times 2$)

g. $1\frac{1}{3}+\frac{3}{4}=\frac{4}{3}+\frac{3}{4}=\frac{16}{12}+\frac{9}{12}=$

$\frac{25}{12}=2\frac{1}{12}$

h. $\frac{5}{6}+1\frac{1}{4}=\frac{10}{12}+1\frac{3}{12}=1\frac{13}{12}=2\frac{1}{12}$ ($\times 2$, $\times 3$)

2. On Monday, Ka practiced guitar for $\frac{2}{3}$ of one hour. When she finished, she practiced piano for $\frac{3}{4}$ of one hour. How much time did Ka spend practicing instruments on Monday?

$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$

3. Ms. How bought a bag of rice for dinner. She used $\frac{3}{5}$ kg of the rice, and still had $2\frac{1}{4}$ kg left. How heavy was the bag of rice that Ms. How bought?

$2\frac{1}{4} + \frac{3}{5} = 2\frac{5}{20} + \frac{12}{20} = 2\frac{17}{20}$

4. Joe spends $\frac{2}{5}$ of his money on a jacket and $\frac{3}{8}$ of his money on a shirt. He spends the rest on a pair of pants. What fraction of his money does he use to buy the pants?

$\frac{2}{5} + \frac{3}{8} = \frac{16}{40} + \frac{15}{40} = \frac{31}{40}$

$1 - \frac{31}{40} = \frac{40}{40} - \frac{31}{40} = \frac{9}{40}$

Joe used $\frac{9}{40}$ to buy pants.

Name _____ Date _____

1. Add.

a. $2\frac{1}{4}+1\frac{1}{5}=$ $3+\frac{5}{20}+\frac{4}{20}=3\frac{9}{20}$

b. $2\frac{3}{4}+1\frac{2}{5}=$ $3+\frac{15}{20}+\frac{8}{20}=3\frac{23}{20}=4\frac{3}{20}$

c. $1\frac{1}{5}+2\frac{1}{3}=$ $3+\frac{3}{15}+\frac{5}{15}=3\frac{8}{15}$

d. $4\frac{2}{3}+1\frac{2}{5}=$ $5+\frac{10}{15}+\frac{6}{15}=5\frac{16}{15}=6\frac{1}{15}$

e. $3\frac{1}{3}+4\frac{5}{7}=$ $7+\frac{7}{21}+\frac{15}{21}=7\frac{22}{21}=8\frac{1}{21}$

f. $2\frac{6}{7}+5\frac{2}{3}=$ $7+\frac{18}{21}+\frac{14}{21}=7\frac{32}{21}=8\frac{11}{21}$

g. $15\frac{1}{5}+3\frac{5}{8}=$ $18+\frac{8}{40}+\frac{25}{40}=18\frac{33}{40}$

h. $15\frac{5}{8}+5\frac{2}{5}=$ $20+\frac{25}{40}+\frac{16}{40}=20\frac{41}{40}=21\frac{1}{40}$

2. Erin jogged $2\frac{1}{4}$ miles on Monday. Wednesday, she jogged $3\frac{1}{3}$ miles, and on Friday, she jogged $2\frac{2}{3}$ miles. How far did Erin jog altogether?

$2\frac{1}{4} + 3\frac{1}{3} + 2\frac{2}{3} = 7 + \frac{3}{12} + \frac{4}{12} + \frac{8}{12} = 7\frac{15}{12} = 8\frac{3}{12} = 8\frac{1}{4}$

(×3, ×4, ×4)

Erin jogged 8 1/4 miles altogether.

3. Darren bought some paint. He used $2\frac{1}{4}$ gallons painting his living room. After that, he had $3\frac{5}{6}$ gallons left. How much paint did he buy?

$2\frac{1}{4} + 3\frac{5}{6} = 5 + \frac{3}{12} + \frac{10}{12} = 5 + \frac{13}{12} = 6\frac{1}{12}$

(×3, ×2)

Darren bought 6 1/12 miles

4. Clayton says that $2\frac{1}{2} + 3\frac{3}{5}$ will be more than 5, but less than 6 since 2 + 3 is 5. Is Clayton's reasoning correct? Prove him right or wrong.

$2\frac{1}{2} + 3\frac{3}{5} = 5 + \frac{1}{2} + \frac{3}{5} = 5 + \frac{5}{10} + \frac{6}{10} = 5\frac{11}{10} = 6\frac{1}{10}$

Clayton is not correct. $\frac{1}{2} + \frac{3}{5}$ is more than 1.

Name _____ Date _____

1. Add.

a. $2\frac{1}{2}+1\frac{1}{5}=$ $3+\frac{5}{10}+\frac{2}{10}=3\frac{7}{10}$

b. $2\frac{1}{2}+1\frac{3}{5}=$ $3\frac{5}{10}+\frac{6}{10}=3\frac{11}{10}=4\frac{1}{10}$

c. $1\frac{1}{5}+3\frac{1}{3}=$ $4\frac{3}{15}+\frac{5}{15}=4\frac{8}{15}$

d. $3\frac{2}{3}+1\frac{3}{5}=$ $4+\frac{10}{15}+\frac{9}{15}=4\frac{19}{15}=5\frac{4}{15}$

e. $2\frac{1}{3}+4\frac{4}{7}=$ $6+\frac{7}{21}+\frac{12}{21}=6\frac{19}{21}$

f. $3\frac{5}{7}+4\frac{2}{3}=$ $7\frac{15}{21}+\frac{14}{21}=7\frac{29}{21}=8\frac{8}{21}$

g. $15\frac{1}{5}+4\frac{3}{8}=$ $19+\frac{8}{40}+\frac{15}{40}=19\frac{23}{40}$

h. $18\frac{3}{8}+2\frac{2}{5}=$ $20+\frac{15}{40}+\frac{16}{40}=20\frac{31}{40}$

2. Angela practiced piano for $2\frac{1}{2}$ hours on Friday, $2\frac{1}{3}$ hours on Saturday, and $3\frac{2}{3}$ hours on Sunday. How much time did Angela practice piano during the weekend?

$2\frac{1}{2}+2\frac{1}{3}+3\frac{2}{3}=7+\frac{3+2+2}{6}=7\frac{7}{6}=8\frac{1}{6}$

Angela practiced 8 minutes and 10 seconds

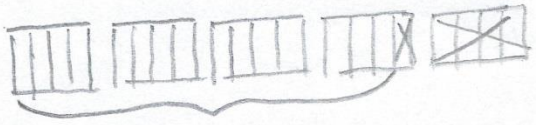
3. String A is $3\frac{5}{6}$ meters long. String B is $2\frac{1}{4}$ meters long. What's the total length of both strings?

$3\frac{5}{6}+2\frac{1}{4}=5+\frac{10}{12}+\frac{3}{12}=5\frac{13}{12}=6\frac{1}{12}$

The total length of both strings is $6\frac{1}{12}$ m.

4. Matt says that $5-1\frac{1}{4}$ will be more than 4, since $5-1$ is 4. Draw a picture to prove that Matt is wrong.

$5-1\frac{1}{4}>4$ $\quad 5-1\frac{1}{4}=4-\frac{1}{4}=3\frac{3}{4}$



$3\frac{3}{4}$

Name _____ Date _____

1. Generate equivalent fractions to get like units. Then, subtract.

a. $\frac{1}{2}-\frac{1}{3}=$ $\frac{3}{6}-\frac{2}{6}=\boxed{\frac{1}{6}}$

b. $\frac{7}{10}-\frac{1}{3}=$ $\frac{21}{30}-\frac{10}{30}=\boxed{\frac{11}{30}}$

c. $\frac{7}{8}-\frac{3}{4}=$ $\frac{7}{8}-\frac{6}{8}=\boxed{\frac{1}{8}}$

d. $1\frac{2}{5}-\frac{3}{8}=$ $1\frac{16}{40}-\frac{15}{40}=\boxed{1\frac{1}{40}}$

e. $1\frac{3}{10}-\frac{1}{6}=$ $1\frac{9}{30}-\frac{5}{30}=1\frac{4}{30}=$ $\boxed{1\frac{2}{15}}$

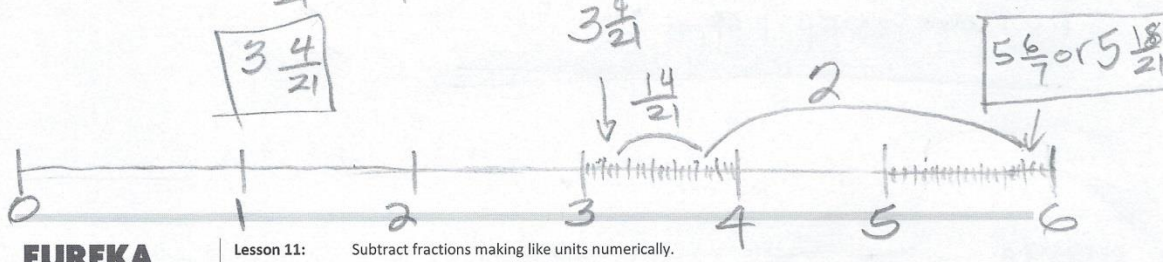
f. $2\frac{1}{3}-1\frac{1}{5}=$ $1\frac{1}{3}-\frac{1}{5}=1\frac{5}{15}-\frac{3}{15}=\boxed{1\frac{2}{15}}$

g. $5\frac{6}{7}-2\frac{2}{3}=$ $3\frac{6}{7}-\frac{2}{3}=$

$3\frac{18}{21}-\frac{14}{21}=$

$\boxed{3\frac{4}{21}}$

h. Draw a number line to show that your answer to (g) is reasonable.



2. George says that, to subtract fractions with different denominators, you always have to multiply the denominators to find the common unit; for example:

$$\frac{3}{8}-\frac{1}{6}=\frac{18}{48}-\frac{8}{48}$$

Show George how he could have chosen a denominator smaller than 48, and solve the problem.

$\frac{3}{8}-\frac{1}{6}=\frac{18}{24}-\frac{8}{24}=\frac{10}{24}=\boxed{\frac{5}{12}}$

8 — 16, (24), 32, 40
6 — 12, 18, (24), 30

3. Meiling has $1\frac{1}{4}$ liter of orange juice. She drinks $\frac{1}{3}$ liter. How much orange juice does she have left? (Extension: If her brother then drinks twice as much as Meiling, how much is left?)

$1\frac{1}{4}-\frac{1}{3}=1\frac{3}{12}-\frac{4}{12}=\frac{15}{12}-\frac{4}{12}=\boxed{\frac{11}{12}}$

Meiling has $\frac{11}{12}$ liters of juice left.

$\frac{11}{12}-\frac{8}{12}=\frac{3}{12}=\boxed{\frac{1}{4}}$ There is $\frac{1}{4}$ liter of juice left

4. Harlan used $3\frac{1}{2}$ kg of sand to make a large hourglass. To make a smaller hourglass, he only used $1\frac{3}{7}$ kg of sand. How much more sand did it take to make the large hourglass than the smaller one?

$3\frac{1}{2}-1\frac{3}{7}=2\frac{1}{2}-\frac{3}{7}=2\frac{7}{14}-\frac{6}{14}=\boxed{2\frac{1}{14}}$

Harlan uses $2\frac{1}{14}$ kg of sand more

Name _____ Date _____

1. Generate equivalent fractions to get like units. Then, subtract.

a. $\frac{1}{2}-\frac{1}{5}=$ $\frac{5}{10}-\frac{2}{10}=\boxed{\frac{3}{10}}$

b. $\frac{7}{8}-\frac{1}{3}=$ $\frac{21}{24}-\frac{8}{24}=\frac{14}{24}=\boxed{\frac{7}{12}}$

c. $\frac{7}{10}-\frac{3}{5}=$ $\frac{7}{10}-\frac{6}{10}=\boxed{\frac{1}{10}}$

d. $1\frac{5}{6}-\frac{2}{3}=$ $1\frac{5}{6}-\frac{4}{6}=\boxed{1\frac{1}{6}}$

e. $2\frac{1}{4}-1\frac{1}{5}=$ $1\frac{1}{4}-\frac{1}{5}=$

$1\frac{5}{20}-\frac{4}{20}=$

$\boxed{1\frac{1}{20}}$

f. $5\frac{6}{7}-3\frac{2}{3}=$ $2\frac{6}{7}-\frac{2}{3}=$

$2\frac{18}{21}-\frac{14}{21}=$

$\boxed{2\frac{4}{21}}$

g. $15\frac{7}{8}-5\frac{3}{4}=$ $10\frac{7}{8}-\frac{3}{4}=$

$10\frac{7}{8}-\frac{6}{8}=$

$\boxed{10\frac{1}{8}}$

h. $15\frac{5}{8}-3\frac{1}{3}=$ $12\frac{5}{8}-\frac{1}{3}=$

$12\frac{15}{24}-\frac{8}{24}=$

$\boxed{12\frac{7}{24}}$

2. Sandy ate $\frac{1}{6}$ of a candy bar. John ate $\frac{3}{4}$ of it. How much more of the candy bar did John eat than Sandy?

$\frac{3}{4} - \frac{1}{6} = \frac{9}{12} - \frac{2}{12} = \boxed{\frac{7}{12}}$

3. $4\frac{1}{2}$ yards of cloth are needed to make a woman's dress. $2\frac{2}{7}$ yards of cloth are needed to make a girl's dress. How much more cloth is needed to make a woman's dress than a girl's dress?

$4\frac{1}{2} - 2\frac{2}{7} = 2\frac{1}{2} - \frac{2}{7} = 2\frac{7}{14} - \frac{4}{14} = \boxed{2\frac{3}{14}}$

4. Bill reads $\frac{1}{5}$ of a book on Monday. He reads $\frac{2}{3}$ of the book on Tuesday. If he finishes reading the book on Wednesday, what fraction of the book did he read on Wednesday?

$\frac{1}{5} + \frac{2}{3} = \frac{3}{15} + \frac{10}{15} = \boxed{\frac{13}{15}}$

$\frac{15}{15} - \frac{13}{15} = \boxed{\frac{2}{15}}$

Bill read 2/15 of the book on Wednesday

5. Tank A has a capacity of 9.5 gallons. $6\frac{1}{3}$ gallons of the tank's water are poured out. How many gallons of water are left in the tank?

$9\frac{1}{2} - 6\frac{1}{3} = 3\frac{1}{2} - \frac{1}{3} = 3\frac{3}{6} - \frac{2}{6} = \boxed{3\frac{1}{6}}$

Name _____ Date _____

1. Subtract.

a. $3\frac{1}{5} - 2\frac{1}{4} =$ $1\frac{1}{5} - \frac{1}{4} = 1\frac{4}{20} - \frac{5}{20} =$ $\frac{24}{20} - \frac{5}{20} = \boxed{\frac{19}{20}}$

b. $4\frac{2}{5} - 3\frac{3}{4} =$ $1\frac{2}{5} - \frac{3}{4} = 1\frac{8}{20} - \frac{15}{20}$ $\frac{28}{20} - \frac{15}{20} = \boxed{\frac{13}{20}}$

c. $7\frac{1}{5} - 4\frac{1}{3} =$ $3\frac{1}{5} - \frac{1}{3} = 3\frac{3}{15} - \frac{5}{15} =$ $2\frac{18}{15} - \frac{5}{15} = \boxed{2\frac{13}{15}}$

d. $7\frac{2}{5} - 5\frac{2}{3} =$ $2\frac{2}{5} - \frac{2}{3} = 2\frac{6}{15} - \frac{10}{15}$ $1\frac{21}{15} - \frac{10}{15} = \boxed{1\frac{11}{15}}$

e. $4\frac{2}{7} - 3\frac{1}{3} =$ $1\frac{2}{7} - \frac{1}{3} = 1\frac{6}{21} - \frac{7}{21}$ $\frac{27}{21} - \frac{7}{21} = \boxed{\frac{20}{21}}$

f. $9\frac{2}{3} - 2\frac{6}{7} =$ $7\frac{2}{3} - \frac{6}{7} = 7\frac{14}{21} - \frac{18}{21} =$ $6\frac{35}{21} - \frac{18}{21} = \boxed{6\frac{17}{21}}$

g. $17\frac{2}{3} - 5\frac{5}{6} =$ $12\frac{2}{3} - \frac{5}{6} =$ $12\frac{4}{6} - \frac{5}{6} =$ $11\frac{10}{6} - \frac{5}{6} =$ $\boxed{11\frac{5}{6}}$

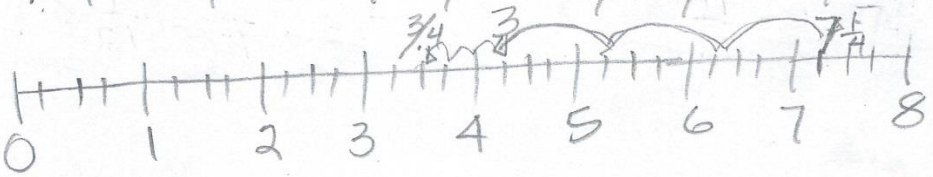
h. $18\frac{1}{3} - 3\frac{3}{8} =$ $15\frac{1}{3} - \frac{3}{8} = 15\frac{8}{24} - \frac{9}{24} =$ $14\frac{32}{24} - \frac{9}{24} =$ $\boxed{14\frac{23}{24}}$

2. Toby wrote the following:

$7\frac{1}{4} - 3\frac{3}{4} = 4\frac{2}{4} = 4\frac{1}{2}$ incorrect

Is Toby's calculation correct? Draw a number line to support your answer.

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



3. Mr. Neville Iceguy mixed up $12\frac{3}{5}$ gallons of chili for a party. If $7\frac{3}{4}$ gallons of chili was mild and the rest was extra spicy, how much extra spicy chili did Mr. Iceguy make?

$12\frac{3}{5} - 7\frac{3}{4} = 5\frac{3}{5} - \frac{3}{4} = 5\frac{12}{20} - \frac{15}{20} = 4\frac{32}{20} - \frac{15}{20} =$

$4\frac{17}{20}$

Mr. Neville did $4\frac{17}{20}$ of extra spicy chili.

4. Jazmyne decided to spend $6\frac{1}{2}$ hours studying over the weekend. She spent $1\frac{1}{4}$ hours studying on Friday evening and $2\frac{2}{3}$ hours on Saturday. How much longer does she need to spend studying on Sunday in order to reach her goal?

$2\frac{2}{3} + 1\frac{1}{4} \quad 3\frac{2}{3} + \frac{1}{4} = 3\frac{8}{12} + \frac{3}{12} = 3\frac{11}{12}$

$6\frac{1}{2} - 3\frac{11}{12} = 6\frac{6}{12} - 3\frac{11}{12} = 3\frac{6}{12} - \frac{11}{12} =$

$2\frac{18}{12} - \frac{11}{12} =$

$2\frac{7}{12}$

Jazmine needs to spend $2\frac{7}{12}$ hours on Sunday

Name _____ Date _____

1. Subtract.

a. $3\frac{1}{4} - 2\frac{1}{3} =$ $1\frac{1}{4} - \frac{1}{3} = \frac{5}{4} - \frac{1}{3} =$

$\frac{15}{12} - \frac{4}{12} = \boxed{\frac{11}{12}}$

b. $3\frac{2}{3} - 2\frac{3}{4} =$ $1\frac{2}{3} - \frac{3}{4} = \frac{5}{3} - \frac{3}{4} =$

$\frac{20}{12} - \frac{9}{12} = \boxed{\frac{11}{12}}$

c. $6\frac{1}{5} - 4\frac{1}{4} =$ $2\frac{1}{5} - \frac{1}{4} = \frac{11}{5} - \frac{1}{4} =$

$\frac{44}{20} - \frac{5}{20} = \frac{39}{20} = \boxed{1\frac{19}{20}}$

d. $6\frac{3}{5} - 4\frac{3}{4} =$ $2\frac{3}{5} - \frac{3}{4} = \frac{13}{5} - \frac{3}{4} =$

$\frac{52}{20} - \frac{15}{20} = \frac{37}{20} = 1\frac{17}{20}$

e. $5\frac{2}{7} - 4\frac{1}{3} =$ $1\frac{2}{7} - \frac{1}{3} = \frac{9}{7} - \frac{1}{3} =$

$\frac{27}{21} - \frac{7}{21} = \boxed{\frac{20}{21}}$

f. $8\frac{2}{3} - 3\frac{5}{7} =$ $5\frac{2}{3} - \frac{5}{7} = 4\frac{5}{3} - \frac{5}{7}$

$4\frac{35}{21} - \frac{15}{21} = \boxed{4\frac{20}{21}}$

g. $18\frac{3}{4} - 5\frac{7}{8} =$ $13\frac{3}{4} - \frac{7}{8} =$

$12\frac{7}{4} - \frac{7}{8} =$

$12\frac{14}{8} - \frac{7}{8} =$

$\boxed{12\frac{7}{8}}$

h. $17\frac{1}{5} - 2\frac{5}{8} =$ $15\frac{1}{5} - \frac{5}{8} = 14\frac{6}{5} - \frac{5}{8} =$

$14\frac{48}{40} - \frac{25}{40} = \boxed{14\frac{23}{40}}$

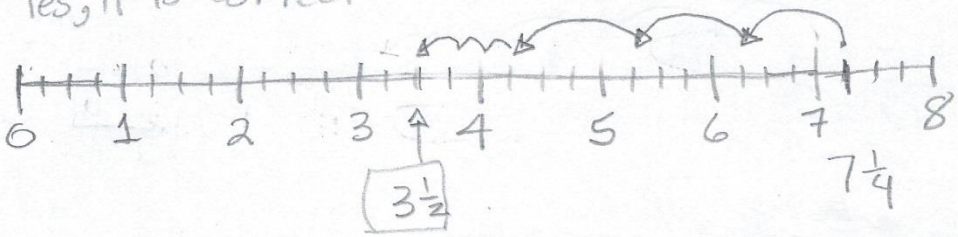
2. Tony wrote the following:

$$7\frac{1}{4} - 3\frac{3}{4} = 4\frac{1}{4} - \frac{3}{4}$$

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

Is Tony's statement correct? Draw a number line to support your answer.

Yes, it is correct



3. Ms. Sanger blended $8\frac{3}{4}$ gallons of iced tea with some lemonade for a picnic. If there were $13\frac{2}{5}$ gallons of the beverage, how many gallons of lemonade did she use?

$13\frac{2}{5} - 8\frac{3}{4} = 5\frac{2}{5} - \frac{3}{4} = 4\frac{7}{5} - \frac{3}{4} = 4\frac{28}{20} - \frac{15}{20} =$

$4\frac{13}{20}$

Ms. Sanger used $4\frac{13}{20}$ gallons of lemonade

4. A carpenter has $10\frac{1}{2}$ feet of wooden plank. He cuts off $4\frac{1}{4}$ feet to replace the slat of a deck and $3\frac{2}{3}$ feet to repair a bannister. He uses the rest of the plank to fix a stair. How many feet of wood does the carpenter use to fix the stair?

$10\frac{1}{2} - 4\frac{1}{4} - 3\frac{2}{3} =$ $10-4=6$ $6-3=3$

$3\frac{1}{2} - \frac{1}{4} = 3\frac{2}{4} - \frac{1}{4} = 3\frac{1}{4}$ $3\frac{1}{4} - \frac{2}{3} = 2\frac{5}{4} - \frac{2}{3} = 2\frac{15}{12} - \frac{8}{12} =$

$2\frac{7}{12}$

The carpenter used $2\frac{7}{12}$ feet of wood to fix the stair

Name _____ Date _____

1. Are the following expressions greater than or less than 1? Circle the correct answer.

a. $\frac{1}{2}+\frac{2}{7}$	greater than 1	(less than 1)	$\frac{7}{14}+\frac{4}{14}=\frac{11}{14}$
b. $\frac{5}{8}+\frac{3}{5}$	(greater than 1)	less than 1	$\frac{25}{40}+\frac{24}{40}=\frac{49}{40}=1\frac{9}{40}$
c. $1\frac{1}{4}-\frac{1}{3}$	greater than 1	(less than 1)	$\frac{5}{4}-\frac{1}{3}=\frac{15}{12}-\frac{4}{12}=\frac{1}{12}$
d. $3\frac{5}{8}-2\frac{5}{9}$	(greater than 1)	less than 1	$1\frac{5}{8}-\frac{5}{9}=1\frac{45}{72}-\frac{40}{72}=1\frac{5}{72}$

2. Are the following expressions greater than or less than $\frac{1}{2}$? Circle the correct answer.

a. $\frac{1}{4}+\frac{2}{3}$	(greater than $\frac{1}{2}$)	less than $\frac{1}{2}$	$\frac{3}{12}+\frac{8}{12}=\frac{11}{12}$
b. $\frac{3}{7}-\frac{1}{8}$	greater than $\frac{1}{2}$	(less than $\frac{1}{2}$)	$\frac{24}{56}-\frac{7}{56}=\frac{17}{56}$
c. $1\frac{1}{7}-\frac{7}{8}$	greater than $\frac{1}{2}$	(less than $\frac{1}{2}$)	$\frac{8}{7}-\frac{7}{8}=\frac{64}{56}-\frac{49}{56}=\frac{15}{56}$
d. $\frac{3}{7}+\frac{2}{6}$	(greater than $\frac{1}{2}$)	less than $\frac{1}{2}$	$\frac{18}{42}+\frac{14}{42}=\frac{32}{42}=1\frac{12}{42}=1\frac{2}{7}$

3. Use >, <, or = to make the following statements true.

a. $5\frac{2}{3}+3\frac{3}{4}$ $>$ $8\frac{2}{3}$ $\quad 9\frac{5}{12}$

b. $4\frac{5}{8}-3\frac{2}{5}$ $<$ $1\frac{5}{8}+\frac{2}{5}$ $\quad 1\frac{9}{40}$ $\quad 2\frac{1}{40}$

c. $5\frac{1}{2}+1\frac{3}{7}$ $=$ $6+\frac{13}{14}$ $\quad 6\frac{13}{14}$

d. $15\frac{4}{7}-11\frac{2}{5}$ $<$ $4\frac{4}{7}+\frac{2}{5}$

4. Is it true that $4\frac{3}{5} - 3\frac{2}{3} = 1 + \frac{3}{5} + \frac{2}{3}$? Prove your answer.

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

$\frac{8}{5} - \frac{2}{3} =$

$\frac{24}{15} - \frac{10}{15} = \frac{12}{15} = \frac{4}{5}$

$\frac{8}{5} + \frac{2}{3} = \frac{24}{15} + \frac{10}{15} = \frac{34}{15} =$

$2\frac{4}{15}$

$\frac{4}{5} < 2\frac{4}{15}$

5. Jackson needs to be $1\frac{3}{4}$ inches taller in order to ride the roller coaster. Since he can't wait, he puts on a pair of boots that add $1\frac{1}{6}$ inches to his height and slips an insole inside to add another $\frac{1}{8}$ inch to his height. Will this make Jackson appear tall enough to ride the roller coaster?

$1\frac{1}{6} + \frac{1}{8} = 1\frac{4}{24} + \frac{3}{24} = 1\frac{7}{24}$

$1\frac{3}{4} = 1\frac{18}{24}$

$1\frac{18}{24} > 1\frac{7}{24}$

It won't make Jackson appear tall enough.

6. A baker needs 5 lb of butter for a recipe. She found 2 portions that each weigh $1\frac{1}{6}$ lb and a portion that weighs $2\frac{2}{7}$ lb. Does she have enough butter for her recipe?

$2 \times 1\frac{1}{6} = 2\frac{2}{6}$

$2\frac{2}{6} + 2\frac{2}{7} = 4\frac{14}{42} + \frac{12}{42} = 4\frac{26}{42} = 4\frac{13}{21}$

The baker does not have enough butter.

Name _____ Date _____

1. Are the following expressions greater than or less than 1? Circle the correct answer.

a.	$\frac{1}{2}+\frac{4}{9}$	greater than 1	less than 1
b.	$\frac{5}{8}+\frac{3}{5}$	greater than 1	less than 1
c.	$1\frac{1}{5}-\frac{1}{3}$	greater than 1	less than 1
d.	$4\frac{3}{5}-3\frac{3}{4}$	greater than 1	less than 1

2. Are the following expressions greater than or less than $\frac{1}{2}$? Circle the correct answer.

a.	$\frac{1}{5}+\frac{1}{4}$	greater than $\frac{1}{2}$	less than $\frac{1}{2}$
b.	$\frac{6}{7}-\frac{1}{6}$	greater than $\frac{1}{2}$	less than $\frac{1}{2}$
c.	$1\frac{1}{7}-\frac{5}{6}$	greater than $\frac{1}{2}$	less than $\frac{1}{2}$
d.	$\frac{4}{7}+\frac{1}{8}$	greater than $\frac{1}{2}$	less than $\frac{1}{2}$

3. Use >, <, or = to make the following statements true.

a. $5\frac{4}{5}+2\frac{2}{3}$ ___ $8\frac{3}{4}$

b. $3\frac{4}{7}-2\frac{3}{5}$ ___ $1\frac{4}{7}+\frac{3}{5}$

c. $4\frac{1}{2}+1\frac{4}{9}$ ___ $5+\frac{13}{18}$

d. $10\frac{3}{8}-7\frac{3}{5}$ ___ $3\frac{3}{8}+\frac{3}{5}$

4. Is it true that $5\frac{2}{3} - 3\frac{3}{4} = 1 + \frac{2}{3} + \frac{3}{4}$? Prove your answer.

$5\frac{2}{3} - 3\frac{3}{4} =$

$2\frac{8}{12} - \frac{9}{12} =$

$1\frac{20}{12} - \frac{9}{12} =$

$1\frac{11}{12}$

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

$1\frac{8}{12} + \frac{9}{12} =$

$1\frac{17}{12} = 2\frac{5}{12}$

$1\frac{11}{12}$ is not equal to $2\frac{5}{12}$

5. A tree limb hangs $5\frac{1}{4}$ feet from a telephone wire. The city trims back the branch before it grows within $2\frac{1}{2}$ feet of the wire. Will the city allow the tree to grow $2\frac{3}{4}$ more feet?

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

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

When the tree grows $2\frac{3}{4}$ more feet, the city will trim it back.

6. Mr. Kreider wants to paint two doors and several shutters. It takes $2\frac{1}{8}$ gallons of paint to coat each door and $1\frac{3}{5}$ gallons of paint to coat all of his shutters. If Mr. Kreider buys three 2-gallon cans of paint, does he have enough to complete the job?

$2 \times 2\frac{1}{8} = 4\frac{4}{8} = 4\frac{1}{2}$

$4\frac{1}{2} + 1\frac{3}{5} = 5\frac{5}{10} + \frac{6}{10} = 5\frac{11}{10} = 6\frac{1}{10}$

Mr. Kreider does not have enough paint to complete the job.

Name _____ Date _____

1. Rearrange the terms so that you can add or subtract mentally, then solve.

a. $\frac{1}{4}+2\frac{2}{3}+\frac{7}{4}+\frac{1}{3}$

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

$2+1+2=\boxed{5}$

b. $2\frac{3}{5}-\frac{3}{4}+\frac{2}{5}=$

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

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

c. $4\frac{3}{7}-\frac{3}{4}-2\frac{1}{4}-\frac{3}{7}$

$(4-2)-(\frac{3}{7}-\frac{3}{7})-\frac{3}{4}-\frac{1}{4}$

$2-0-\frac{3}{4}-\frac{1}{4}$

$\frac{8}{4}-\frac{3}{4}-\frac{1}{4}=\frac{4}{4}=\boxed{1}$

d. $\frac{5}{6}+\frac{1}{3}-\frac{4}{3}+\frac{1}{6}=$

$\left(\frac{5}{6}+\frac{1}{6}+\frac{1}{3}\right)-\frac{4}{3}=$

$\left(\frac{5}{6}+\frac{1}{6}+\frac{2}{6}\right)-\frac{8}{6}=$

$\frac{8}{6}-\frac{8}{6}=\boxed{0}$

2. Fill in the blank to make the statement true.

a. $11\frac{2}{5}-3\frac{2}{3}-\frac{11}{3}=$ $4\frac{3}{5}$

$11\frac{2}{5}-3\frac{2}{3}-3\frac{2}{3}=$

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

$4\frac{21}{15}-\frac{20}{15}=\boxed{4\frac{1}{15}}$

b. $11\frac{7}{8}+3\frac{1}{5}-$ $\frac{3}{4}$ $=15$

$11\frac{7}{8}+3\frac{1}{5}=14\frac{35}{40}+\frac{8}{40}=$

$14\frac{43}{40}=\boxed{15\frac{3}{40}}$

c. $\frac{5}{12}-$ 1 $+\frac{5}{4}=\frac{2}{3}$

$\frac{5}{12}+\frac{5}{4}=\frac{5}{12}+\frac{15}{12}=\frac{20}{12}=1\frac{8}{12}=\boxed{1\frac{2}{3}}$

d. $58\frac{11}{12}-30-7\frac{1}{4}=21\frac{2}{3}$

$37\frac{1}{4}+21\frac{2}{3}=$

$58\frac{1}{4}+\frac{2}{3}=58\frac{3}{12}+\frac{8}{12}=$

$\boxed{58\frac{11}{12}}$

e. $\frac{24}{5} + 4\frac{33}{35} + \frac{8}{7} = 9$

$\frac{24}{5} + \frac{8}{7} = 4\frac{4}{5} + 1\frac{1}{7} =$

$5\frac{4}{5} + \frac{1}{7} = 5\frac{28}{35} + \frac{5}{35} = 5\frac{33}{35}$

$9 - 5\frac{33}{35} = 4 - \frac{33}{35} = \boxed{3\frac{2}{35}}$

f. $11.1 + 3\frac{1}{10} - 4\frac{3}{10} = \frac{99}{10}$

$11\frac{1}{10} + 3\frac{1}{10} = 14\frac{2}{10}$

$14\frac{2}{10} - \frac{99}{10} = 14\frac{2}{10} - 9\frac{9}{10} =$

$5\frac{2}{10} - \frac{9}{10} = 4\frac{12}{10} - \frac{9}{10} = \boxed{4\frac{3}{10} \text{ or } 4.3}$

3. DeAngelo needs 100 lb of garden soil to landscape a building. In the company's storage area, he finds 2 cases holding $24\frac{3}{4}$ lb of garden soil each, and a third case holding $19\frac{3}{8}$ lb. How much gardening soil does DeAngelo still need in order to do the job?

$\boxed{2 \times 24\frac{3}{4} + 19\frac{3}{8}} = 48\frac{6}{4} + 19\frac{3}{8} = 67 + 1\frac{2}{4} + \frac{3}{8} = 68\frac{2}{4} + \frac{3}{8}$

$68\frac{4}{8} + \frac{3}{8} = \boxed{68\frac{7}{8}}$

$100 - 68\frac{7}{8} = 32 - \frac{7}{8} = 31\frac{1}{8}$

De Angelo still needs $31\frac{1}{8}$ lb of garden soil

4. Volunteers helped clean up 8.2 kg of trash in one neighborhood and $11\frac{1}{2}$ kg in another. They sent $1\frac{1}{4}$ kg to be recycled and threw the rest away. How many kilograms of trash did they throw away?

$\boxed{8\frac{1}{5} + 11\frac{1}{2}} = 19\frac{1}{5} + \frac{1}{2} = 19\frac{2}{10} + \frac{5}{10} = \boxed{19\frac{7}{10}}$

$\boxed{19\frac{7}{10} - 1\frac{1}{4}} = 18\frac{7}{10} - \frac{1}{4} = 18\frac{14}{20} - \frac{5}{20} = \boxed{18\frac{9}{20}}$

The volunteers threw $18\frac{9}{20}$ away

Name _____ Date _____

1. Rearrange the terms so that you can add or subtract mentally, then solve.

a. $1\frac{3}{4}+\frac{1}{2}+\frac{1}{4}+\frac{1}{2}$ $\left(\frac{3}{4}+\frac{1}{4}\right)+\left(\frac{1}{2}+\frac{1}{2}\right)=$ $2+1=\boxed{3}$

b. $3\frac{1}{6}-\frac{3}{4}+\frac{5}{6}$ $3\left(\frac{1}{6}+\frac{5}{6}\right)+\frac{3}{4}$ $3+1+\frac{3}{4}=\boxed{4\frac{3}{4}}$

c. $5\frac{5}{8}-2\frac{6}{7}-\frac{2}{7}-\frac{5}{8}=$ $(5-2)-\left(\frac{5}{8}-\frac{5}{8}\right)-\frac{6}{7}-\frac{2}{7}=$ $3-0-\frac{6}{7}-\frac{2}{7}=$ $\frac{21}{7}-\frac{6}{7}-\frac{2}{7}=\frac{13}{7}=\boxed{1\frac{6}{7}}$

d. $\frac{7}{9}+\frac{1}{2}-\frac{3}{2}+\frac{2}{9}$ $\left(\frac{7}{9}+\frac{2}{9}\right)+\frac{1}{2}-\frac{3}{2}=$ $1\frac{1}{2}-\frac{3}{2}=$ $3/2-3/2=\boxed{0}$

2. Fill in the blank to make the statement true.

a. $7\frac{3}{4}-1\frac{2}{7}-\frac{3}{2}=$ _____ $7\ 3/4-1\ 2/7-1\ 1/2=$ $5\ 3/4-2/7-1/2=5(3/4-2/4)-2/7$ $5\ 1/4-2/7=4\ 5/4-2/7=4\frac{35}{28}-\frac{8}{28}=$ $\boxed{4\ 27/28}$

b. $9\frac{5}{6}+1\frac{1}{4}+$ _____ $=14$ $(14-9-1)-5/6-1/4=$ $4-5/6-1/4=$ $4-10/12-3/12=$ $\boxed{47/12}$

c. $\frac{7}{10}-$ _____ $+\frac{3}{2}=\frac{6}{5}$ $\frac{7}{10}+\frac{15}{10}=\frac{22}{10}$ $\frac{22}{10}-\frac{12}{10}=\frac{10}{10}=\boxed{1}$

d. _____ $-20-3\frac{1}{4}=14\frac{5}{8}$ $(14+20+3)=37$ $\frac{5}{8}+\frac{1}{4}=\frac{5}{8}+\frac{2}{8}=\frac{7}{8}=\boxed{37\frac{7}{8}}$

e. $\frac{17}{3} + \_\_\_\_ + \frac{5}{2} = 10\frac{4}{5}$

$\frac{17}{3} + \frac{5}{2} = \frac{34}{6} + \frac{15}{6} = \frac{49}{6} = 8\frac{1}{6}$

$10\frac{4}{5} - 8\frac{1}{6} = (10-8) - (\frac{4}{5} - \frac{1}{6})$

$2 - (\frac{24}{30} - \frac{5}{30}) = \boxed{2\frac{19}{30}}$

f. $23.1 + 1\frac{7}{10} - \_\_\_\_ = \frac{66}{10}$

$23\frac{1}{10} + 1\frac{7}{10} = \frac{231}{10} + \frac{17}{10} = \frac{248}{10}$

$\frac{248}{10} - \frac{66}{10} = \frac{181}{10} = \boxed{18\frac{1}{10} \text{ or } 18.1}$

3. Laura bought $8\frac{3}{10}$ yd of ribbon. She used $1\frac{2}{5}$ yd to tie a package and $2\frac{1}{3}$ yd to make a bow. Joe later gave her $4\frac{3}{5}$ yd. How much ribbon does she now have?

$8\frac{3}{10} - 1\frac{2}{5} - 2\frac{1}{3} + 4\frac{3}{5}$

$(8+4-1-2)(\frac{3}{10} + \frac{3}{5} - \frac{2}{5} - \frac{1}{3})$

$9 + (\frac{9}{30} + \frac{18}{30} - \frac{12}{30} - \frac{10}{30}) =$

$9\frac{5}{30} = \boxed{9\frac{1}{6}}$ Laura has $9\frac{1}{6}$ yd of ribbon.

4. Mia bought $10\frac{1}{9}$ lb of flour. She used $2\frac{3}{4}$ lb of flour to bake a banana cake and some to bake a chocolate cake. After baking the two cakes, she had $3\frac{5}{6}$ lb of flour left. How much flour did she use to bake the chocolate cake?

$10\frac{1}{9} - (2\frac{3}{4} + 3\frac{5}{6}) =$

$10\frac{1}{9} - (2+3+\frac{9}{12} + \frac{10}{12})$

$10\frac{1}{9} - (5 + \frac{19}{12}) = 10\frac{1}{9} - 6\frac{7}{12} = 4\frac{1}{9} - \frac{7}{12} =$

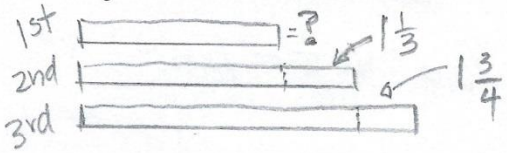
$3\frac{10}{9} - \frac{7}{12} = 3\frac{40}{36} - \frac{21}{36} = \boxed{3\frac{19}{36}}$

Mila used $3\frac{19}{36}$ lb of flour for the chocolate cake.

Name _____ Date _____

Solve the word problems using the RDW strategy. Show all of your work.

1. In a race, the second place finisher crossed the finish line $1\frac{1}{3}$ minutes after the first-place finisher. The third-place finisher was $1\frac{3}{4}$ minutes behind the second-place finisher. The third-place finisher took $34\frac{2}{3}$ minutes. How long did the first-place finisher take?



$34\frac{2}{3} - 1\frac{3}{4} = 33\frac{2}{3} - \frac{3}{4} =$

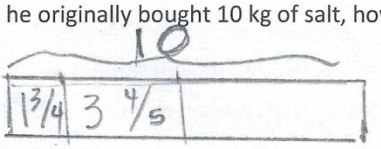
$33\frac{8}{12} - \frac{9}{12} = 32\frac{20}{12} - \frac{9}{12} = 32\frac{11}{12}$

$32\frac{11}{12} - 1\frac{1}{3} = 31\frac{11}{12} - \frac{1}{3} = 31\frac{11}{12} - \frac{4}{12}$

The first place took 31 min 35 sec.

$31\frac{7}{12}$

2. John used $1\frac{3}{4}$ kg of salt to melt the ice on his sidewalk. He then used another $3\frac{4}{5}$ kg on the driveway. If he originally bought 10 kg of salt, how much does he have left?



$1\frac{3}{4} + 3\frac{4}{5} = 4\frac{3}{4} + \frac{4}{5} =$

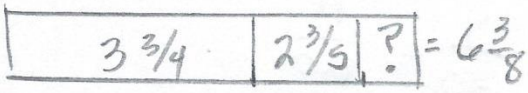
$= 4\frac{15}{20} + \frac{16}{20} = 4\frac{31}{20}$

$= 5\frac{11}{20}$

John has $4\frac{9}{20}$ kg left

$10 - 5\frac{11}{20} = 5 - \frac{11}{20} = 4\frac{9}{20}$

3. Sinister Stan stole $3\frac{3}{4}$ oz of slime from Messy Molly, but his evil plans require $6\frac{3}{8}$ oz of slime. He stole another $2\frac{3}{5}$ oz of slime from Rude Ralph. How much more slime does Sinister Stan need for his evil plan?



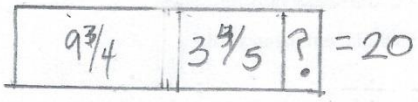
$3\frac{3}{4} + 2\frac{3}{5} = 5 + \frac{3}{4} + \frac{3}{5} =$

$5 + \frac{15}{20} + \frac{12}{20} = 5\frac{27}{20} = 6\frac{7}{20}$

Sinister needs $\frac{1}{40}$ oz more

$6\frac{3}{8} - 6\frac{7}{20} = \frac{15}{40} - \frac{14}{40} = \frac{1}{40}$

4. Gavin had 20 minutes to do a three-problem quiz. He spent $9\frac{3}{4}$ minutes on question 1 and $3\frac{4}{5}$ minutes on question 2. How much time did he have left for question 3? Write the answer in minutes and seconds.



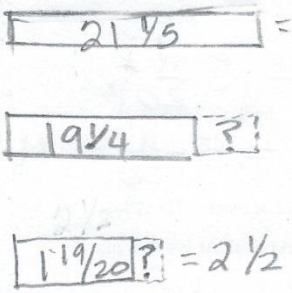
$9\frac{3}{4} + 3\frac{4}{5} = 12\frac{3}{4} + \frac{4}{5} =$

$12\frac{15}{20} + \frac{16}{20} = 12\frac{31}{20} = 13\frac{11}{20}$

$20 - 13\frac{11}{20} = 7 - \frac{11}{20} =$

$6\frac{9}{20}$

5. Matt wants to save $2\frac{1}{2}$ minutes on his 5K race time. After a month of hard training, he managed to lower his overall time from $21\frac{1}{5}$ minutes to $19\frac{1}{4}$ minutes. By how many more minutes does Matt need to lower his race time?



$21\frac{1}{5} - 19\frac{1}{4} = 2\frac{1}{5} - \frac{1}{4} =$

$1\frac{4}{5} - \frac{1}{4} = 1\frac{24}{20} - \frac{5}{20} = 1\frac{19}{20} =$

$2\frac{1}{2} - 1\frac{19}{20} = 1\frac{1}{2} - \frac{19}{20} = 1\frac{10}{20} - \frac{19}{20} =$

$\frac{30}{20} - \frac{19}{20} = \frac{11}{20}$

$\frac{11}{20} = \frac{33}{60}$ or 33 minutes

Matt needs 33 minutes

Name _____ Date _____

Solve the word problems using the RDW strategy. Show all of your work.

1. A baker buys a 5 lb bag of sugar. She uses $1\frac{2}{3}$ lb to make some muffins and $2\frac{3}{4}$ lb to make a cake. How much sugar does she have left?

$5 - 1\frac{2}{3} - 2\frac{3}{4} = 2 - \frac{2}{3} - \frac{3}{4} = \left(\frac{6}{3} - \frac{2}{3}\right) - \frac{3}{4} = \frac{4}{3} - \frac{3}{4} =$

$\frac{16}{12} - \frac{9}{12} = \boxed{\frac{5}{12}}$

The baker has 5/12 lb of sugar left.

2. A boxer needs to lose $3\frac{1}{2}$ kg in a month to be able to compete as a flyweight. In three weeks, he lowers his weight from 55.5 kg to 53.8 kg. How many kilograms must the boxer lose in the final week to be able to compete as a flyweight?

$\begin{array}{r} 55^{4}.15 \\ -53.8 \\ \hline 1.7 = 1\frac{7}{10} \end{array}$

$3\frac{1}{2} - 1\frac{7}{10} = 3\frac{5}{10} - 1\frac{7}{10} = 2\frac{5}{10} - \frac{7}{10} =$

$1\frac{15}{10} - \frac{7}{10} =$

$1\frac{8}{10} = \boxed{1\frac{4}{5}}$

The boxer must lose 1.8 kg

3. A construction company builds a new rail line from Town A to Town B. They complete $1\frac{1}{4}$ miles in their first week of work and $1\frac{2}{3}$ miles in the second week. If they still have $25\frac{3}{4}$ miles left to build, what is the distance from Town A to Town B?

$1\frac{1}{4} + 1\frac{2}{3} + 25\frac{3}{5} = 27\frac{1}{4} + \frac{2}{3} + \frac{3}{4} =$

$27\frac{3}{12} + \frac{8}{12} + \frac{9}{12} = 27 + \frac{20}{12} =$

$27 + 1\frac{8}{12} = 28\frac{8}{12} = \boxed{28\frac{2}{3}}$

The distance is 28 2/3 mile

4. A catering company needs 8.75 lb of shrimp for a small party. They buy $3\frac{2}{3}$ lb of jumbo shrimp, $2\frac{5}{8}$ lb of medium-sized shrimp, and some mini-shrimp. How many pounds of mini-shrimp do they buy?

$8\frac{3}{4} - 3\frac{2}{3} - 2\frac{5}{8} = 3\frac{3}{4} - \frac{2}{3} - \frac{5}{8} =$

Jumbo	medium	mini
$3\frac{2}{3}$	$2\frac{5}{8}$	?

$= 8.75$ lb

$3\frac{3}{4} - \frac{16}{24} - \frac{15}{24} =$

$3\frac{18}{24} - \frac{16}{24} - \frac{15}{24} =$

$2\frac{42}{24} - \frac{16}{24} - \frac{15}{24} =$

$= \boxed{2\frac{11}{24}}$

The catering company bought $2\frac{11}{24}$ lb of mini shrimp

5. Mark breaks up a 9-hour drive into 3 segments. He drives $2\frac{1}{2}$ hours before stopping for lunch. After driving some more, he stops for gas. If the second segment of his drive was $1\frac{2}{3}$ hours longer than the first segment, how long did he drive after stopping for gas?

$2\frac{1}{2} + 1\frac{2}{3} = 3\frac{1}{2} + \frac{2}{3} = 3\frac{3}{6} + \frac{4}{6} = 3\frac{7}{6} = \boxed{4\frac{1}{6}}$

$2\frac{1}{2} + 4\frac{1}{6} = 6\frac{1}{2} + \frac{1}{6} = 6\frac{3}{6} + \frac{1}{6} = 6\frac{4}{6} = \boxed{6\frac{2}{3}}$

$9 - 6\frac{2}{3} = 3 - \frac{2}{3} = \boxed{2\frac{1}{3}}$

1st	2nd	3rd
$2\frac{1}{2}$	$2\frac{1}{2} + 1\frac{2}{3}$	?

$= 9$ hours

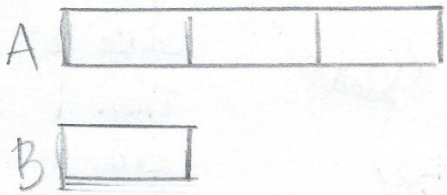
Names _____ and _____ Date _____

1. Draw the following ribbons. When finished, compare your work to your partner's.

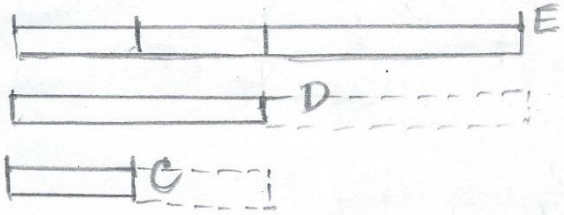
   a. 1 ribbon. The piece shown below is only $\frac{1}{3}$ of the whole. Complete the drawing to show the whole piece of ribbon.

   b. 1 ribbon. The piece shown below is $\frac{4}{5}$ of the whole. Complete the drawing to show the whole piece of ribbon.

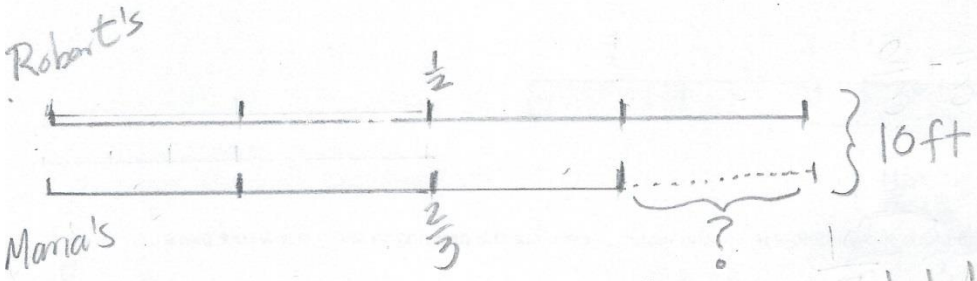
   c. 2 ribbons, A and B. One third of A is equal to all of B. Draw a picture of the ribbons.



   d. 3 ribbons, C, D, and E. C is half the length of D. E is twice as long as D. Draw a picture of the ribbons.



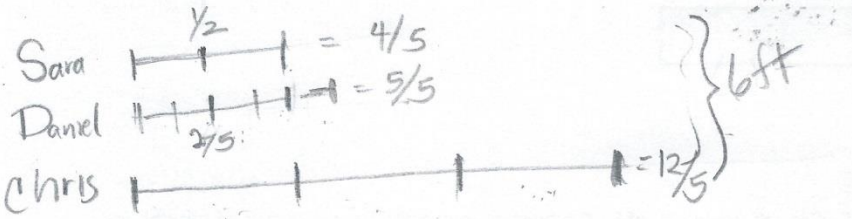
2. Half of Robert's piece of wire is equal to 2 thirds of Maria's wire. The total length of their wires is 10 feet. How much longer is Robert's wire than Maria's?



$\frac{7}{7}$ = 10ft, then $\frac{10}{7}$ ft is the total length.

So, Robert's is $\frac{10}{7}$ ft longer than Maria's wire.

3. Half of Sarah's wire is equal to $\frac{2}{5}$ of Daniel's. Chris has 3 times as much as Sarah. In all, their wire measures 6 ft. How long is Sarah's wire in feet?



Since $\frac{1}{2} = \frac{2}{5}$, then 1 = 4/5, So there are 21/5 or 21 segments. 21 = 6 ft So 6/21 = 2/7

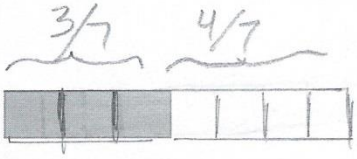
21 units 6 ft = $\frac{6}{21} = \frac{2}{7}$ ft

$4 \times \frac{2}{7} = \frac{8}{7} = 1\frac{1}{7}$ ft

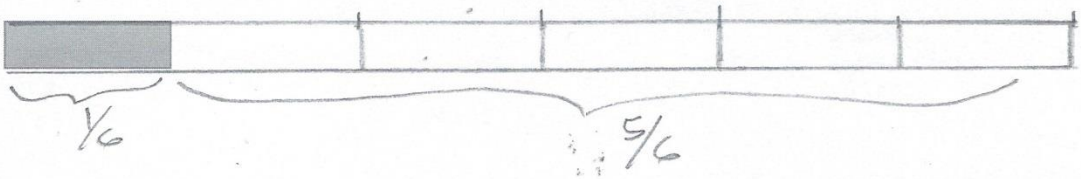
Name _____ Date _____

Draw the following roads.

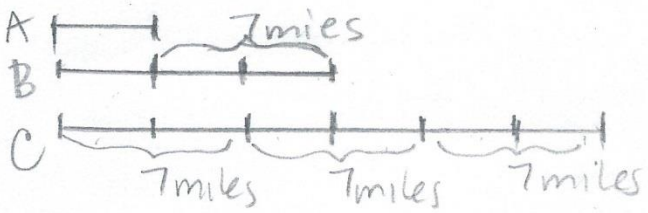
a. 1 road. The piece shown below is only $\frac{3}{7}$ of the whole. Complete the drawing to show the whole road.



b. 1 road. The piece shown below is $\frac{1}{6}$ of the whole. Complete the drawing to show the whole road.



c. 3 roads, A, B, and C. B is three times longer than A. C is twice as long as B. Draw the roads. What fraction of the total length of the roads is the length of A? If Road B is 7 miles longer than Road A, what is the length of Road C?



A = 1/10

C = 21 miles

d. Write your own road problem with 2 or 3 lengths.

3 roads X, Y, Z. X is twice as long as Y. Z is twice as long as Y. If B is 6 miles longer than X, what is the length of Z?