

# Fun with Math Fluency

## TEKS Resource System Conference 2018

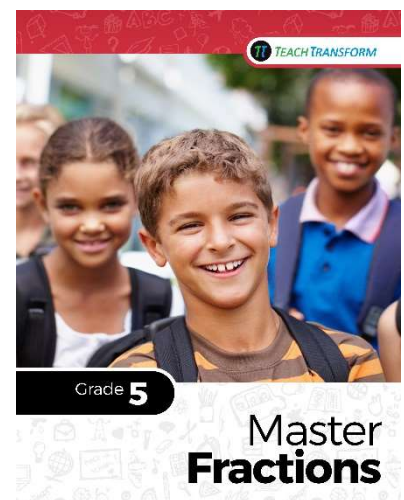
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## 3 – A Fluency Game



### Purpose

3, the game, builds fluency with the number 3, increases attention to detail, teaches students to listen to each other, and creates or reinforces a classroom culture where mistakes are okay.



### Why?

Building fluency doesn't have to be boring or scary. This activity creates a team atmosphere where students root for each other and the game ends when the whole class is successful. It's a great way to get everyone to participate and help your students get to know each other.



### Setting Up the Activity

Ask students to stand up and make a circle.



### How to Do the Activity with Your Students

1. Explain the rules.
  - No one can say a number where any of the digits are 3.
  - No one can say a number that is a multiple of 3.
  - Instead of saying the number, clap your hands.
2. Start with the teacher and go clockwise around the circle. Count from 1. Clap instead of saying numbers that have a digit of 3 or are a multiple of 3.
3. If someone makes a mistake, start over at 1 with that person.
4. The game ends when the class can count to 30 without making a mistake.



### Options

This game can be played with any number. As students are learning their multiplication facts, use the fact families that you are practicing. Once students “know” their facts, vary the game, changing the target number. The game ends when students can go around the circle without making a mistake to  $10 \times$  the number.

This game is fun for any age group and can be played at moment's notice. For older students, if you identify a set of multiplication facts that students don't know, choose that number as the target.

*1, 2, Clap, 4, 5, Clap, 7, 8, Clap, 10, 11, Clap,  
Clap, 14, Clap, 16, 17, Clap, 19, 20, Clap, 22,  
Clap, Clap, 25, 26, Clap, 28, 29 Clap!*

## Fizz – Buzz



### Purpose

Fizz – Buzz helps students identify the multiples of the numbers 3 and 5.



### Why?

In elementary school, students use multiples in their work with fractions – finding common denominators and simplifying fractions. In middle and high schools, students need to be able to recall multiples quickly. Multiples continue to be used with fraction operations. But they also appear in slopes, ratio and proportion, factoring, and simplifying complex fractions.



### Setting Up the Activity

Ask students to stand in a circle.



### How to Do the Activity with Your Students

1. Explain the rules.
  - You can't say a number that is a multiple of 3 or 5.
  - Instead of saying a multiple of 3, say "Fizz".
  - Instead of saying a multiple of 5, say "Buzz".
  - If a number is a multiple of both 3 and 5, say "Fizz – Buzz".
2. Start with the teacher and go clockwise around the circle. Count from 1.
3. If someone makes a mistake, start over at 1 with that person.
4. The game ends whenever the fun winds down.



### Options

Write the numbers on the board. Point to them as you go around the circle. This will help students not lose their place in counting.

Once your students become experts in Fizz – Buzz, move on to Fizz – Buzz – Zip – Zap. (See pg. 3.)

1, 2, Fizz, 4, Buzz, Fizz, 7, 8, Fizz, Buzz, 11, Fizz,  
13, 14, Fizz-Buzz, 16, 17, Fizz, 19, Buzz, Fizz, 22,  
23, Fizz, Buzz, 26, Fizz, 28, 29, Buzz, ...

## Fizz – Buzz – Zip – Zap



### Purpose

Fizz – Buzz – Zip - Zap helps students identify the multiples of the numbers 3, 5, 7, and 11.



### Why?

In elementary school, students use multiples in their work with fractions – finding common denominators and simplifying fractions. In middle and high schools, students need to be able to recall multiples quickly. Multiples continue to be used with fraction operations. But they also appear in slopes, ratio and proportion, factoring, and simplifying complex fractions.



### Setting Up the Activity

Ask students to stand in a circle.



### How to Do the Activity with Your Students

1. Explain the rules.
  - You can't say a number that is a multiple of 3, 5, 7, or 11.
  - Instead of saying a multiple of 3, say "Fizz".
  - Instead of saying a multiple of 5, say "Buzz".
  - Instead of saying a multiple of 7, say "Zip".
  - Instead of saying a multiple of 11, say "Zap".
  - For numbers that are a multiple of 3 and 5, say Fizz-Buzz. For numbers that are a multiple of 3 and 7, say Fizz-Zip, etc.
2. Start with the teacher and go clockwise around the circle. Count from 1.
3. If someone makes a mistake, start over at 1 with that person.
4. The game ends whenever the fun winds down.



### Options

This game is hard! Here are the ways to scaffold the play...

- Play Fizz – Buzz. Then Fizz – Buzz – Zip. Then Fizz – Buzz – Zip – Zap.
- Write it in groups. Then play where everyone says the all the numbers. Then play with each person saying one number or word(s).

1, 2, Fizz, 4, Buzz, Fizz, Zip, 8, Fizz, Buzz, Zap, Fizz,  
13, Zip, Fizz-Buzz, 16, 17, Fizz, 19, Buzz, Fizz-Zip,  
Zap, 23, Fizz, Buzz, 26, Fizz, Zip, 29, Fizz-Buzz, ...

## I ♥ Math!



### Purpose

I ♥ Math! builds fluency in operations. This game has endless variations.



### Why?

This game builds speed in operations without the pressure of a timed test.



### Setting Up the Activity

Ask students to stand in groups of 2. Decide what the play will be. Here are some examples:

- Add the numbers.
- Subtract the numbers.
- Add the numbers and tell what number is needed to make 10.
- Multiply the numbers.
- Add the numbers. Then multiply by 7 (or any other number).
- Add the numbers. Then multiply by  $\frac{2}{3}$ .
- Have one person be + and one person be -. Add, subtract, or multiply the integers.
- Have students use both hands to make the numbers.
- Ask your students to come up with the rule.



### How to Do the Activity with Your Students

This activity is played like Paper – Rock – Scissors.

1. On “Show”, each student uses their fingers on one hand to show a number.
2. Students follow the rule you’ve set.
3. Race to see who can say the answer first. As the rules get more complicated or if the operations are challenging, students will probably begin to say the answers together.



### Options

The variations in Setting Up the Activity are the tip of the iceberg. Be creative. You can use this game to practice almost any operation. Choose operations or processes that your students struggle with.

Some variations for groups of 3:

- Add the numbers.
- Add the largest and smallest. Then subtract the number in the middle.
- Multiply the numbers.
- Multiply the two largest numbers. Then subtract the smallest one.
- Assign each person a “sign”. Then add and/or subtract any combination of integers.
- Ask your students to come up with the rule.

## All Down



### Purpose

All Down builds fluency in math operations.



### Why?

This game builds speed in operations without the pressure of a timed test.



### Setting Up the Activity

- Make 1 set of digit cards (0-9) per student or per pair of students. You may also use playing cards. Use the Ace for 1 and Joker for 0.
- Gather 2 dice or 1 double dice per game.



### How to Do the Activity with Your Students

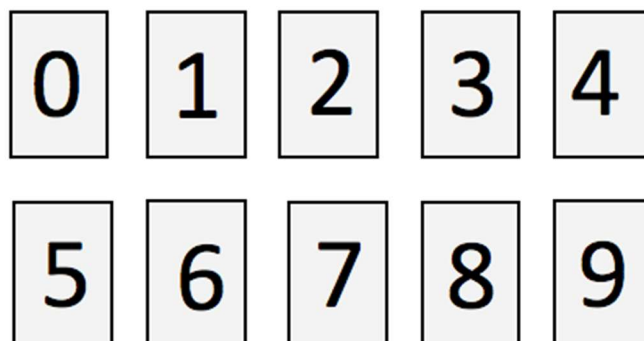
1. Have students sit in pairs or groups of 4. If students sit in groups of 4, they will play as partners. Hand out the digit cards and the dice.
2. Each player or pair places the digit cards face up from least to greatest.
3. Player 1 rolls the dice and adds the pips.
4. Turn face down the digit cards that make the sum or any combination of digit cards that make the sum. If a number is rolled that cannot be made from the face up digit cards, the player must turn the digit(s) face up.
5. Player 2 repeats the process.
6. The first player to get all the digits face down is the winner.



### Options

Variation with Integers:

- Students can choose any number to be positive or negative. Then they add to get the sum on the dice. They may need scratch paper for this.
- Students can choose any number to be positive or negative. Then they subtract to get the difference on the dice. They will need scratch paper for this.
- Students can choose any number to be positive or negative. They can add or subtract to get the number on the dice. They will need scratch paper for this.



Adapted from *Establishing Critical Math Routines: Best Practices with the Texas Standards* by Kim Sutton.

## All Factors Down



### Purpose

All Factors Down builds fluency in recognizing factors.



### Why?

This game builds fluency in identifying the factors of numbers. This skill is critical from elementary to Algebra 2.



### Setting Up the Activity

- Make 1 set of digit cards (1-9) per student or per pair of students. You may also use playing cards. Use the Ace for 1.
- Gather 1 decahedron double dice or 2 decahedron dice per game.



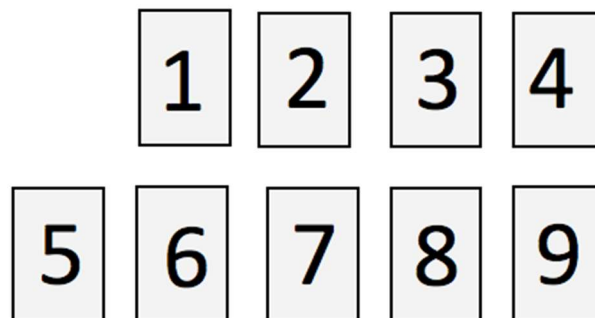
### How to Do the Activity with Your Students

1. Have students sit in pairs or groups of 4. If students sit in groups of 4, they will play as partners. Hand out the digit cards and the dice.
2. Each player or pair places the digit cards face up from least to greatest.
3. Player 1 rolls the dice and makes a 2-digit number. If using 2 decahedron dice, read the dice from right to left. Left is tens and right is ones. If using 1 double decahedron die, the inside die is the ones and the outside is the tens.
4. Turn face down one factor of that numbers and explain why that number is a factor. For example, Player 1 rolls 34. She would turn over 2 because  $2 \times 17 = 34$ . If a number is prime, then the 1 card can be turned over. If the player rolls a number where the factors are already turned over, they must turn one of the factors face up.
5. Player 2 repeats the process.
6. The first player to get all the digits face down is the winner.



### Options

If students are still struggling with multiplication facts, allow them to use a multiplication chart as an aid **ONLY** when they absolutely need it. Have them record which facts they looked up so that they can practice those facts later.



Adapted from *Establishing Critical Math Routines: Best Practices with the Texas Standards* by Kim Sutton.

## Race the Deck



### Purpose

Race the Deck builds fact fluency.



### Why?

This game builds speed in operations without the pressure of a timed test.



### Setting Up the Activity

- Make 1 set of digit cards (1-9) per pair of students. You may also use playing cards. Remove the face cards. Use the Ace for 1 and Joker for 0.
- Gather 1 timer for each pair or have students use their phones.
- Decide what rule students will work on.



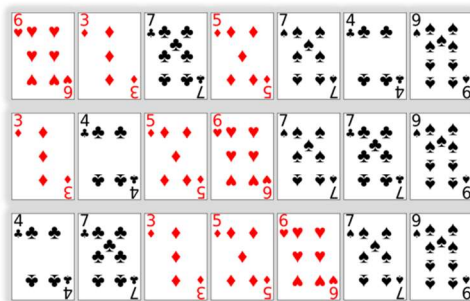
### How to Do the Activity with Your Students

1. Have students sit in pairs. Hand out the cards. Ask students to shuffle the cards and lay them face down.
2. Player 1 plays. Player 2 times Player 1.
3. Player 1 turns a card over, says the number along with the rule, and gives the answer. If Player 1 is correct, they keep going. If not, they figure out the answer. For example, if the rule is  $+$  (-4), Player 1 says  $2 + (-4) = -2$ . If Player 1 is correct, Player 2 says, "Go!". Player 1 continues to turn over the cards, state the equation, and give or find the correct answer until they run out of cards.
4. Player 2 follows the same process.
5. The winner is the person who races the deck in the least amount of time.



### Options

- If students are still struggling with multiplication facts, allow them to use a multiplication chart as an aid **ONLY** when they absolutely need it. Have them record which facts they looked up so that they can practice those facts later.
- Rather than using a timer, the students can share a set of cards and alternate turns, stating the equation, and giving the answer. Have them record the equations and answers.
- You may wish to provide number lines for students to use as needed.



Adapted from *Establishing Critical Math Routines: Best Practices with the Texas Standards* by Kim Sutton.