

COMPACTED MATHEMATICS

CHAPTER 6B

ADDING AND SUBTRACTING FRACTIONS

TOPICS COVERED:

- Adding and subtracting fractions
- Adding and subtracting mixed numbers
- Subtracting mixed numbers with regrouping
- Applying adding and subtracting to real world problems

To add fractions with like denominators, add the numerators.
 To subtract fractions with like denominators, subtract the numerators.

Add or subtract. Write each answer in simplest form.

| | | | | | | | | |
|-----|---------------------------------|--|-----|---------------------------------|--|-----|--------------------------------|--|
| 1. | $\frac{7}{12} + \frac{2}{12}$ | | 2. | $\frac{9}{10} - \frac{3}{10}$ | | 3. | $\frac{7}{9} + \frac{5}{9}$ | |
| 4. | $\frac{7}{16} - \frac{3}{16}$ | | 5. | $\frac{5}{11} + \frac{6}{11}$ | | 6. | $\frac{7}{8} - \frac{5}{8}$ | |
| 7. | $\frac{2}{3} + \frac{2}{3}$ | | 8. | $\frac{11}{12} - \frac{5}{12}$ | | 9. | $\frac{3}{4} + \frac{3}{4}$ | |
| 10. | $\frac{4}{5} - \frac{1}{5}$ | | 11. | $\frac{5}{6} + \frac{1}{6}$ | | 12. | $\frac{7}{10} - \frac{1}{10}$ | |
| 13. | $\frac{3}{7} + \frac{4}{7}$ | | 14. | $\frac{15}{16} - \frac{3}{16}$ | | 15. | $\frac{5}{8} + \frac{3}{8}$ | |
| 16. | $\frac{2}{9} + \frac{4}{9}$ | | 17. | $\frac{13}{16} - \frac{7}{16}$ | | 18. | $\frac{5}{8} + \frac{7}{8}$ | |
| 19. | $\frac{17}{18} - \frac{9}{18}$ | | 20. | $\frac{13}{15} - \frac{4}{15}$ | | 21. | $\frac{3}{4} + \frac{2}{4}$ | |
| 22. | $\frac{11}{12} - \frac{7}{12}$ | | 23. | $\frac{19}{20} - \frac{11}{20}$ | | 24. | $\frac{8}{14} + \frac{8}{14}$ | |
| 25. | $\frac{9}{10} - \frac{4}{10}$ | | 26. | $\frac{4}{5} + \frac{1}{5}$ | | 27. | $\frac{6}{7} - \frac{5}{7}$ | |
| 28. | $\frac{10}{11} - \frac{2}{11}$ | | 29. | $\frac{17}{18} + \frac{4}{18}$ | | 30. | $\frac{5}{6} + \frac{4}{6}$ | |
| 31. | $\frac{12}{13} - \frac{12}{13}$ | | 32. | $\frac{9}{16} + \frac{11}{16}$ | | 33. | $\frac{14}{15} - \frac{9}{15}$ | |
| 34. | $\frac{13}{20} - \frac{7}{20}$ | | 35. | $\frac{11}{14} - \frac{5}{14}$ | | 36. | $\frac{11}{18} + \frac{3}{18}$ | |

Tell whether you would add or subtract to solve. Then solve.

| | | |
|-----|--|--|
| 37. | Audrey spent $\frac{2}{5}$ of an hour on her math assignment and $\frac{4}{5}$ of an hour studying for her science test. How much time did she spend doing her homework? | |
| 38. | Taylor planted $\frac{11}{16}$ of her fields with corn and $\frac{5}{16}$ of her fields with wheat. How much more of her fields were planted with corn than wheat? | |

Use fractions pieces to solve the equations. Look for patterns. List ALL colors necessary to solve the problem.

| | | | | | |
|----|-------------------------------|--|----|---------------------------------|--|
| 1. | $\frac{1}{4} + \frac{2}{4} =$ | | 2. | $\frac{4}{10} + \frac{1}{10} =$ | |
| 3. | $\frac{2}{5} + \frac{3}{5} =$ | | 4. | $\frac{4}{8} + \frac{3}{8} =$ | |
| 5. | $\frac{3}{4} - \frac{1}{4} =$ | | 6. | $\frac{5}{12} - \frac{2}{12} =$ | |
| 7. | $\frac{5}{6} - \frac{2}{6} =$ | | 8. | $\frac{5}{8} - \frac{4}{8} =$ | |

Use fractions pieces to solve the equations. Look for patterns. List ALL colors necessary to solve the problem.

| | | | | | |
|-----|--------------------------------|--|-----|--------------------------------|--|
| 9. | $\frac{1}{3} + \frac{1}{2} =$ | | 10. | $\frac{1}{3} - \frac{1}{3} =$ | |
| 11. | $\frac{1}{3} + \frac{1}{3} =$ | | 12. | $\frac{1}{3} - \frac{1}{4} =$ | |
| 13. | $\frac{1}{3} + \frac{1}{4} =$ | | 14. | $\frac{1}{3} - \frac{1}{6} =$ | |
| 15. | $\frac{1}{3} + \frac{1}{6} =$ | | 16. | $\frac{1}{3} - \frac{1}{12} =$ | |
| 17. | $\frac{2}{3} + \frac{1}{12} =$ | | 18. | $\frac{1}{3} + \frac{3}{6} =$ | |
| 19. | $\frac{5}{5} - \frac{3}{10} =$ | | 20. | $\frac{2}{3} + \frac{1}{12} =$ | |
| 21. | $\frac{3}{4} - \frac{1}{8} =$ | | 22. | $\frac{1}{3} + \frac{2}{4} =$ | |
| 23. | $\frac{1}{2} - \frac{1}{5} =$ | | 24. | $\frac{1}{2} + \frac{1}{5} =$ | |
| 25. | $\frac{2}{3} - \frac{1}{4} =$ | | | | |

Different denominators mean different size pieces. It is not easy to add fractions when the denominators are different. If you can cut the pieces into equal sizes, then they would be easier to add. From the standpoint of fractions, this would mean creating a common denominator. **To add fractions with unlike denominators, write equivalent fractions with a common denominator. Then add.**

Example: $\frac{3}{4} + \frac{5}{6}$

Write the problem vertically:

$$\begin{array}{r} \frac{3}{4} = \frac{9}{12} \\ \frac{5}{6} = \frac{10}{12} \\ \hline = \frac{19}{12} = 1\frac{7}{12} \end{array}$$

Solve.

| | | | | | | | |
|-----|--|-----|--|-----|--|-----|---|
| 1. | $\frac{2}{3} = \frac{\quad}{12}$ $+\frac{1}{4} = \frac{\quad}{12}$ | 2. | $\frac{2}{5} = \frac{\quad}{15}$ $+\frac{1}{3} = \frac{\quad}{15}$ | 3. | $\frac{1}{2} = \frac{\quad}{8}$ $+\frac{3}{8} = \frac{\quad}{8}$ | 4. | $\frac{2}{3} = \frac{\quad}{6}$ $+\frac{1}{2} = \frac{\quad}{6}$ |
| 5. | $\frac{1}{2} = \frac{\quad}{10}$ $+\frac{4}{5} = \frac{\quad}{10}$ | 6. | $\frac{3}{4} = \frac{\quad}{8}$ $+\frac{5}{8} = \frac{\quad}{8}$ | 7. | $\frac{1}{3} = \frac{\quad}{6}$ $+\frac{1}{6} = \frac{\quad}{6}$ | 8. | $\frac{3}{5} = \frac{\quad}{20}$ $+\frac{1}{4} = \frac{\quad}{20}$ |
| 9. | $\frac{5}{6} = \frac{\quad}{18}$ $+\frac{4}{9} = \frac{\quad}{18}$ | 10. | $\frac{2}{3} = \frac{\quad}{24}$ $+\frac{3}{8} = \frac{\quad}{24}$ | 11. | $\frac{1}{2} = \frac{\quad}{10}$ $+\frac{3}{10} = \frac{\quad}{10}$ | 12. | $\frac{3}{4} = \frac{\quad}{12}$ $+\frac{5}{6} = \frac{\quad}{12}$ |
| 13. | $\frac{4}{5} = \frac{\quad}{10}$ $+\frac{7}{10} = \frac{\quad}{10}$ | 14. | $\frac{1}{3} = \frac{\quad}{12}$ $+\frac{5}{12} = \frac{\quad}{12}$ | 15. | $\frac{7}{8} = \frac{\quad}{24}$ $+\frac{5}{6} = \frac{\quad}{24}$ | 16. | $\frac{2}{5} = \frac{\quad}{40}$ $+\frac{3}{8} = \frac{\quad}{40}$ |

Solve.

| | | | | | | | |
|-----|-----------------------------------|-----|------------------------------------|-----|-----------------------------------|-----|-----------------------------------|
| 1. | $\frac{1}{2}$ + $\frac{1}{3}$ | 2. | $\frac{2}{5}$ + $\frac{1}{2}$ | 3. | $\frac{1}{2}$ + $\frac{1}{4}$ | 4. | $\frac{1}{3}$ + $\frac{4}{9}$ |
| 5. | $\frac{1}{5}$ + $\frac{2}{3}$ | 6. | $\frac{5}{8}$ + $\frac{1}{4}$ | 7. | $\frac{1}{3}$ + $\frac{5}{6}$ | 8. | $\frac{1}{2}$ + $\frac{7}{8}$ |
| 9. | $\frac{3}{4}$ + $\frac{2}{3}$ | 10. | $\frac{7}{16}$ + $\frac{9}{16}$ | 11. | $\frac{1}{6}$ + $\frac{4}{9}$ | 12. | $\frac{1}{4}$ + $\frac{4}{5}$ |
| 13. | $\frac{1}{8}$ + $\frac{2}{3}$ | 14. | $\frac{1}{2}$ + $\frac{1}{6}$ | 15. | $\frac{3}{10}$ + $\frac{1}{2}$ | 16. | $\frac{4}{15}$ + $\frac{1}{3}$ |
| 17. | $\frac{3}{4}$ + $\frac{7}{12}$ | 18. | $\frac{5}{6}$ + $\frac{3}{10}$ | 19. | $\frac{1}{6}$ + $\frac{1}{2}$ | 20. | $\frac{1}{4}$ + $\frac{7}{8}$ |

Find the LCD for each pair of fractions.

| | | | | | |
|----|-----------------------------|--|----|------------------------------|--|
| 1. | $\frac{1}{6}, \frac{2}{3}$ | | 2. | $\frac{1}{2}, \frac{2}{5}$ | |
| 3. | $\frac{7}{8}, \frac{5}{6}$ | | 4. | $\frac{4}{9}, \frac{1}{3}$ | |
| 5. | $\frac{5}{8}, \frac{1}{3}$ | | 6. | $\frac{3}{10}, \frac{4}{15}$ | |
| 7. | $\frac{5}{12}, \frac{1}{2}$ | | 8. | $\frac{13}{20}, \frac{2}{5}$ | |

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|--|--|-----|---------------------------------|--|
| 9. | $\frac{2}{3} - \frac{1}{2} =$ | | 10. | $\frac{9}{10} - \frac{3}{5} =$ | |
| 11. | $\frac{4}{5} + \frac{1}{12} =$ | | 12. | $\frac{11}{15} - \frac{1}{3} =$ | |
| 13. | $\frac{1}{9} + \frac{1}{6} =$ | | 14. | $\frac{1}{2} - \frac{7}{16} =$ | |
| 15. | $\frac{3}{10} + \frac{4}{5} =$ | | 16. | $\frac{4}{5} - \frac{1}{6} =$ | |
| 17. | $\frac{2}{3} + \frac{1}{2} =$ | | 18. | $\frac{7}{8} - \frac{4}{9} =$ | |
| 19. | $\frac{3}{4} + \frac{5}{6} =$ | | 20. | $\frac{7}{8} - \frac{2}{3} =$ | |
| 21. | $\frac{4}{7} - \frac{1}{2} =$ | | 22. | $\frac{8}{9} - \frac{5}{12} =$ | |
| 23. | $\frac{2}{3} + \frac{3}{5} =$ | | 24. | $\frac{6}{7} + \frac{1}{4} =$ | |
| 25. | $\frac{1}{6} + \frac{13}{15} =$ | | 26. | $\frac{9}{16} - \frac{5}{12} =$ | |
| 27. | $\frac{3}{8} - \frac{2}{7} =$ | | 28. | $\frac{8}{9} - \frac{2}{3} =$ | |
| 29. | $\frac{4}{5} + \frac{2}{9} =$ | | 30. | $\frac{1}{2} - \frac{3}{11} =$ | |
| 31. | <p>Linda monitors the level of water in her fish tank. She must replace the water when the water level drops below seven and one-quarter inches. Based on the data below, what day will Linda need to replace the water in her fish tank?</p> <p>Day 1 - $9\frac{1}{8}$, Day 2 - $8\frac{3}{4}$, Day 3 - $8\frac{3}{8}$</p> | | | | |

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|---------------------------------|--|-----|---------------------------------|--|
| 1. | $\frac{7}{9} - \frac{3}{4} =$ | | 2. | $\frac{5}{8} + \frac{9}{16} =$ | |
| 3. | $\frac{1}{3} + \frac{6}{13} =$ | | 4. | $\frac{5}{12} - \frac{2}{5} =$ | |
| 5. | $\frac{1}{3} - \frac{1}{12} =$ | | 6. | $\frac{5}{8} - \frac{1}{4} =$ | |
| 7. | $\frac{9}{10} - \frac{3}{4} =$ | | 8. | $\frac{3}{4} - \frac{1}{6} =$ | |
| 9. | $\frac{13}{14} - \frac{6}{7} =$ | | 10. | $\frac{4}{5} - \frac{2}{3} =$ | |
| 11. | $\frac{5}{6} - \frac{1}{4} =$ | | 12. | $\frac{5}{9} - \frac{1}{6} =$ | |
| 13. | $\frac{1}{3} - \frac{5}{18} =$ | | 14. | $\frac{13}{15} - \frac{3}{5} =$ | |
| 15. | $\frac{2}{3} - \frac{4}{7} =$ | | 16. | $\frac{12}{15} - \frac{1}{5} =$ | |
| 17. | $\frac{3}{4} - \frac{2}{7} =$ | | 18. | $\frac{5}{6} - \frac{1}{2} =$ | |
| 19. | $\frac{7}{9} - \frac{2}{3} =$ | | 20. | $\frac{5}{8} - \frac{9}{16} =$ | |

Add. Write each answer in simplest form.

| | | | | | |
|-----|---|--|-----|--|--|
| 21. | $\frac{1}{3} + \frac{3}{4} + \frac{5}{6} =$ | | 22. | $\frac{1}{2} + \frac{6}{7} + \frac{2}{7} =$ | |
| 23. | $\frac{5}{8} + \frac{3}{4} + \frac{1}{8} =$ | | 24. | $\frac{3}{8} + \frac{1}{4} + \frac{5}{6} =$ | |
| 25. | $\frac{5}{7} + \frac{2}{3} + \frac{1}{7} =$ | | 26. | $\frac{2}{3} + \frac{1}{2} + \frac{5}{6} =$ | |
| 27. | $\frac{4}{9} + \frac{5}{6} + \frac{1}{3} =$ | | 28. | $\frac{3}{5} + \frac{1}{3} + \frac{8}{15} =$ | |
| 29. | $\frac{5}{8} + \frac{1}{4} + \frac{15}{16} =$ | | 30. | $\frac{3}{4} + \frac{3}{8} + \frac{1}{2} =$ | |
| 31. | $\frac{1}{4} + \frac{1}{2} + \frac{3}{5} =$ | | | | |

| | | |
|---------------|--------------------|-------|
| Activity 6-18 | Blood Types | NAME: |
|---------------|--------------------|-------|

Each person has one of eight blood types. The data below from the American Red Cross shows what fraction of the population has each blood type. A person who needs a blood transfusion cannot receive blood from just anyone. The blood must be a certain type, or complications arise, and the person could even die.

| A+ | A- | B+ | B- | AB+ | AB- | O+ | O- |
|-----------------|----------------|----------------|-----------------|----------------|-----------------|------------------|-----------------|
| $\frac{17}{50}$ | $\frac{3}{50}$ | $\frac{2}{25}$ | $\frac{3}{200}$ | $\frac{1}{25}$ | $\frac{1}{200}$ | $\frac{39}{100}$ | $\frac{7}{100}$ |

The following table lists the types of blood that a person of each blood type can receive.

| Patient Type | Can RECEIVE types... | Patient Type | Can RECEIVE types... |
|--------------|----------------------|--------------|----------------------|
| A+ | A+, A-, O+, O- | AB+ | All types |
| A- | A-, O- | AB- | A-, B-, AB-, O- |
| B+ | B+, B-, O+, O- | O+ | O+, O- |
| B- | B-, O- | O- | O- |

| | | | | | | | | | | |
|----|---|---|----|-----|----|-----|----|----|----|----|
| 1. | Which blood type is the most common? | | | | | | | | | |
| 2. | Which blood type is the least common? | | | | | | | | | |
| 3. | The sum of all of the blood types is... | | | | | | | | | |
| 4. | Determine the fraction of the population from which each patient type can receive blood. | <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">A+</td> <td style="width: 50%;">AB+</td> </tr> <tr> <td>A-</td> <td>AB-</td> </tr> <tr> <td>B+</td> <td>O+</td> </tr> <tr> <td>B-</td> <td>O-</td> </tr> </table> | A+ | AB+ | A- | AB- | B+ | O+ | B- | O- |
| A+ | AB+ | | | | | | | | | |
| A- | AB- | | | | | | | | | |
| B+ | O+ | | | | | | | | | |
| B- | O- | | | | | | | | | |
| 5. | If a person can receive a large number of blood types, can that person receive blood from a larger fraction of the population? Explain. | | | | | | | | | |
| 6. | People with O- blood are known as “universal donors.” Why do you think they are called this? | | | | | | | | | |
| 7. | A “universal recipient” is a person who can receive blood from anyone, regardless of their blood type. What fraction of the population are universal recipients? Explain. | | | | | | | | | |

Adding and subtracting mixed numbers is very similar to adding and subtracting fractions. First, add or subtract the fractions. Then, add or subtract the whole numbers. Rename and simplify, if necessary.

Example: $4\frac{7}{8} + 3\frac{1}{2}$ Write the problem vertically: $3\frac{1}{2} = 3\frac{4}{8}$

$$\begin{array}{r} 4\frac{7}{8} \\ + 3\frac{4}{8} \\ \hline = 7\frac{11}{8} = 8\frac{3}{8} \end{array}$$

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|------------------------------------|--|-----|------------------------------------|--|
| 1. | $6\frac{1}{4} + 2\frac{1}{4} =$ | | 2. | $7\frac{7}{9} - 4\frac{2}{9} =$ | |
| 3. | $8\frac{2}{3} + 2\frac{1}{3} =$ | | 4. | $6\frac{5}{7} - 5\frac{2}{7} =$ | |
| 5. | $10\frac{1}{2} + 4\frac{1}{8} =$ | | 6. | $12\frac{5}{6} - 3\frac{1}{3} =$ | |
| 7. | $7\frac{1}{10} + 2\frac{1}{5} =$ | | 8. | $9\frac{1}{2} - 5\frac{1}{6} =$ | |
| 9. | $5\frac{3}{4} + 2\frac{5}{8} =$ | | 10. | $18\frac{3}{4} - 6\frac{3}{4} =$ | |
| 11. | $5\frac{6}{7} + 4\frac{2}{3} =$ | | 12. | $9\frac{3}{4} - 2\frac{1}{6} =$ | |
| 13. | $2\frac{3}{7} + 4\frac{2}{7} =$ | | 14. | $6\frac{2}{3} + 3\frac{4}{9} =$ | |
| 15. | $8\frac{7}{12} - 5\frac{5}{12} =$ | | 16. | $10\frac{3}{5} - 2\frac{1}{2} =$ | |
| 17. | $6\frac{5}{6} + \frac{3}{8} =$ | | 18. | $9\frac{4}{5} + 2\frac{2}{3} =$ | |
| 19. | $7\frac{15}{16} - 3\frac{7}{16} =$ | | 20. | $5\frac{8}{9} - 3\frac{1}{6} =$ | |
| 21. | $8\frac{3}{4} + 6\frac{2}{5} =$ | | 22. | $13\frac{3}{10} - 8\frac{2}{15} =$ | |
| 23. | $11\frac{2}{3} - 3\frac{4}{7} =$ | | 24. | $3\frac{5}{9} + 7\frac{4}{9} =$ | |
| 25. | $9\frac{1}{2} + 3\frac{8}{9} =$ | | 26. | $14\frac{7}{8} - 8\frac{3}{4} =$ | |

| | | |
|---------------|---|-------|
| Activity 6-20 | Addition an Subtraction w/ Mixed Numbers | NAME: |
|---------------|---|-------|

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|---|--|-----|---|--|
| 1. | $13\frac{7}{12} - 9\frac{1}{4} =$ | | 2. | $2\frac{5}{7} + 7\frac{1}{2} =$ | |
| 3. | $14\frac{2}{3} + \frac{5}{6} =$ | | 4. | $7\frac{11}{12} - 6\frac{5}{8} =$ | |
| 5. | $10\frac{5}{6} - 3\frac{5}{6} =$ | | 6. | $8\frac{2}{7} + 3\frac{4}{5} =$ | |
| 7. | $5\frac{8}{11} + 5\frac{1}{3} =$ | | 8. | $9\frac{15}{16} - 7\frac{3}{8} =$ | |
| 9. | $4\frac{9}{10} - 3\frac{2}{5} =$ | | 10. | $8\frac{2}{3} + 9\frac{5}{8} =$ | |
| 11. | $7\frac{19}{20} - 4\frac{7}{10} =$ | | 12. | $3\frac{11}{16} + 4\frac{1}{2} =$ | |
| 13. | $9\frac{2}{3} + 2\frac{5}{8} =$ | | 14. | $13\frac{4}{5} + 4\frac{7}{10} =$ | |
| 15. | $5\frac{1}{4} + 8\frac{5}{6} =$ | | 16. | $37\frac{4}{9} + 19\frac{1}{2} =$ | |
| 17. | $1\frac{11}{12} + 6\frac{1}{3} =$ | | 18. | $4\frac{3}{10} + 9\frac{8}{15} =$ | |
| 19. | $5\frac{1}{4} + 2\frac{9}{16} =$ | | 20. | $3\frac{1}{6} + 2\frac{2}{3} + 7\frac{1}{2} =$ | |
| 21. | $10\frac{1}{5} + 8\frac{1}{2} + \frac{7}{10} =$ | | 22. | $4\frac{3}{8} + 1\frac{1}{6} + 3\frac{5}{24} =$ | |

Solve each equation and word problem. Write each answer in simplest form.

| | | | | | |
|-----|---|--|-----|-------------------------------------|--|
| 23. | $x = 2\frac{5}{6} + 3\frac{2}{7}$ | | 24. | $16\frac{5}{12} - 7\frac{2}{9} = n$ | |
| 25. | $a = 18\frac{3}{20} - 5\frac{1}{15}$ | | 26. | $12\frac{7}{15} - 5\frac{1}{3} = c$ | |
| 27. | <p>Juan's model locomotive is $7\frac{5}{8}$ in. long. His coal care is $6\frac{1}{4}$ in. long. When hooked together, there is a $\frac{7}{8}$ inch space between cars. What is the total length when the two cars are hooked together?</p> | | | | |
| 28. | <p>Every day Mr. Mangham walks around a park near his house. The park is in the shape of a rectangle 2 mi long and $1\frac{3}{10}$ mi wide. How far does he walk?</p> | | | | |

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|-------------------------------------|--|-----|------------------------------------|--|
| 1. | $9\frac{3}{4} - 4\frac{1}{2} =$ | | 2. | $16\frac{2}{3} - 7\frac{2}{5} =$ | |
| 3. | $8\frac{8}{9} - 5\frac{1}{6} =$ | | 4. | $20\frac{13}{16} - 3\frac{1}{4} =$ | |
| 5. | $13\frac{5}{6} - 6\frac{1}{3} =$ | | 6. | $51\frac{4}{5} - 8\frac{1}{2} =$ | |
| 7. | $25\frac{7}{8} - 12\frac{5}{12} =$ | | 8. | $37\frac{7}{10} - 28\frac{1}{6} =$ | |
| 9. | $67\frac{4}{7} - 17 =$ | | 10. | $4\frac{1}{5} - 4\frac{3}{100} =$ | |
| 11. | $18\frac{3}{4} - 5\frac{1}{6} =$ | | 12. | $6\frac{2}{3} - 3\frac{4}{9} =$ | |
| 13. | $94\frac{11}{15} - 49\frac{2}{5} =$ | | | | |

| | | |
|-----|--|--|
| 14. | <p>When Arnold Schwarzenegger was named Mr. Universe, he had a chest measurement of $56\frac{7}{8}$ inches and a waist measurement of $32\frac{1}{4}$ inches. How much larger was his chest than his waist?</p> | |
| 15. | <p>The maximum weight for a basketball is $22\frac{9}{10}$ ounces. For a baseball it is $5\frac{1}{2}$ ounces, and for a tennis ball it is $2\frac{1}{16}$ ounces. How much heavier is a maximum-weight basketball than a maximum-weight baseball?</p> | |
| 16. | <p>On Monday Bailey rode the treadmill for $1\frac{5}{8}$ hours. On Wednesday she attended an aerobics class and lifted weights for $2\frac{1}{4}$ hours, and on Friday she swam laps in the pool for $1\frac{1}{2}$ hours. How many hours did Bailey exercise that week?</p> | |

When subtracting mixed numbers it is sometimes necessary to rename a mixed number as an improper fraction before you can subtract.

Example: $6\frac{1}{2} - 2\frac{3}{4}$

$6\frac{1}{2} = 6\frac{2}{4}$ You cannot subtract $\frac{3}{4}$ from $\frac{2}{4}$. \longrightarrow $5\frac{6}{4}$
 $-2\frac{3}{4} = 2\frac{3}{4}$ Rename one of the "wholes" as $\frac{4}{4}$. $\begin{array}{r} -2\frac{3}{4} \\ \hline 3\frac{3}{4} \end{array}$

Determine the missing number in the box.

| | | | | | | | | |
|----|---|--|----|--------------------------------------|--|----|--------------------------------------|--|
| 1. | $7\frac{5}{6} = \square \frac{11}{6}$ | | 2. | $4\frac{3}{4} = 3\frac{\square}{4}$ | | 3. | $2\frac{3}{8} = 1\frac{\square}{8}$ | |
| 4. | $9\frac{3}{5} = \square \frac{8}{5}$ | | 5. | $10\frac{1}{3} = 9\frac{\square}{3}$ | | 6. | $15 = 14\frac{\square}{2}$ | |
| 7. | $20\frac{5}{12} = 19\frac{\square}{12}$ | | 8. | $13 = 12\frac{\square}{7}$ | | 9. | $6\frac{2}{5} = \square \frac{7}{5}$ | |

Subtract. Write each answer in simplest form.

| | | | | | |
|-----|----------------------------------|--|-----|-----------------------------------|--|
| 10. | $5\frac{1}{3} - 3\frac{2}{3} =$ | | 11. | $12\frac{1}{6} - 7\frac{5}{6} =$ | |
| 12. | $8\frac{3}{8} - 3\frac{5}{8} =$ | | 13. | $9\frac{1}{2} - 4\frac{3}{4} =$ | |
| 14. | $12 - 1\frac{2}{5} =$ | | 15. | $8\frac{1}{2} - \frac{7}{8} =$ | |
| 16. | $15\frac{1}{3} - 9\frac{5}{6} =$ | | 17. | $7\frac{1}{2} - 3\frac{11}{12} =$ | |
| 18. | $22 - 10\frac{8}{9} =$ | | 19. | $6\frac{1}{4} - 1\frac{4}{5} =$ | |

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|---------------------------------|--|-----|------------------------------------|--|
| 20. | $2\frac{1}{3} + 7\frac{1}{6} =$ | | 21. | $8\frac{4}{5} + 1\frac{4}{15} =$ | |
| 22. | $7\frac{3}{4} - 2\frac{1}{6} =$ | | 23. | $1\frac{6}{7} + 5\frac{1}{2} =$ | |
| 24. | $8\frac{3}{8} - 5\frac{3}{4} =$ | | 25. | $4\frac{1}{4} - 1\frac{2}{3} =$ | |
| 26. | $1\frac{5}{6} + 1\frac{8}{9} =$ | | 27. | $10\frac{1}{2} - 6\frac{2}{3} =$ | |
| 28. | $2\frac{3}{5} + 3\frac{2}{3} =$ | | 29. | $11\frac{13}{15} - 9\frac{1}{5} =$ | |

| | | |
|---------------|---|-------------|
| Activity 6-23 | Addition and Subtraction and Mixed Numbers | NAME: _____ |
|---------------|---|-------------|

Add or subtract. Write each answer in simplest form.

| | | | | | |
|-----|---|--|-----|-----------------------------------|--|
| 1. | $\frac{2}{5} + \frac{2}{5} =$ | | 2. | $\frac{15}{16} - \frac{5}{16} =$ | |
| 3. | $\frac{7}{10} - \frac{1}{2} =$ | | 4. | $\frac{1}{3} + \frac{2}{9} =$ | |
| 5. | $\frac{2}{3} + \frac{5}{6} =$ | | 6. | $\frac{2}{3} - \frac{3}{8} =$ | |
| 7. | $\frac{5}{12} + \frac{5}{6} =$ | | 8. | $\frac{4}{9} - \frac{1}{3} =$ | |
| 9. | $4\frac{1}{4} + 2\frac{1}{2} =$ | | 10. | $8\frac{4}{9} - 5\frac{2}{3} =$ | |
| 11. | $6\frac{1}{8} + 3\frac{3}{4} =$ | | 12. | $2\frac{1}{6} - 1\frac{2}{3} =$ | |
| 13. | $1\frac{1}{3} - \frac{1}{6} =$ | | 14. | $5\frac{1}{7} - 2\frac{1}{4} =$ | |
| 15. | $3\frac{1}{6} - 1\frac{1}{4} =$ | | 16. | $6\frac{1}{8} + 2\frac{1}{4} =$ | |
| 17. | $4\frac{5}{8} + 2\frac{1}{4} =$ | | 18. | $8\frac{3}{5} + 2\frac{7}{10} =$ | |
| 19. | $5\frac{2}{7} + 3\frac{1}{2} =$ | | 20. | $7\frac{1}{4} + 8\frac{3}{8} =$ | |
| 21. | $6\frac{2}{5} + 4\frac{9}{10} =$ | | 22. | $1\frac{4}{5} + 8\frac{2}{3} =$ | |
| 23. | $2\frac{1}{4} + 6\frac{1}{3} =$ | | 24. | $3\frac{7}{12} + 9\frac{1}{4} =$ | |
| 25. | $5\frac{1}{8} - 2\frac{1}{3} =$ | | 26. | $7\frac{6}{7} - 2\frac{8}{14} =$ | |
| 27. | $10\frac{4}{9} - 3\frac{9}{10} =$ | | 28. | $12\frac{1}{4} - 8\frac{3}{5} =$ | |
| 29. | $11\frac{4}{5} - 4\frac{7}{8} =$ | | 30. | $15\frac{7}{10} - 8\frac{1}{2} =$ | |
| 31. | The computer lab at Carroll High School used to have $13\frac{1}{2}$ inch computer monitors. The lab's new models have $17\frac{1}{4}$ inch monitors. How much larger are the new monitors? | | | | |

Mr. Brake and Mrs. Phillips just can't seem to agree. They can't determine how many Little Debbies are left in the front office. Mr. Mangham had a working lunch and in order to get his work completed, he was only able to finish $\frac{1}{4}$ of his Swiss Cake Roll. He left the rest for Mr. Brake. Ms. Atkins also had a working lunch and she too brought a Swiss Cake Roll for dessert. She ate $\frac{3}{8}$ of her dessert and left the rest for Mrs. Phillips.



Determine whether the following statements are **TRUE** or **FALSE**. Support each answer in three different ways: **words** (why your answer is correct and how you got it), a **mathematical equation** (numbers!), and with a **picture** (that accurately demonstrates the answer).

- Mr. Brake believes that means Mr. Mangham left $\frac{3}{4}$ of the Little Debbie for him.
- Mrs. Phillips is excited because she thinks $\frac{5}{8}$ is still left for her from Ms. Atkins.
- Mrs. Phillips wishes to determine the total amount of Swiss Cake Rolls now sitting in the office. She performs the following calculation: $\frac{3}{4} + \frac{5}{8} = \frac{8}{12} = \frac{2}{3}$. She concludes that, written in simplest form, there is exactly $\frac{2}{3}$ of a Little Debbie left in the office.
- Mr. Brake believes that Mrs. Phillips got more of a Swiss Cake Roll than he did since both the numerator and denominator for her portion are bigger than for his portion.
- Mrs. Phillips agrees with Mr. Brake and she wants to determine how much more she received. She performs the following calculation: $\frac{5}{8} - \frac{3}{4} = \frac{2}{4} = \frac{1}{2}$. She is thrilled that she gets to eat $\frac{1}{2}$ a Swiss Cake Roll more than Mr. Brake.
- Mr. Mangham and Ms. Atkins believe that together they ate a total of $\frac{5}{8}$ of a Swiss Cake Roll.
- Mrs. Phillips and Mr. Brake will assign both Mr. Mangham and Ms. Atkins working lunches again tomorrow because they both want more free food.

$$7\frac{2}{3} + 3\frac{5}{6}$$

You need: markers or crayons

Student Directions:

1. You will be making a design or a picture out of pattern block figures. Each figure will have given a value.
2. You will trace the supplied pattern blocks to form your picture on a piece of construction paper.
3. Your design will consist of two separate objects - one with a value of seven and two-thirds and one with a value of three and five sixths.
4. **The following are the key rules to your design:**
 - A. Each part of your design must contain all 4 shapes.
 - B. No more than one half of your design can be any one color/shape.
 - C. Your design must use a total number of pattern blocks that is divisible by 3.
 - D. You must complete the design matrix page and attach it to the back of your construction paper.
 - E. You must have a title for your design.
 - F. Your design must have a key in the lower right hand corner of the project that explains the value of each pattern block shape in mathematical terms.
 - G. The final product must be neat and clean. You must outline your shapes in black marker.
5. Suggestions:
 - A. Lay your pieces out and decide on your design before you begin tracing.
 - B. Double check the rules above to be sure that you have completed all of them.

| | | |
|---------------|--------------------------------|-------------|
| Activity 6-25 | Fraction Design Project | NAME: _____ |
|---------------|--------------------------------|-------------|

| |
|-------------------------------|
| $7\frac{2}{3} + 3\frac{5}{6}$ |
|-------------------------------|

| SHAPE COLOR | SHAPE PICTURE | SHAPE NAME | SHAPE VALUE | NUMBER USED | TOTAL VALUE in SIMPLEST FORM | TOTAL VALUE w/ COMMOM DENOMINATOR |
|-------------|---------------|------------|-------------|-------------|------------------------------------|---|
| Yellow | | | | | | |
| Blue | | | | | | |
| Red | | | | | | |
| Green | | | | | | |
| Total: | | | | | Total: | |

Must simplify to $7\frac{2}{3}$

| SHAPE COLOR | SHAPE PICTURE | SHAPE NAME | SHAPE VALUE | NUMBER USED | TOTAL VALUE in SIMPLEST FORM | TOTAL VALUE w/ COMMOM DENOMINATOR |
|-------------|---------------|------------|-------------|-------------|------------------------------------|---|
| Yellow | | | | | | |
| Blue | | | | | | |
| Red | | | | | | |
| Green | | | | | | |
| Total: | | | | | Total: | |

Must simplify to $3\frac{5}{6}$

THINK YOU ARE HAVING A BAD DAY?

Dear Sir:

I am writing in response to your request for additional information. In Block #3 of the accident reporting form, I put "trying to do the job alone" as the cause of my accident. You said in your letter that I should explain more fully and I trust that the following details will be sufficient.

I am a bricklayer by trade. On the day of the accident, I was working alone on the roof of a new six story building. When I completed my work, I discovered that I had about 500 pounds of bricks left over. Rather than carry the bricks down by hand, I decided to lower them in a barrel by using a pulley which, fortunately, was attached to the side of the building on the top floor.

Securing the rope at ground level, I went up to the roof, swung the barrel over the side and loaded bricks into it. Then I went back to the ground and untied the rope holding it tightly to insure a slow descent of the 500 pounds of bricks. You will not in Block #11 of the accident report form that my weight is 185#. Do to my surprise at being jerked off the ground so suddenly, I lost presence of mind and forgot to let go of the rope. Needless to say, I proceeded at a rather rapid rate up the side of the building.

In the vicinity of the third floor, I met the barrel coming down. This explains my fractured skull, minor abrasions, and broken collarbone.

Slowed only slightly, I continued my rapid ascent, not stopping until the fingers of my right hand were two knuckles deep into the pulley. Fortunately by this time I had regained my presence of mind and was able to hold tightly to the rope despite the excruciating pain I was beginning to experience.

At that time however, the barrel of bricks reached the ground - and the bottom fell out of the barrel when it hit. Now devoid of the 500 pounds of bricks the barrel now weighed only 50 pounds.

As you might imagine, I began a rapid descent down the side of the building. In the vicinity of the third floor, I met the barrel coming up. This accounts for the two fractured ankles, broken tooth, and the severe lacerations on my legs and lower body.

Here my luck began to change slightly. The encounter with the barrel seemed to slow it up enough to lessen my injuries when I fell into the pile of bricks and fortunately only three vertebrae were cracked.

I am sorry to report, however, that as I lay there on the pile of bricks in pain, unable to move and watching the empty barrel six stories above me, I lost hold of the rope. The empty barrel weighed more than the rope and came back down on me and broke both my legs.

I hope I have furnished the information you required as to how the accident occurred.