



5

ACTIVITIES

For Multiplying Fractions and Whole Numbers

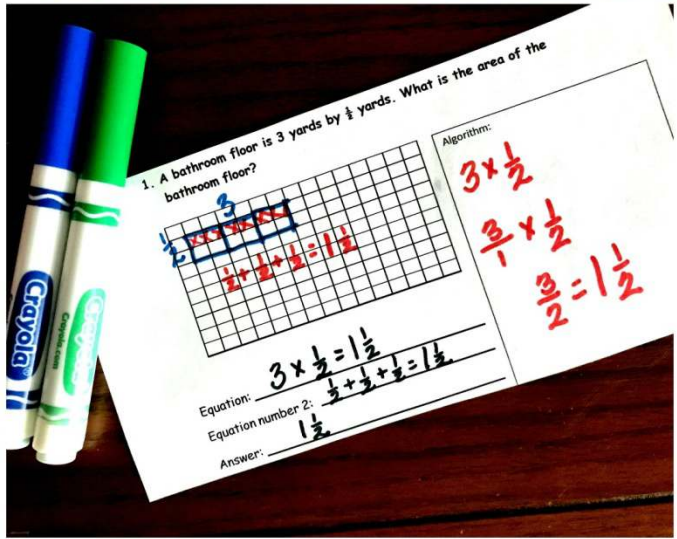
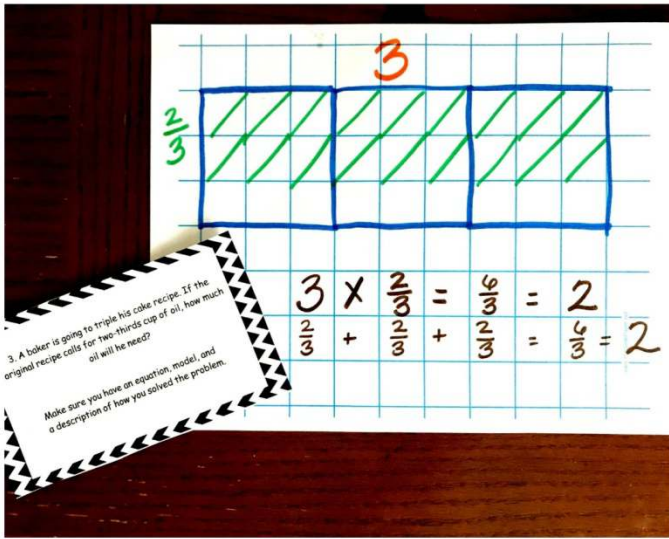
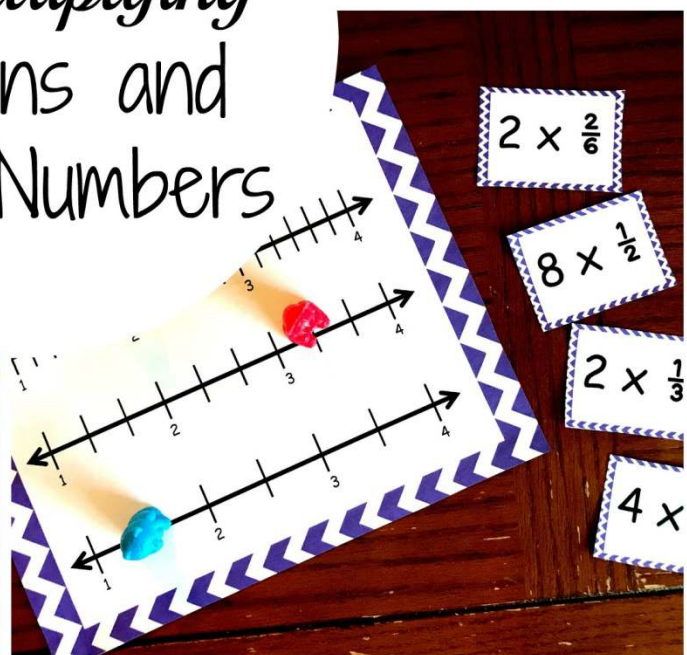
Name: _____

Mrs. Beasley has $1\frac{1}{2}$ packs of paper on each shelf. If her bookshelf has many packs of paper does she have?

- Have each of your partners (3 of them) get out $1\frac{1}{2}$. Put them together up. How much do you have altogether? $\frac{9}{4}$
- Write an equation to show what you did.
 $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4}$
- Use your fraction bars to change your mixed number into an improper fraction.
 $\frac{9}{4}$

Algorithm:

$$3 \times \frac{3}{4} = \frac{3}{1} \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$$



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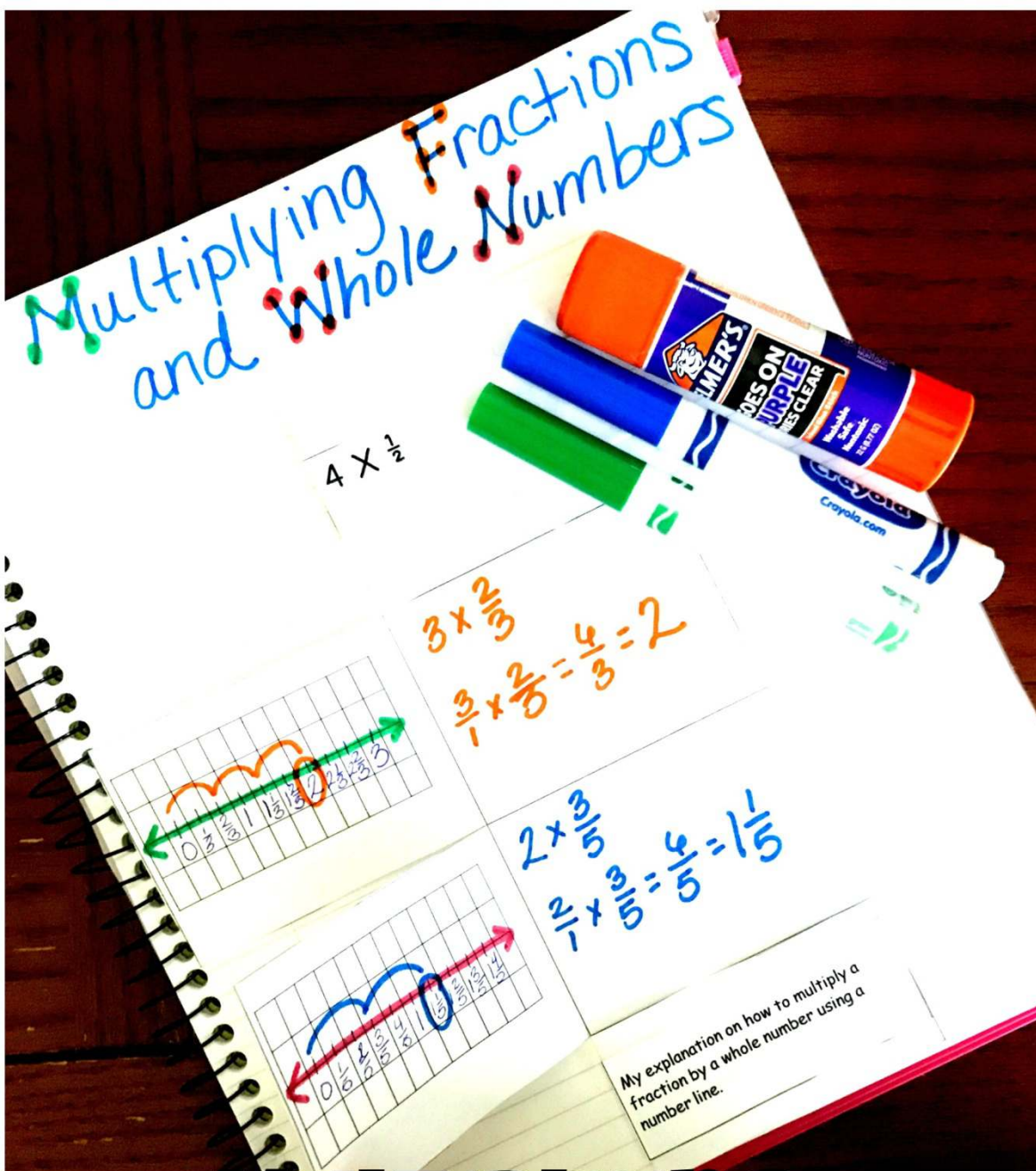
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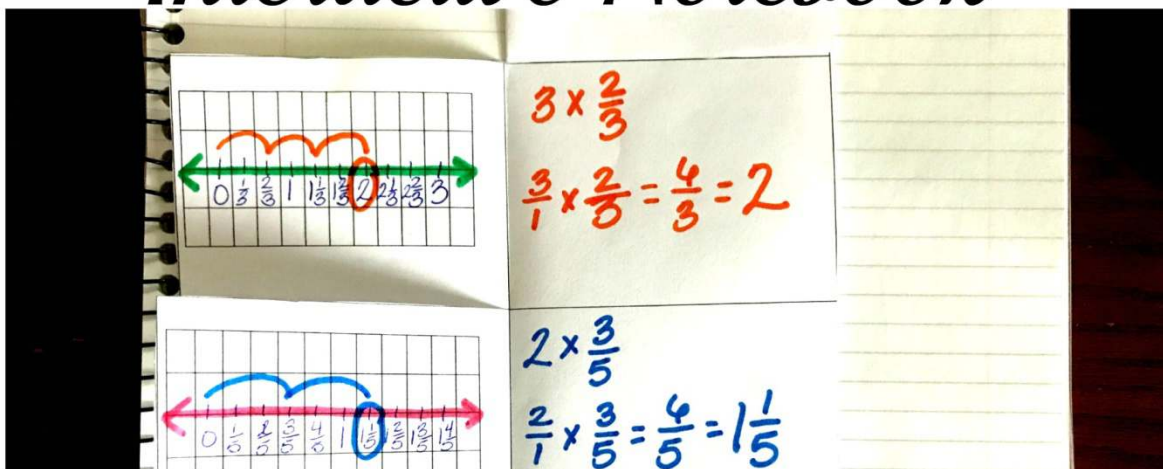
Clip art by [Catherine S](#)



MULTIPLYING

Fractions By Whole Numbers

Interactive Notebook



Multiplying Fractions by Whole Numbers Interactive Notebook

Prep Work -

1. Have students cut out the graphic organizer. Glue the right hand column into their math journal.
2. Fold at the solid line, and cut the dotted lines.
3. Glue the three problems unto the folded paper.

Directions -

1. Open up the paper and draw a number line starting at 0 and continuing with $\frac{1}{2}$ increments. $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2 and so forth.
Discuss in detail what multiplication is. Have students make predictions on how they can use the number line to multiply 4 by $\frac{1}{2}$. Then have students draw an arrow moving up the number line four times. Make sure you point out that the answer is less than 4. Have students explain why that is.
2. Have the students solve the problem using the algorithm.
3. Repeat the same process for the other two problems. Note that for problem two they have to move up $\frac{2}{3}$ three times.
4. Have students write a step by step description on how to multiply a whole number by a fraction. Encourage them to explain that when you are multiplying a whole number by a fraction, the answer will always be less than the whole number.

$$4 \times \frac{1}{2}$$

$$3 \times \frac{2}{3}$$

$$2 \times \frac{3}{5}$$

My explanation on how to multiply a fraction by a whole number using a number line.

Name: _____

1. Mrs. Beasley has $1\frac{3}{4}$ packs of paper on each shelf. If her bookshelf has three shelves, how many packs of paper does she have?

a. Have each of your partners (3 of them) get out $1\frac{3}{4}$. Put them together and add them up. How much do you have altogether? $\frac{9}{4}$

b. Write an equation to show what you did.
 $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4}$

c. Use your fraction bars to change your mixed number into an improper fraction.
 $2\frac{1}{4}$

Algorithm:

$$3 \times \frac{3}{4} = \frac{3}{1} \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

MULTIPLYING

Fractions and Whole Numbers

With Fraction Bars

2. Mrs. Jones is baking pancakes. Her recipe calls for $\frac{1}{2}$ cup of milk. If she plans to make 3 servings, how much milk does she need?

a. Have each of your partners (3 of them) get out $\frac{1}{2}$. Add them up. How much do you have altogether?
 $\frac{3}{2}$

b. Write an equation to show what you did.
 $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{2}$

c. Use your fraction bars to change your mixed number into an improper fraction.
 $1\frac{1}{2}$

Algorithm:

$$3 \times \frac{1}{2}$$
$$\frac{3}{1} \times \frac{1}{2} = \frac{3}{2} = 1\frac{1}{2}$$

Modeling Multiplying Fractions and Whole Numbers Using Fraction Bars

Prep Work -

1. Print off sheets.
2. Gather up pencils and fraction bars
3. Put students in groups of three

Directions -

1. Students follow directions on the sheet to complete the multiplication problems

Modeling Multiplying a Mixed Number by a Whole Number with Fraction Bars

Name: _____

1. Mrs. Beasley has $\frac{3}{4}$ packs of paper on each shelf. If her bookshelf has three shelves how many packs of paper does she have?

a. Have each of your partners (3 of them) get out $\frac{3}{4}$. Put them together and add them up. How much do you have altogether? _____

b. Write an equation to show what you did.

c. Use your fraction bars to change your mixed number into an improper fraction.

Algorithm:

2. Mrs. Jones is baking pancakes. Her recipe calls for $\frac{1}{2}$ cups of pancake mix. If Ms. Jones plans to make 3 servings, how much pancake mix does she need?

a. Have each of your partners (3 of them) get out $\frac{1}{2}$. Put them together and add them up. How much do you have altogether?

d. Write an equation to show what you did.

e. Use your fraction bars to change your mixed number into an improper fraction.

Algorithm:

3. Mr. Flemish ate $\frac{2}{3}$ of a sub three days in a row. How many subs has he eaten?
- Have each of your partners (3 of them) get out $\frac{2}{3}$. Put them together and add them up. How much do you have altogether?

 - Write an equation to show what you did.

 - Use your fraction bars to change your mixed number into an improper fraction.

Algorithm:

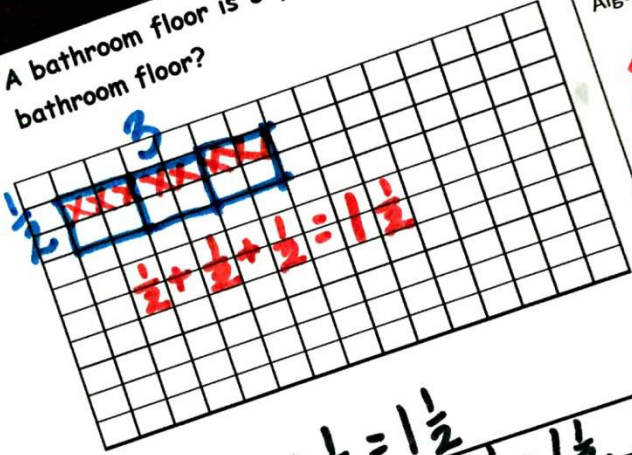
4. Mrs. Williams walked $\frac{3}{8}$ of a mile for three days. How far has she walked?
- Have each of your partners (3 of them) get out $\frac{3}{8}$. Put them together and add them up. How much do you have altogether?

 - Write an equation to show what you did.

 - Use your fraction bars to change your mixed number into an improper fraction.

Algorithm:

1. A bathroom floor is 3 yards by $\frac{1}{2}$ yards. What is the area of the bathroom floor?



Algorithm:

$$3 \times \frac{1}{2}$$


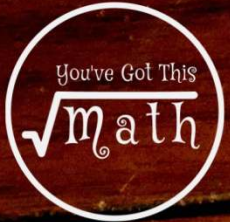
$$\frac{3}{1} \times \frac{1}{2}$$

$$\frac{3}{2} = 1\frac{1}{2}$$

Equation: $3 \times \frac{1}{2} = 1\frac{1}{2}$

Equation number 2: $\frac{3}{1} \times \frac{1}{2} = 1\frac{1}{2}$

Answer: $1\frac{1}{2}$

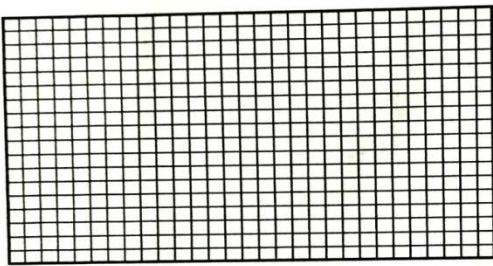



MULTIPLYING

Fractions By Whole Numbers

With Visual Models

2. Caleb mowed a small lawn that was two yards by $\frac{1}{4}$ yards. How much grass did he mow?



Algorithm:

Equation: _____

Equation number 2: _____

Answer: _____

Modeling Multiplying Fractions and Whole Numbers Using Visual Models

Prep Work -

1. Print off sheets.
2. Gather up pencils and colored pencils

Directions -

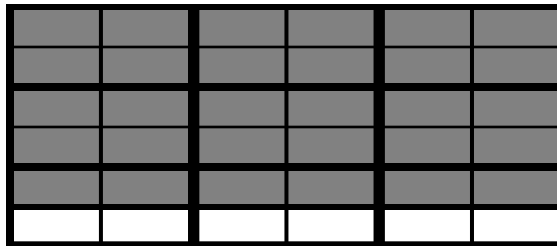
1. Preferably in a small group model to students how to draw a visual model.
2. Do the first two problems together to provide support.
3. See if they can do the last two problems on their own.

Direction for Modeling a Whole Number Times a Fraction using Arrays

Example for $3 \times 2\frac{1}{2}$

Hint: A few of the numbers that make squares (square numbers) are 4, 9, 16, 25, and 36.

- Begin by deciding how many squares your whole will be. In the first question the fraction is $\frac{1}{2}$, so your square can be any of the square numbers that is an even number. For example, if you choose 4 the whole square will be a 2×2 .
- Going vertical, draw three 2×2 squares.
- Going horizontally, round your mixed number ($2\frac{1}{2}$ in the first problem) up to the next whole number and draw that many 2×2 squares. (You should have a total of 3 squares going down for the first problem. Remember they already have drawn one.)
- Continue making 2×2 boxes until you have completed your array. (You should have a 3 wholes by 3 wholes)
- Looking at the horizontal side of your array it is time to take the last whole and break it up to show the mixed number. Divide the last row up into fractional parts. For problem one, you will divide the 2×2 boxes up into two equal parts. I would recommend that they do this in a different color or with a dotted line so they do not confuse the whole box with the boxes divided up into fractions. Shade in $3 \times 2\frac{1}{2}$ When you are finished your array should like this....

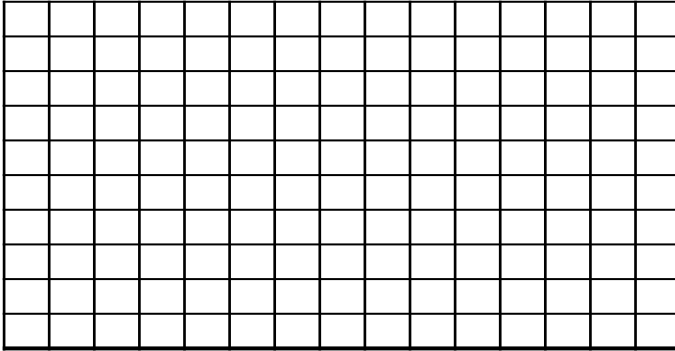


- Finally, add up all the parts that are shaded in. $1 + 1 + 1 + 1 + 1 + 1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 7\frac{1}{2}$.
Therefore $3 \times 2\frac{1}{2} = 7\frac{1}{2}$

Modeling a Whole Number Times a Fraction using Arrays

Name: _____

1. A bathroom floor is 3 yards by $\frac{1}{2}$ yards. What is the area of the bathroom floor?



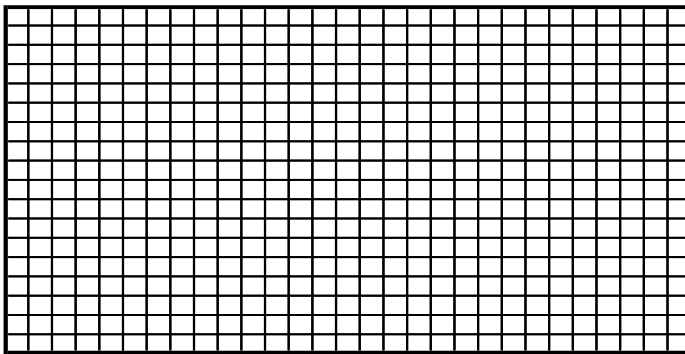
Algorithm:

Equation: _____

Equation number 2: _____

Answer: _____

2. Caleb mowed a small lawn that was two yards by $\frac{1}{4}$ yards.
How much grass did he mow?



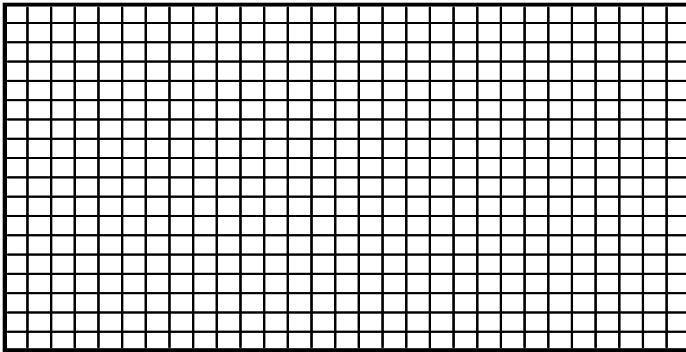
Algorithm:

Equation: _____

Equation number 2: _____

Answer: _____

3. A bedroom is 4 yards by $\frac{1}{3}$ yards. What is the area of the bedroom?



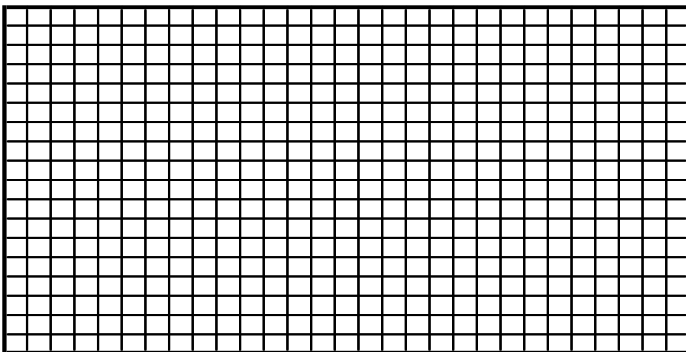
Algorithm:

Equation: _____

Equation number 2: _____

Answer: _____

4. The billboard of the interstate is 3 yards by $\frac{3}{5}$ yards. What is the area of the billboard?

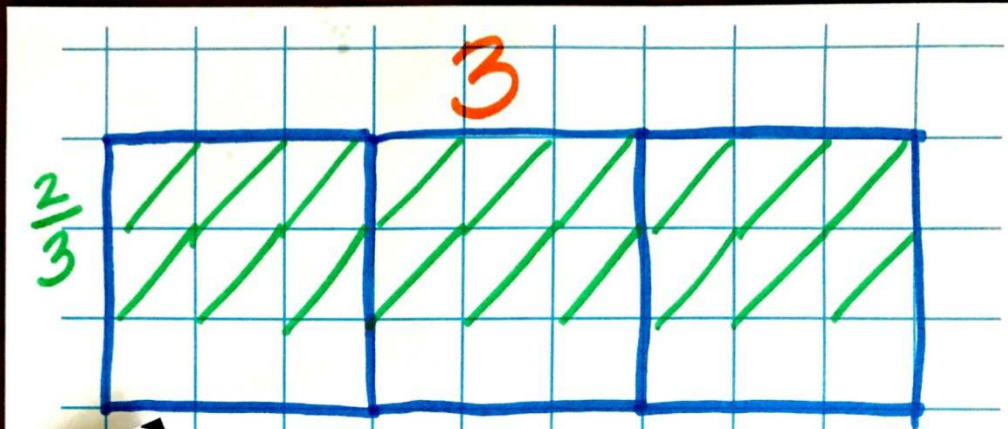
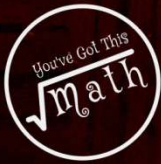


Algorithm:

Equation: _____

Equation number 2: _____

Answer: _____



3. A baker is going to triple his cake recipe. If the original recipe calls for two-thirds cup of oil, how much oil will he need?
Make sure you have an equation, model, and a description of how you solved the problem.

$$3 \times \frac{2}{3} = \frac{6}{3} = 2$$
$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{6}{3} = 2$$

MULTIPLYING

Fractions by Whole Numbers Word Problems

14. Farmer Nikki has land that is $\frac{3}{4}$ of a square mile by 5 square miles. Farmer James has land that is $\frac{1}{2}$ a square mile by 6 square miles. Who has the largest land? How much more do they have?
Make sure you have an equation, model, and a description of how you solved the problem.

13. There are 75 guest coming to a wedding. $\frac{1}{3}$ of the guest are females, and $\frac{2}{5}$ are male. The rest are children. If 8 chairs are placed around a children's table, how many tables will be needed to sit all the children?
Make sure you have an equation, model, and a description of how you solved the problem.

Multiplying Fractions by a Whole Number Word Problems

Prep Work -

1. Print off task cards
2. Gather up math notebooks, pencils, and colored pencils

Directions -

1. Students solve the word problems by modeling and creating equations in their math journals.



1. Write three expressions that equal

$$4 \times \frac{1}{3}$$

Draw a model for at least one.

(number line, area model, ect)

2. A farmer has 10 acers of land. He planted corn on $\frac{1}{3}$ of his land, and wheat on $\frac{1}{2}$. The rest he left for his cows to graze on. How many acers of land do the cows have to graze on?

Make sure you have an equation, model, and a description of how you solved the problem.

3. A baker is going to triple his cake recipe. If the original recipe calls for two-thirds cup of oil, how much oil will he need?

Make sure you have an equation, model, and a description of how you solved the problem.

4. Johnny is planning his birthday party. He is ordering 16 pizzas. Each pizza has 8 slices. If $\frac{1}{4}$ of the pizzas have pepperoni on them, how many slices of pepperoni pizza will he have?

Make sure you have an equation, model, and a description of how you solved the problem.

5. On Monday, Suzzie walked her dog $\frac{7}{8}$ of a mile. On Tuesday she walked him $\frac{1}{2}$ of a mile. On Wednesday and Thursday she only walked $\frac{1}{4}$ of a mile. How far did she walk if she during those four days?

Make sure you have an equation, model, and a description of how you solved the problem.

6. John bought 7 yards of wood. $\frac{4}{5}$ of the yards were already stained. The other part still had to be stained. How much wood will John need to stain himself?

Make sure you have an equation, model, and a description of how you solved the problem.

7. 20 students are in a classroom. $\frac{3}{5}$ of them are wearing red to cheer on the Falcons for their playoff game. How many students are wearing red?

Make sure you have an equation, model, and a description of how you solved the problem.

8. Kawon gets nine dollars a week for allowance. He decides to save $\frac{2}{3}$ of his money so he can pay half of the cost of summer camp. If camp cost \$100, how many weeks will it take him to be able to pay half of it?

Make sure you have an equation, model, and a description of how you solved the problem.

9. Sally planted a garden with $\frac{3}{4}$ of the flowers being lilies. The rest of the seeds were daises. When the lilies came up $\frac{1}{4}$ were pink and the rest were white. If she planted 16 seeds how many were daises, how many were pink lilies, and how many were white lilies?

Make sure you have an equation, model, and a description of how you solved the problem.

10. Lydia has to finish her 215 page book by Friday. If today is Wednesday and she reads $\frac{2}{5}$ of the book every day, will she be able to finish it on Friday?

Make sure you have an equation, model, and a description of how you solved the problem.

11. Nate got five times as much candy as Susan at the Easter Egg Hunt. If Susan got two-fifths of a bag of candy, how much did Nate get?

Make sure you have an equation, model, and a description of how you solved the problem.

12. In the first hour they were open, Dunkin Donuts sold 12 dozen donuts. Of the donuts sold one-fourth were chocolate, one-third were sprinkles, one-sixth were cream filled, and the rest had sprinkles. How many sprinkle and chocolate donuts were sold?

Make sure you have an equation, model, and a description of how you solved the problem.

13. There are 75 guest coming to a wedding. $\frac{1}{3}$ of the guest are females, and $\frac{2}{5}$ are male. The rest are children. If 8 chairs are placed around a children's table, how many tables will be needed to sit all the children?

Make sure you have an equation, model, and a description of how you solved the problem.

14. Farmer Nikki has land that is $\frac{3}{4}$ of a square mile by 5 square miles. Farmer James has land that is $\frac{1}{2}$ a square mile by 6 square miles. Who has the largest land? How much more do they have?

Make sure you have an equation, model, and a description of how you solved the problem.

15. A recipe calls for $\frac{1}{4}$ cup of flour, $\frac{1}{2}$ cup of oil, $\frac{3}{4}$ cup of water, $\frac{1}{2}$ teaspoon of cinnamon, and $\frac{1}{2}$ cup of sugar. If the cook quadruples the recipe, what is the total amount of liquid ingredients he will use?

Make sure you have an equation, model, and a description of how you solved the problem.

16. Briella collected $\frac{2}{3}$ a bin of recyclables. Katyln collected 3 times as much and Drew 5 times as much as Briella. How many more bins of recyclables did Drew collect than Katyln?

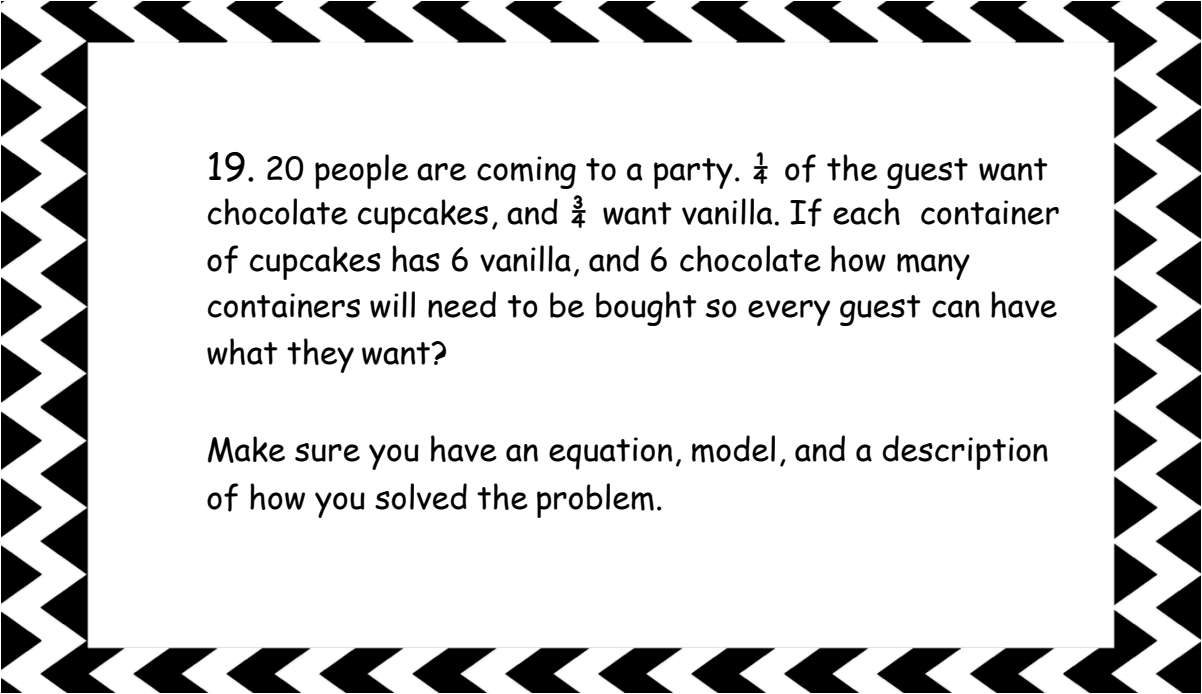
Make sure you have an equation, model, and a description of how you solved the problem.

17. Shannon is allowed to watch $\frac{3}{4}$ an hour of TV and then play games on her computer for $\frac{2}{3}$ of an hour each day. How much screen time (computer and TV combined) is she allowed a week?

Make sure you have an equation, model, and a description of how you solved the problem.

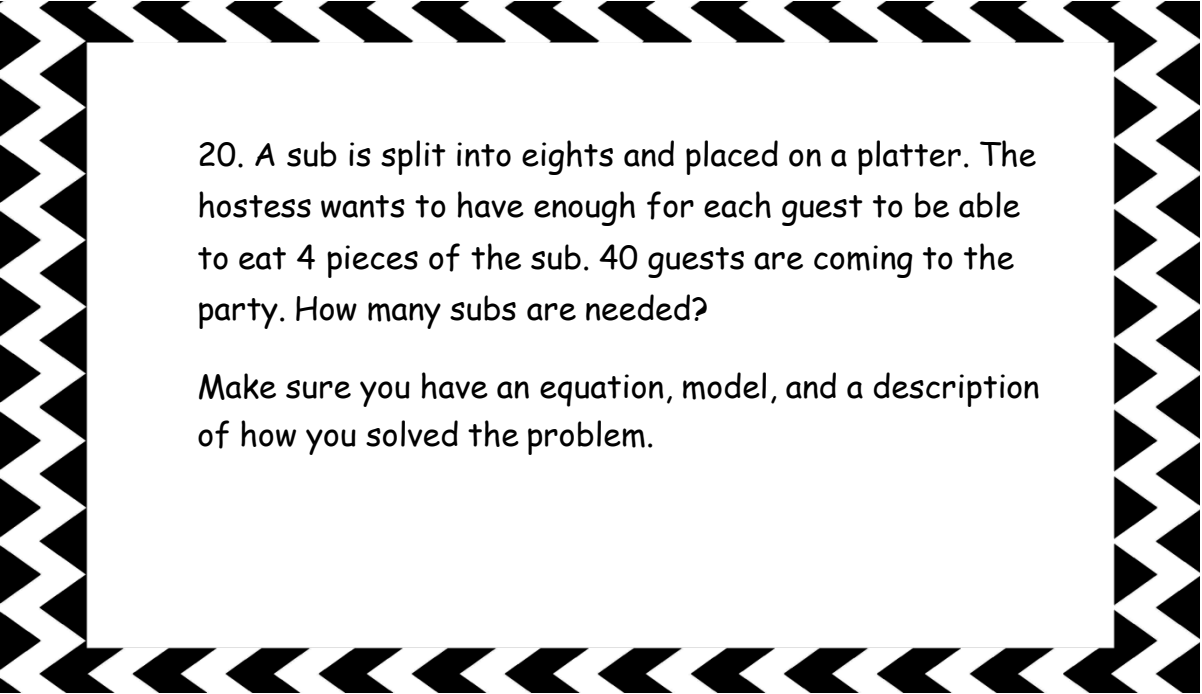
18. Sam drinks three-fifths of a gallon of water a day. How much water does he drink in 15 days?

Make sure you have an equation, model, and a description of how you solved the problem.



19. 20 people are coming to a party. $\frac{1}{4}$ of the guest want chocolate cupcakes, and $\frac{3}{4}$ want vanilla. If each container of cupcakes has 6 vanilla, and 6 chocolate how many containers will need to be bought so every guest can have what they want?

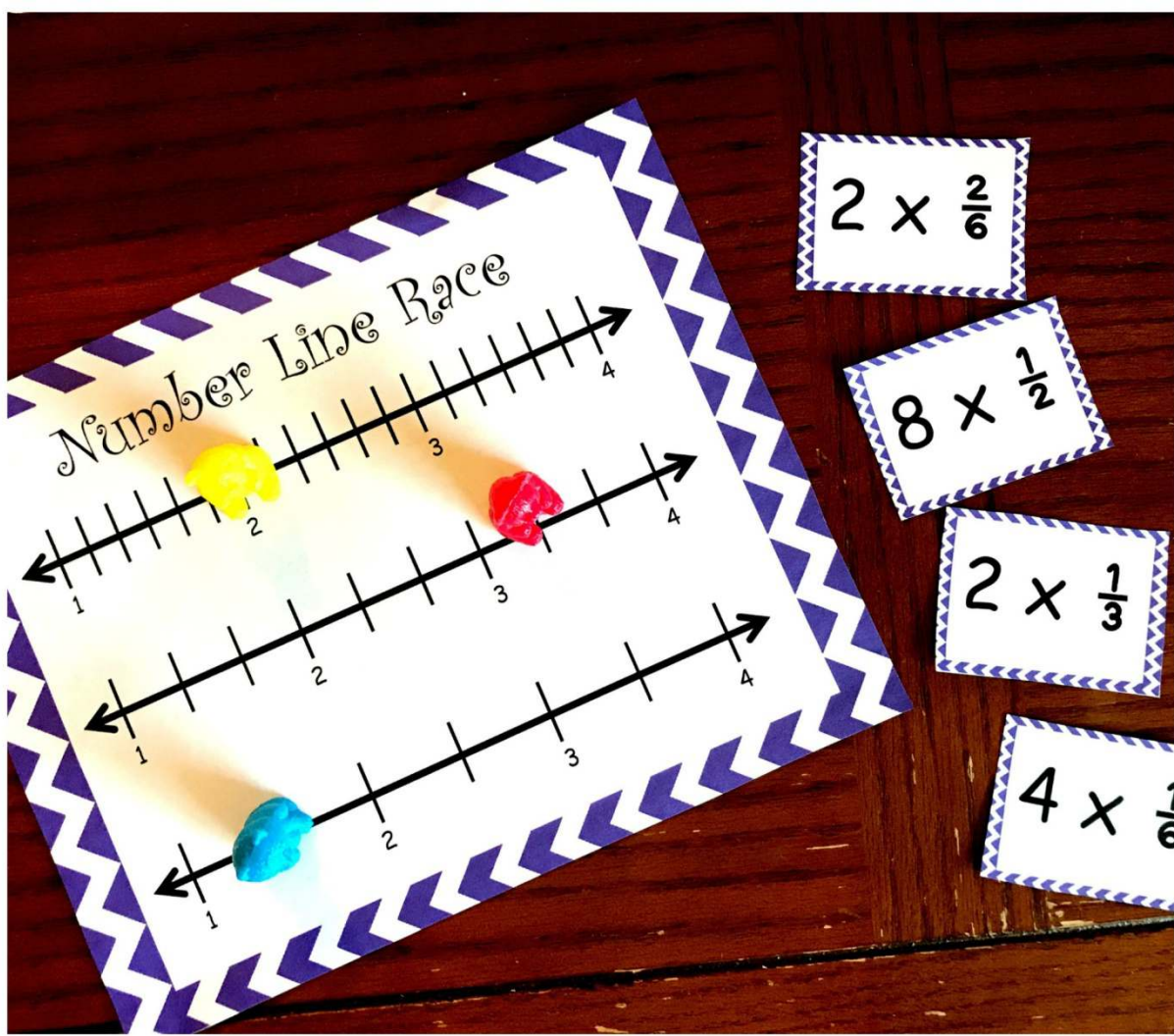
Make sure you have an equation, model, and a description of how you solved the problem.



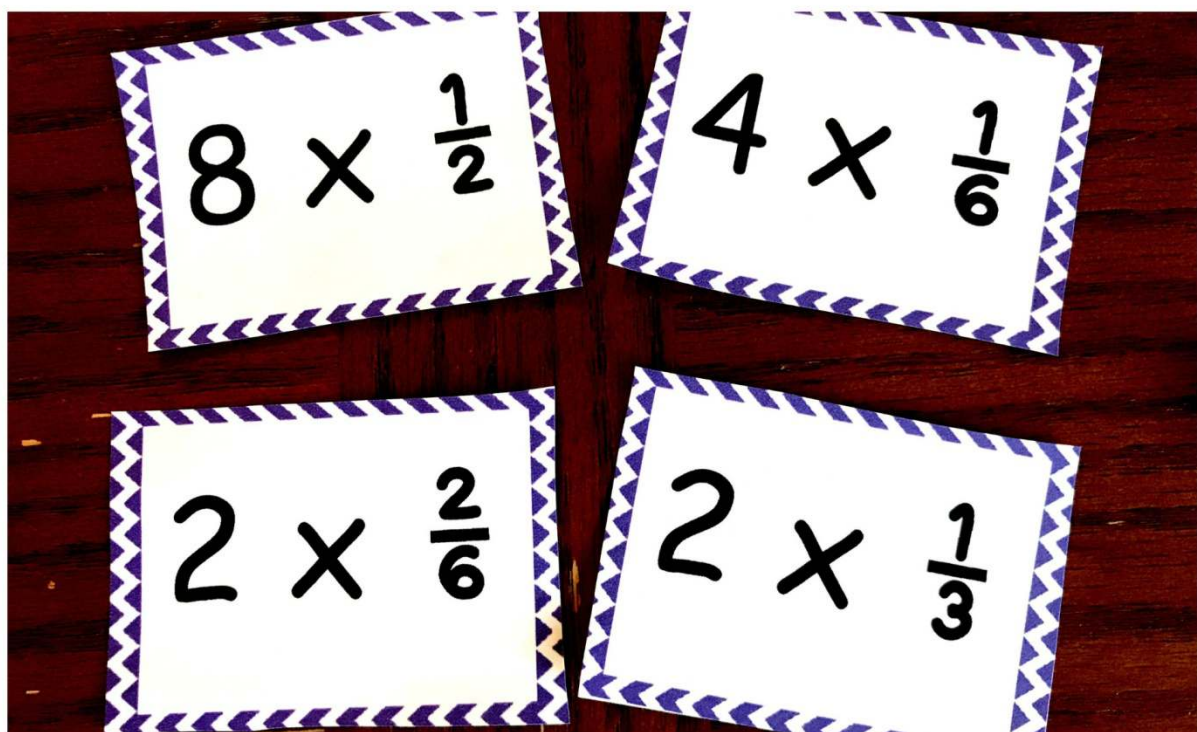
20. A sub is split into eights and placed on a platter. The hostess wants to have enough for each guest to be able to eat 4 pieces of the sub. 40 guests are coming to the party. How many subs are needed?

Make sure you have an equation, model, and a description of how you solved the problem.

Problem	Answers
1	Answers will vary one example may be $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$
2	3 acers
3	2 cups of oil
4	32 slices of pizza
5	1 $\frac{7}{8}$ miles
6	1 $\frac{2}{5}$ yards
7	20 students
8	9 weeks
9	3 pink lilies, 9 white lilies, 4 daises
10	Yes! She will read 86 pages on Wednesday, 86 pages on Thursday, and 43 on Friday.
11	2 bags of candy
12	36 chocolate and 36 sprinkles = 72 donuts
13	20 kids so 3 tables are needed
14	Nikki has $\frac{3}{4}$ a square mile more
15	5 cups
16	1 $\frac{1}{3}$ more
17	9 hrs and 55 min
18	9 gallons
19	3 containers
20	20 subs



Multiplying Fractions
by Whole Numbers
GAME



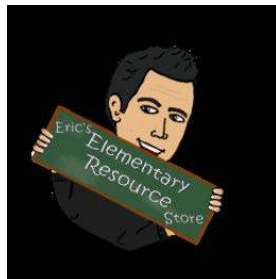
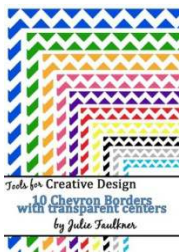
Number Line Multiplication

Prep Work -

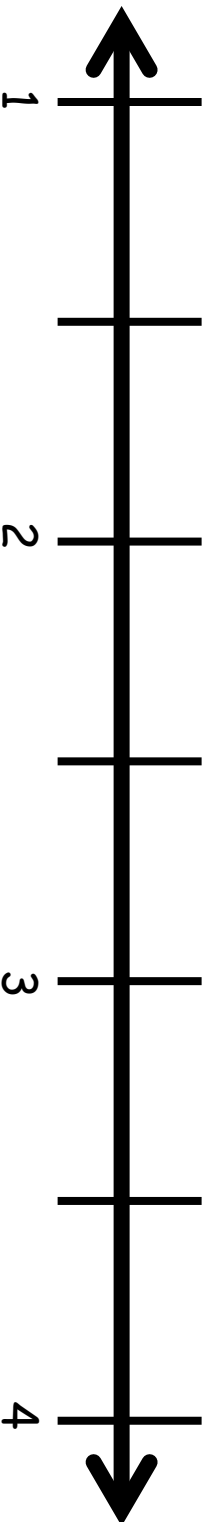
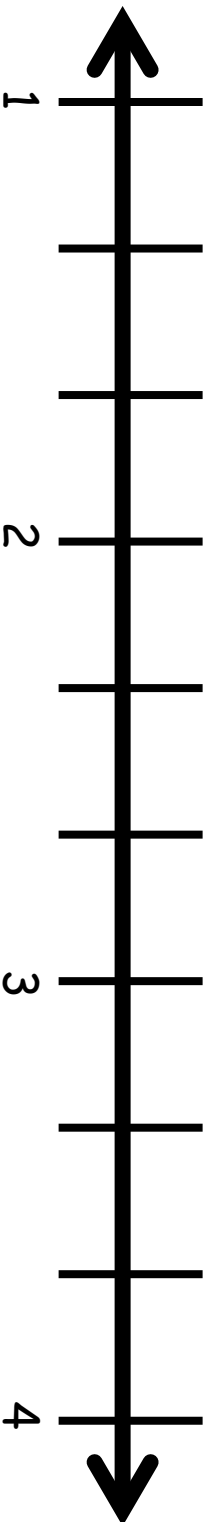
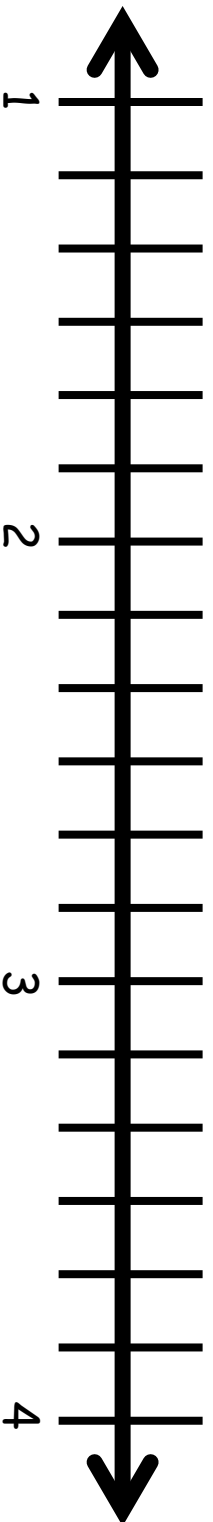
1. Print off game boards and fraction cards
2. Gather up 6 game markers and white board and dry erase markers to show work.

Directions -

1. Player one draws a card and gives the answer. Player two checks to verify that he or she has given the correct answer. If the correct answer is given, player one may move up that many spaces on a number line that matches the answer. Example: If the answer is $1 \frac{2}{3}$, the player may only move up $1 \frac{2}{3}$ on the number line divided into thirds. If the answer is $1 \frac{3}{6} = 1 \frac{1}{2}$ and the player gave BOTH answers, the player may choose to move up on the line divided into sixths or the line divided into halves.
2. Player two then take his or her turn. Player two draws a card and gives the answer. Player one checks to verify that he or she has given the correct answer. If the correct answer is given, player one may move up that many spaces on a number line that matches the answer. (Remember that you may only move up on a number line if that answer is on your paper or white board.)
3. Players will continue to take turns until one player is able to get all three markers to the
4. The final moves must be exact moves. Your answer cannot be $\frac{5}{6}$ and you only move $\frac{3}{6}$ to get to the 4.



Number Line Race



$$2 \times \frac{1}{2}$$

$$3 \times \frac{1}{2}$$

$$4 \times \frac{1}{2}$$

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

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

$$7 \times \frac{1}{2}$$

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

$$1 \times \frac{1}{2}$$

$$2 \times \frac{1}{3}$$

$$1 \times \frac{1}{3}$$

$$3 \times \frac{1}{3}$$

$$4 \times \frac{1}{3}$$

$$1 \times \frac{2}{3}$$

$$2 \times \frac{2}{3}$$

$$3 \times \frac{2}{3}$$

$$4 \times \frac{2}{3}$$

$$1 \times \frac{1}{6}$$

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

$$1 \times \frac{3}{6}$$

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

$$3 \times \frac{1}{6}$$

$$2 \times \frac{3}{6}$$

$$2 \times \frac{2}{6}$$

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

$$3 \times \frac{3}{6}$$

$$3 \times \frac{2}{6}$$

$$5 \times \frac{1}{6}$$

$$1 \times 5 = 5$$

$$1 \times 4 = 4$$

$$5 \times 1 = 5$$

$$2 \times 5 = 10$$

$$2 \times 4 = 8$$

$$4 \times 1 = 4$$

$$3 \times 5 = 15$$

$$3 \times 4 = 12$$

$$5 \times 2 = 10$$