**Fraction Kit Directions : I cannot remember where I retrieved this from. I know I copied and pasted it off a website.**

**(***adapted from Cindy White’s MTI materials (added labeling the parts)*

**Big ideas:** Composing and Decomposing 1, Unit fractions (fractions with a numerator of 1), Equivalence

**Objective:** Students will develop an understanding of unit fractions and equivalent fractional pieces by making a fraction kit and discussing the relationships between fractional pieces.

**Materials:** Each student will need a set of fraction strips to create 1, 1/2, 1/4, 1/8, and 1/16 size pieces, and an envelope to store their kit in. Use a different color for each different size piece (3” x 12” strips in 5 different colors). Create a fraction die for each pair of students. Label the faces of the die 1/2, 1/4, 1/8, and 1/16 (the remaining two faces may be “roll again”, “pick any”, or another 1/8 and 1/16).

**Making the Fraction Kit:** Have the students put their initials on each fractional piece as they create their kits. In the examples below: yellow – 1, blue – 1/2, green – 1/4, pink – 1/8, and purple – 1/16.

* Identify a color (yellow) to represent 1 and have the students set that color aside. *It is important to refer to this strip as 1 rather than a whole because the whole is not always 1*. This piece will be the game board for Cover Up and Uncover.
* Select another color strip (blue) and have students fold short parallel sides together and cut or tear to form 1/2 size pieces.
* Have students discuss the relationship between the 1/2 and the 1 piece:
	+ Blue is 1/2 of the yellow (1)
	+ It is called 1/2 because it takes 2-- 1/2 size pieces to make 1
	+ Yellow (1) is 2 times larger than blue
		- Label each piece as 1/2 (adapted from original version in which you don’t label)
* Select another color strip (green) and have students fold short parallel sides together and then fold together again to form 1/4 size pieces—ask students to predict how many pieces they will have this time.
* Have students discuss the relationship between all three pieces
	+ Green is 1/4 of yellow
	+ It is called 1/4 because it takes 4—1/4 size pieces to make(compose) 1
	+ Yellow (1) is 4 times larger than green (1/4)
	+ Green (1/4) is 1/2 of blue (1/2)
	+ Blue (1/2) is 2 times larger than green (1/4)
		- Label each piece as 1/4
* Emphasize the importance of the unit fraction:
	+ We name something 1/4 because it takes 4 (1/4) size pieces to make 1
	+ We name something 1/2 because it takes 2 (1/2) size pieces to make 1
* Continue the same process and discussion for 1/8 and 1/16 size pieces
	+ When making 1/8 and 1/16 size pieces it is easier to cut 1/4 or 1/8 size pieces and then fold and cut in half again to create 1/8 and 1/16 pieces (this helps keep the pieces equal sized)
	+ It is important that students always fold side to side—not top to bottom because they will not be able to play the games if they cut the pieces the other way

 **Extensions:**

* If blue (1/2 size piece) now represents 1, what would we name the other pieces? Why?

 green – 1/2, pink - 1/4, purple - 1/8, yellow - 2.

* Cut 3 additional fraction strips and add 1/3, 1/6, and 1/12 size pieces to the kit. Play Cover-Up One with 1/3, 1/6, and 1/12 size pieces first, then combine all pieces.

**Activities for Fraction Kits**

**Cover-Up One:** Each player will use the 1(yellow) piece from their fraction kit as their game board. Players will share a fraction die.

1. Player 1 rolls the fraction die and places the piece to cover up that portion of 1.
2. Player 2 repeats the process.
3. The winner is the player to cover 1 first without going over. If a player rolls a piece larger than the remaining space on the gameboard they must pass that turn.
4. Extension: Have the students create a proportional diagram of their gameboard as they cover it up and then write a fraction sentence to match the diagram at the end of each game.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1/4 | 1/2 | 1/16 | 1/16 | 1/8 |

 1/4 + 1/2 + 1/16 + 1/16 + 1/8 = 1

**Uncover One:** Each player will use the 1(yellow) piece from their fraction kit as their game board. Players will share a fraction die. Players play Cover-Up One first to fill the game board and then play Uncover One.

1. Player 1 rolls the fraction die and removes that size portion from the covered game board. The player may need to exchange pieces in order to remove the fraction rolled. The other player must agree that the exchange is for an equivalent size piece or pieces.
	1. Students must ‘uncover’ from right to left (last piece on must be first piece off) and therefore must ‘exchange’ pieces in some cases. Remind students they are removing an ‘area’ matching the fraction rolled, not necessarily that specific piece (may need to combine pieces).
	2. Students just developing an understanding of equivalence may need to start by removing the rolled portion from anywhere on their game board.
2. Player 2 repeats the process.
3. The first player to Uncover One is the winner. If a player rolls a fraction that is larger than the remaining portion, they must pass that turn.
4. Extension: Have students record exchanges as they play Uncover One.
5. Extension: Have students record jumps on a numberline as they play Uncover One. (start at 1 on the numberline and jump backwards to 0).