

Grade 4 Lesson 22: Subtraction of Fractions

Purpose: To determine the difference in shaded amounts of bars and write subtraction equations

Materials: Transparent Capture mat and bars, Fraction Bars, Capture mats, markers, "Fraction Number Line" (Lesson 14), Updated Transparency Fraction Number Line

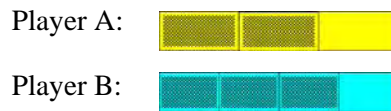
TEACHER MODELING/STUDENT COMMUNICATION

Activity 1 Finding the total shaded amount of two bars

transp
Capture mat

transp bars

1. Place a transparency of the Capture mat on the overhead and place one marker on the Center Step. Also use these two transparent bars and label each as shown.



- On this mat, Player A will move the marker toward GOAL A. How many steps can the marker be moved? (8) Move the marker
- Player B will move the marker back toward GOAL B. How many steps back will the marker be moved? (9) Move the marker 9 steps toward goal B.
- Which player's marker is closest to their goal and how many steps have they gained? (Player's B's marker is closest to GOAL B and there has been a gain of 1 step.)

Game: Capture (small groups)

Pass out a deck of bars, sack of markers and a Capture mat to each group.

Fraction
Bars

Capture
mats

markers

- Turn all the bars face down. Place one marker on the Center Step and each player selects a goal.
- Both players select a bar at the same time and place them side by side to compare the shaded amounts.
- First one player moves the marker towards GOAL A and then the other player moves the marker back toward GOAL B for the shaded amounts of their bars.
- The first player to get the marker to remain in their goal after both players have finished using their bars, captures the marker. The marker does not have to go to the end of the goal. It only has to finish somewhere in the bar marked "GOAL." If one player gets the marker into their goal and the other player moves it out on the same turn, the marker is not captured.

Looking Back: Following the game discuss special situations. For example, after a few turns you may see only the player with the greater shaded amount moving the marker. Encourage this type of "short cut" as it involves determining differences.

Activity 2 Writing equations for differences of fractions.

1. Place these two bars on the overhead.

- Which player will gain steps on the Capture mat and how many steps will be gained? (The player with the green bar will gain 2 steps.)



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

Tell students this is a visual way to find the difference of two fractions. Write the subtraction equation for the difference of $\frac{1}{2}$ and $\frac{2}{6}$.

2. Ask students to turn their bars face down, select two bars, find the difference in shaded amounts, and write an equation for the difference of the fractions for the bars. Ask a few volunteers to describe their bars and equations. Capture mats may be helpful for finding differences. Repeat this activity as time permits.

Fraction
Bars

Game: Number Lines Race (pairs of students)

Pass out each student's "Fraction Number Line" from Lesson 14 and a sack of markers to each group.

Fraction
Number
Lines

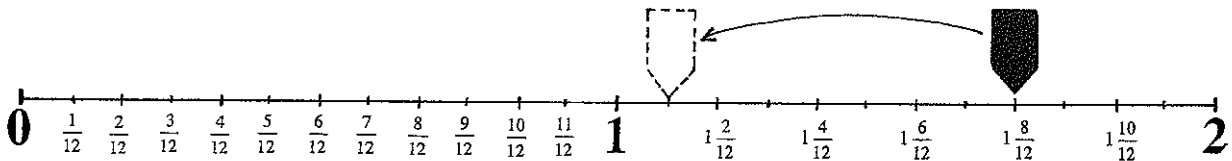
markers

- Turn the bars face down and each player places a marker above the number "2" at the end of their number line.
- Take turns selecting two bars at a time. You should determine the difference in the number of steps for the two bars before moving your marker toward the zero end of the line.
- The first player to reach the number "0" or go beyond wins the game.
- On each turn you may place one of your bars aside and select another in its place. If you do this, you must use the new bar in finding the difference.

Updated
Transp
Fraction
Number Line

transp
bars

Illustrate a move on your Updated Transparent Number Line for the two bars shown here. The difference in the fractions for the two bars is $\frac{7}{12}$, and since the marker is at the point for 1 and $\frac{8}{12}$, it ends up on the line at 1 and $\frac{1}{12}$.



INDEPENDENT PRACTICE and ASSESSMENT

Activity Sheet #22A Subtracting fractions by comparing differences using their bars

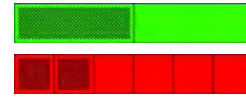
Activity Sheet #22B Computing differences of fractions using number lines



fractionbars.com Set 2 **Rope Tug-Levels I, II** (Subtract fractions with equal denominators) or Set 1 **Number Line Racing** (Subtract mixed numbers for moves on number lines)

Activity 2 Writing equations for differences of fractions.

1. Place these two bars on the overhead.



- Which player will gain steps on the Capture mat and how many steps will be gained? (The player with the green bar will gain 2 steps.)

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

Tell students this is a visual way to find the difference of two fractions. Write the subtraction equation for the difference of $\frac{1}{2}$ and $\frac{2}{6}$.

2. Ask students to turn their bars face down, select two bars, find the difference in shaded amounts, and write an equation for the difference of the fractions for the bars. Ask a few volunteers to describe their bars and equations. Capture mats may be helpful for finding differences. Repeat this activity as time permits.

Fraction Bars

Fraction Number Lines

markers

Updated Transp Fraction Number Line

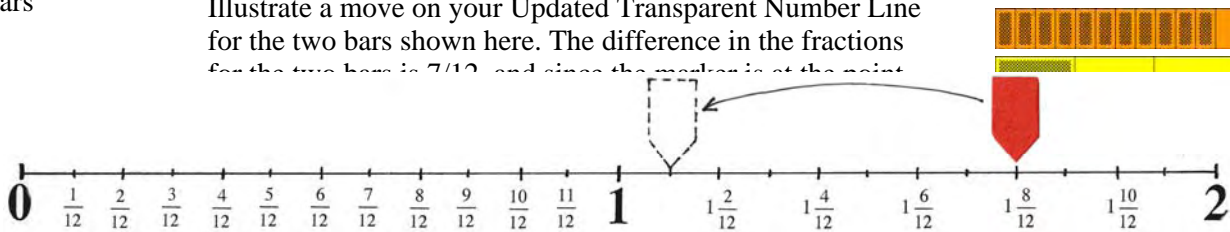
transp bars

Game: Number Lines Race (pairs of students)

Pass out each student's "Fraction Number Line" from Lesson 14 and a sack of markers to each group.

- Turn the bars face down and each player places a marker above the number "2" at the end of their number line.
- Take turns selecting two bars at a time. You should determine the difference in the number of steps for the two bars before moving your marker toward the zero end of the line.
- The first player to reach the number "0" or go beyond wins the game.
- On each turn you may place one of your bars aside and select another in its place. If you do this, you must use the new bar in finding the difference.

Illustrate a move on your Updated Transparent Number Line for the two bars shown here. The difference in the fractions for the two bars is $\frac{7}{12}$, and since the marker is at the point



INDEPENDENT PRACTICE and ASSESSMENT

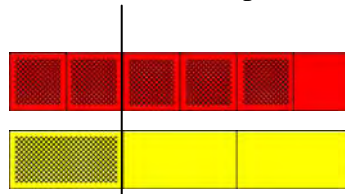


Activity Sheet #22A Subtracting fractions by comparing differences using their bars
Activity Sheet #22B Computing differences of fractions using number lines

fractionbars.com Set 2 **Rope Tug-Levels I, II** (Subtract fractions with equal denominators) or Set 1 **Number Line Racing** (Subtract mixed numbers for moves on number lines)



I drew a line to compare the shaded amounts of two bars to see the difference in their fractions. The top bar shows the difference is $\frac{3}{6}$.



$$\frac{5}{6} - \frac{1}{3} = \frac{3}{6}$$



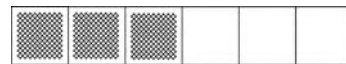
Draw vertical lines across the two bars to show the difference in their shaded amounts. Then write the missing fraction for each pair of bars and complete the subtraction equation.

1.



$$\frac{10}{12} - \frac{1}{2} = \text{--}$$

2.



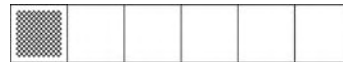
$$\frac{3}{4} - \text{--} = \text{--}$$

3.



$$\frac{7}{12} - \text{--} = \text{--}$$

4.



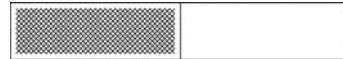
$$\frac{1}{2} - \text{--} = \text{--}$$

5.



$$\frac{2}{3} - \text{--} = \text{--}$$

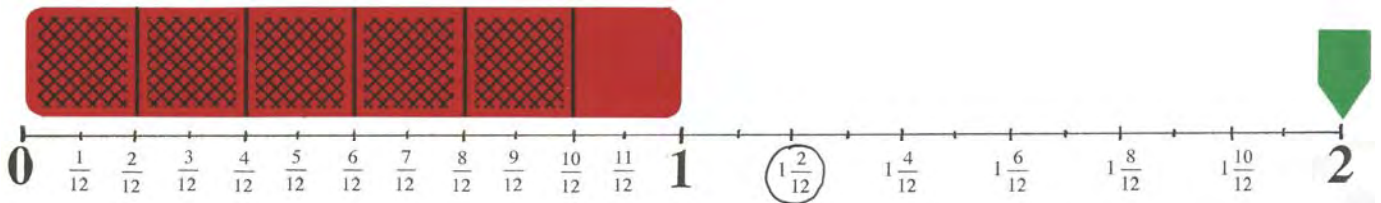
6.



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



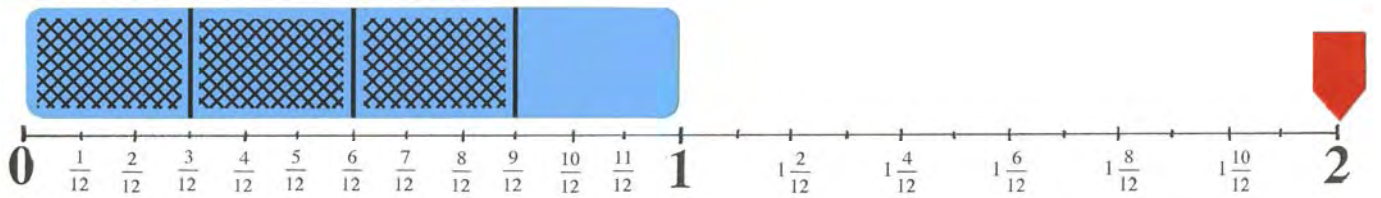
In the Number Line Race, my first bar is worth 10 steps, so my marker can be moved back from the number "2" to the number I circled.



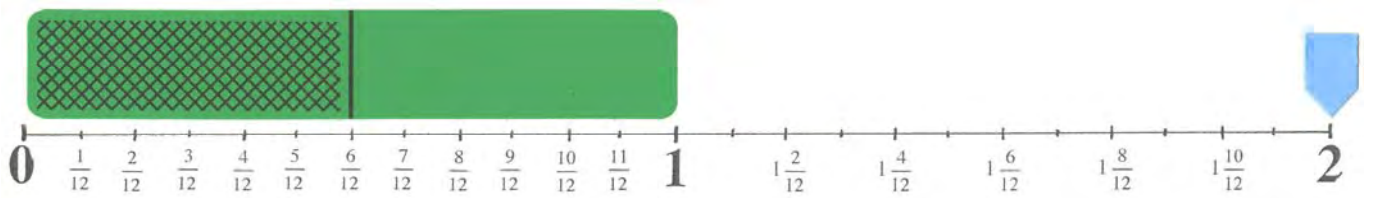
$$2 - \frac{5}{6} = 1 \frac{2}{12}$$



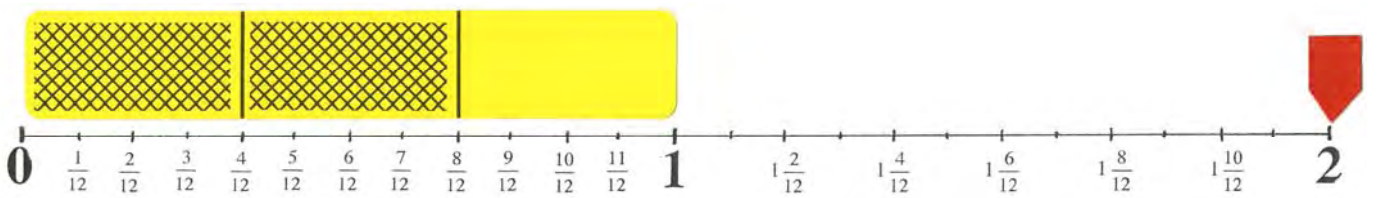
Circle the number the marker can be moved to for the shaded amount of each bar and complete the subtraction equation.



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



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



3. $2 - \frac{2}{3} =$