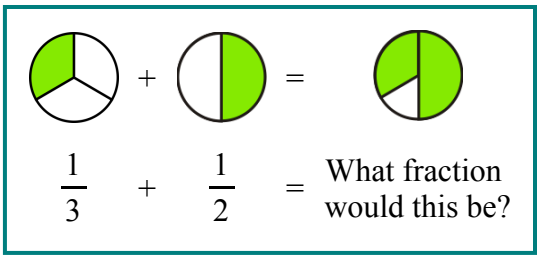
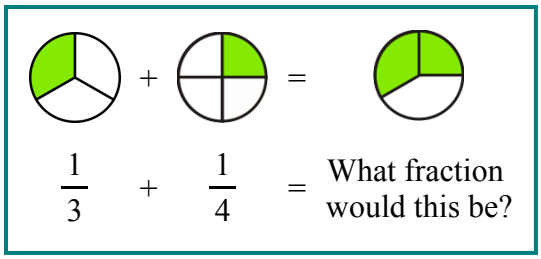
# Adding and Subtracting Unlike Fractions

Cover the page below the black line. Then try to figure out the addition problems below.

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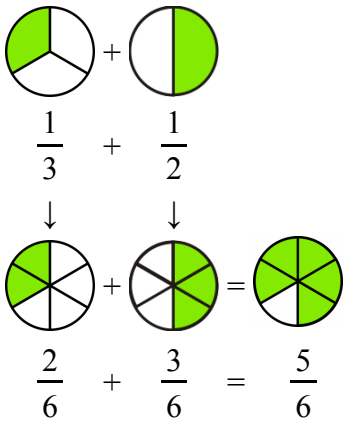
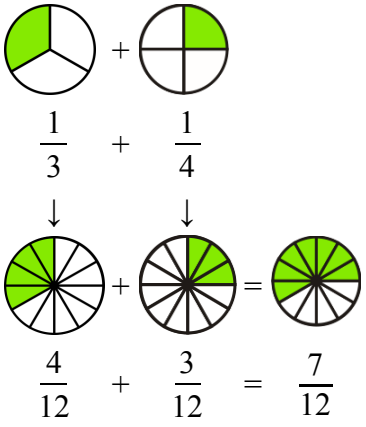


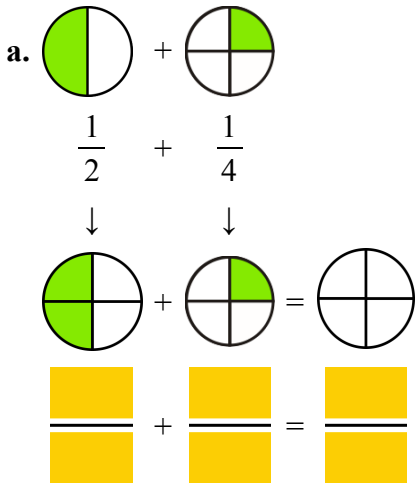

Did you solve the problems above?

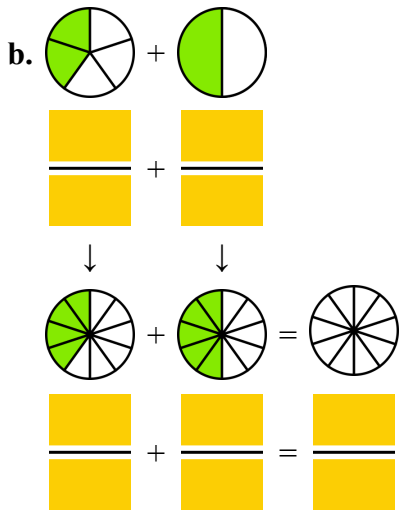
The solution is this:

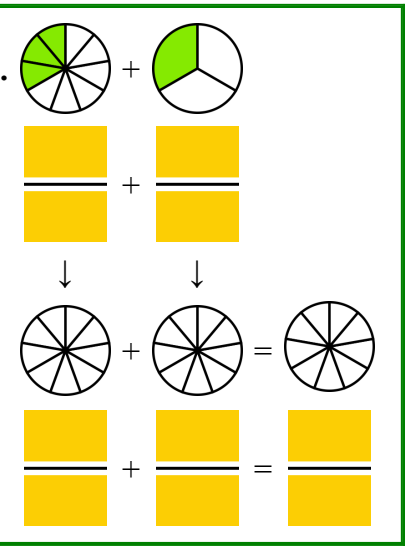
We convert the fractions so that they become *like* fractions (the *same* denominator), using equivalent fractions.

Then we can add or subtract.

1. Write the fractions shown by the pie images. Convert them into *equivalent fractions with the same denominator* (like fractions), and then add them. Color in the missing parts.



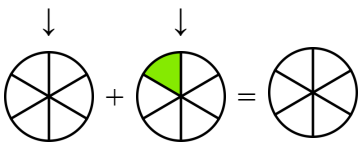



2. Convert the fractions to like fractions first, and then add or subtract. In the bottom problems (d-f), you need to figure out what kind of pieces to use, but the *top* problems (a-c) will help you do that!

**a.**

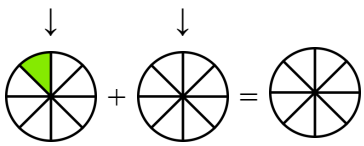
$\frac{1}{2} + \frac{1}{6}$



$\frac{\square}{\square} + \frac{1}{6} = \frac{\square}{\square}$

**b.**

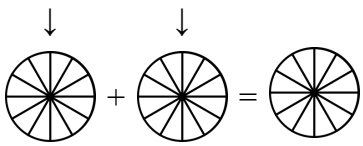
$\frac{1}{8} + \frac{1}{4}$



$\frac{1}{8} + \frac{\square}{\square} = \frac{\square}{\square}$

**c.**

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



$\frac{\square}{\square} + \frac{\square}{\square} = \frac{\square}{\square}$

**d.** $\frac{5}{6} - \frac{1}{2}$

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

**e.** $\frac{5}{8} - \frac{1}{4}$

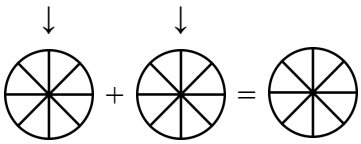
$\frac{\square}{\square} - \frac{\square}{\square} = \frac{\square}{\square}$

**f.** $\frac{5}{6} - \frac{1}{4}$

$\frac{\square}{\square} - \frac{\square}{\square} = \frac{\square}{\square}$

**g.**

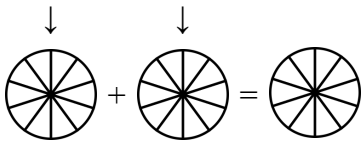
$\frac{1}{2} + \frac{1}{8}$



$\frac{\square}{\square} + \frac{\square}{\square} = \frac{\square}{\square}$

**h.**

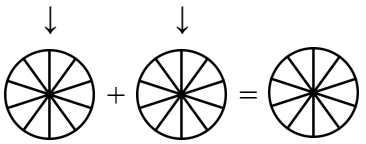
$\frac{3}{10} + \frac{1}{5}$



$\frac{\square}{\square} + \frac{\square}{\square} = \frac{\square}{\square}$

**i.**

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



$\frac{\square}{\square} + \frac{\square}{\square} = \frac{\square}{\square}$

**j.** $\frac{1}{2} + \frac{3}{8}$

$\frac{\square}{\square} - \frac{\square}{\square} = \frac{\square}{\square}$

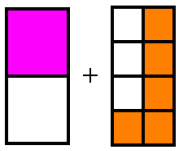
**k.** $\frac{9}{10} - \frac{2}{5}$

$\frac{\square}{\square} - \frac{\square}{\square} = \frac{\square}{\square}$

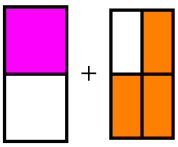
**l.** $\frac{4}{5} - \frac{1}{2}$

$\frac{\square}{\square} - \frac{\square}{\square} = \frac{\square}{\square}$

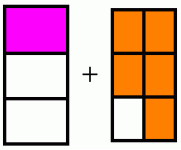
3. Split the parts only in the *first* fraction so that both fractions will have the same kind of parts. Add.



**a.** ___/8 + 5/8 =

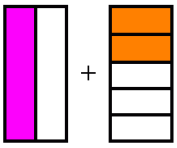


**b.** ___ + 3/4 =

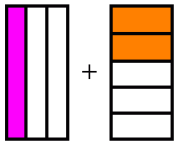


**c.** ___ + 5/6 =

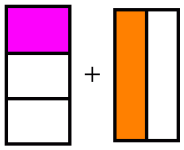
Now split the parts in *both* fractions so that they will have the same kind of parts. Add.



**d.** ___/10 + ___/10 =



**e.** ___/15 + ___ =



**f.** ___ + ___ =

4. Fill in the table based on the problems above. What kind of parts did the two fractions have at first? What kind of parts did you use in the final addition?

| | Types of parts: | Converted to: |
|---|---|---|
| **a.** | 2nd parts and 8th parts | *8th* parts |
| **b.** | 2nd parts and 4th parts | _____ parts |
| **c.** | 3rd parts and 6th parts | _____ parts |

| | Types of parts: | Converted to: |
|---|---|---|
| **d.** | 2nd parts and 5th parts | _____ parts |
| **e.** | 3rd parts and 5th parts | _____ parts |
| **f.** | 3rd parts and 2nd parts | _____ parts |

5. Now think: How can you know into what kind of parts to convert the fractions that you are adding? Can you see any patterns or rules in the table above?

6. **Challenge:** If you think you know what kind of parts to convert these fractions into, then try these problems. Do not worry if you do not know how to do them—we will study this in the next lesson.

**a.** 1/2 + 2/3

↓ ↓

___ + ___ =

**b.** 2/3 − 2/5

↓ ↓

___ − ___ =

**c.** 1/3 + 3/4

↓ ↓

___ + ___ =