Teacher Notes

- Fractions
- Addition
- Graphing

DANCING FRACTIONS – GRAPHICAL ADDITION

TOPIC: Adding fractions, common denominator

- **Grade Level**/Activating Prior Knowledge

  3rd grade and beyond/natural numbers

- **Learning Objective**

  To teach addition of fractions through dance design, graphing representations, and physical movement. Comparison of various steps develops understanding of common denominator.

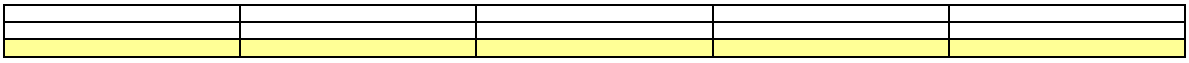
- **Materials (per student)**
  - ✓ The student worksheets for the graphing
  - ✓ Several different colored highlighters

- **Lesson**

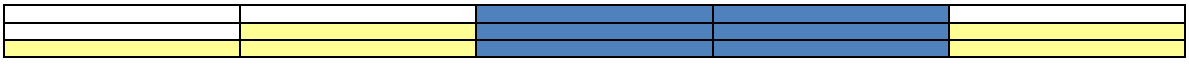
1. Start with designing 1/3 dance that has 1 special step  and 2 regular steps. Represent the dance graphically, using yellow for the special step (dance figure). Students should be able make the graph themselves, but ask them to use vertical bar to represent their dance (at right).

2. Ask the students to design the 2/5 dance and graph it using a blue marker (Example below).

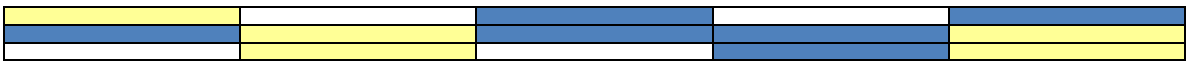
3. Draw a three by five rectangle. The new dance will have 15 steps. Shade yellow 1/3 of the rectangle (rows corresponding to the vertical 1/3).



4. Now we would like to color 2/5 (vertical columns). Before doing that, move the yellow blocks away so we can color the columns blue. The example below illustrates this step.



5. Rearrange the way you would like your dance (no overlaps). And decide on the order of walking through all the blocks (no repetitions). Ask students to dance their arrangement to a friend, compare dances, and represent them as fractions.

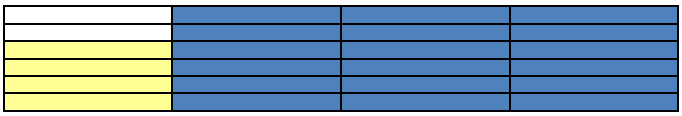


6. Ask: What is the total number of steps in the dance? We call this the denominator (common denominator). In our example we have 15.
7. What fraction corresponds to first (yellow) figure? 5/15 which is also 1/3
8. What fraction corresponds to second (blue) figure? 6/15 which is equal to 2/5
9. What fraction corresponds to both figures put together? 5/15 + 6/15 = 11/15
10. What fraction corresponds to just walking? 4/15 Also, 1 - 11/15 = 4/15
11. Work with students on another dance, for example 1/3 + 2/4. **Warning** – Pick fractions that add up to less than 1! Mixed numbers will be introduced in the next activity for larger sums.

📖 **Vocabulary:** numerator, denominator, addition of fractions, equivalent fractions, graphical representations.

TEST: ADDING FRACTIONS - TEACHER's SOLUTIONS

1. Plan the following two dances: 1/6 (one special figure out of six colored yellow) and 3/4 (three special figures out of four colored blue). Use the grid below to show the addition of the special dancing figures in both dances.



Answer the following questions:

2. What is the total number of steps in the combined dance? _____24_____

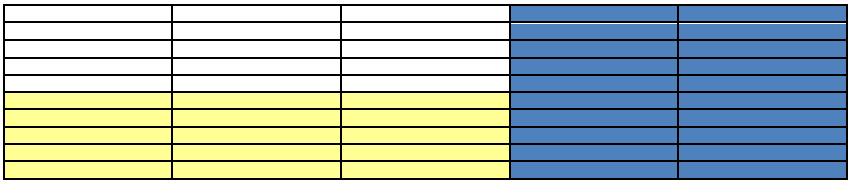
3. What fraction corresponds to first (yellow) figure? ____4/24____ After simplifying ____1/6____

4. What fraction corresponds to second (blue) figure? ____18/24____ After simplifying ____3/4____

5. What fraction corresponds to both figures put together? _____4/24 + 18/24 = 22/24 = 11/22 _____

6. What fraction corresponds to just walking? _____ 2/24 = 1/12 _____

7. Plan the following two dances: 3/10 (three special figures out of six colored yellow) and 2/5 (two special figures out of five colored blue). Use the grid below to show the addition of the special dancing figures in both dances.



Answer the following questions:

8. What is the total number of steps in the combined dance? _____50_____

9. What fraction corresponds to first (yellow) figure? ____15/50 ___ After simplifying ____3/10____

10. What fraction corresponds to second (blue) figure? ____20/50____ After simplifying ____2/5____

11. What fraction corresponds to both figures put together? _____15/50 + 20/50 = 35/50 = 7/10_____

12. What fraction corresponds to just walking? _____15/50 = 3/10_____

Activity

- Fractions
- Addition
- Graphing

DANCING FRACTIONS – EQUIVALENT FRACTIONS

Materials you should have

✓ Colored highlighters

Activity

1. Design different two dances: first with two special figures out of 4 steps, second with three special figures out of 8 steps.

   a) First dance – color the special steps  yellow on the vertical graph below.

   b) Second dance – color the special steps  blue on the horizontal graph below.

   c) The grid below puts both dances together. Color the entire row yellow that would extend the special figures from dance one.

   d) Now look at the second dance and move the yellow boxes into different places (no overlaps!), so you can color the columns corresponding to the second dance in blue on the rectangular grid below.

   e) Rearrange your dance by moving boxes around. Decide on the order that you will walk through the grid (you cannot step into any box twice!). Perform your dance.

Answer the following questions:

2. What is the total number of steps in the combined dance? _____

3. What fraction corresponds to first (yellow) figure? _____ After simplifying _____

4. What fraction corresponds to second (blue) figure? _____ After simplifying _____

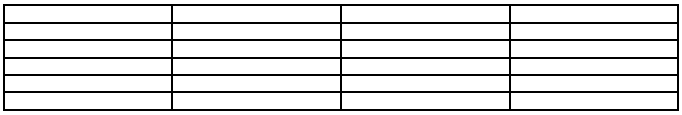
5. What fraction corresponds to both figures put together? _____

6. What fraction corresponds to just walking? _____

Challenge: Add dances 2/5 + 1/ 4 on the grid below.

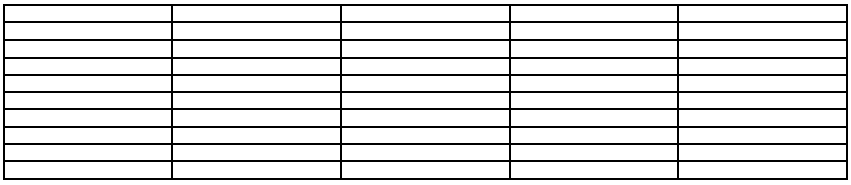
TEST: ADDING FRACTIONS

1. Plan the following two dances: 1/6 (one special figure out of six colored yellow) and 3/4 (three special figures out of four colored blue). Use the grid below to show the addition of the special dancing figures in both dances.



Answer the following questions:

2. What is the total number of steps in the combined dance? _____
3. What fraction corresponds to first (yellow) figure? _____ After simplifying _____
4. What fraction corresponds to second (blue) figure? _____ After simplifying _____
5. What fraction corresponds to both figures put together? _____
6. What fraction corresponds to just walking? _____
7. Plan the following two dances: 3/10 (three special figures out of six colored yellow) and 2/5 (two special figures out of five colored blue). Use the grid below to show the addition of the special dancing figures in both dances.



Answer the following questions:

8. What is the total number of steps in the combined dance? _____
9. What fraction corresponds to first (yellow) figure? _____ After simplifying _____
10. What fraction corresponds to second (blue) figure? _____ After simplifying _____
11. What fraction corresponds to both figures put together? _____
12. What fraction corresponds to just walking? _____