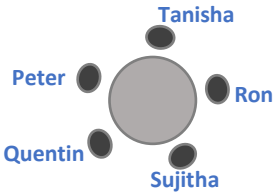
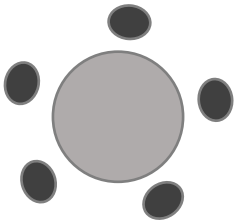
Math Challenge #2

First Name: _____	**Last Name:** _____	**Grade:** _____
Teacher: _____	**Parent's email:** _____	

Birthday

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

		Answer
1.	Today is Marissa's birthday. Last year, her birthday cake looked like the picture below. How old is she this year? 	*9 [years old]*
2.	Tom turned 5 years old 4 days ago. If today is Sunday, what day was Tom's birthday?	*Wednesday*
3.	Below are puppies that are 2 months old, 3 months old, 5 months old, and 7 months old. Find the age of each puppy using the clues below:  Kiki with a red bandana  Bonnie with a green bandana  Rusty with a pink bandana  Romeo with a blue bandana • The youngest puppy wears a pink bandana. • The oldest puppy wears a green bandana. • Romeo is the second youngest puppy. *Rusty is 2 months old (the youngest).* *Bonnie is 7 months old (the oldest).* *Romeo, who is the second youngest, must be 3 months old.* *That leaves Kiki who must be 5 months old.*	*Kiki's age: 5 months old* *Bonnie's age: 7 months old* *Rusty's age: 2 months old* *Romeo's age: 3 months old*
4.	Miranda is 7 years old. Her brother is two years younger than her. If you add Miranda's age, her brother's age and their cat's age, you will get 15. How old is their cat?	*3 [years old]*
5.	Myra's is going to be 5 years old. Her mom baked a cake and prepared 5 candles. They are red and blue candles. Myra draws all the different combinations using red and blue candles could be on her birthday cake. For example, 5 red candles, 4 red and 1 blue candles, 3 red and 2 blue candles, etc. Help Myra record the information and find how many different ways could there be.  *5 red, 0 blue* *2 red, 3 blue* *4 red, 1 blue* *1 red, 4 blue* *3 red, 2 blue* *0 red, 5 blue*	*6 [ways]*
6.	For his birthday, Alexander is going to invite 5 friends to the party. They will get 3 candy bars and 2 balloons each to take home. How many candy bars and balloons will Alexander need? He will need (3 x 5) or 15 candy bars and (2 x 5) or 10 balloons.	*15 [candy bars] and 10 [balloons]*

7.	Samuel invited nine children to his birthday party. They are going to play a game in pairs. Each pair will need a balloon and 4 strings. How many balloons and strings will they need? *Since there will be 10 children (including Samuel), there will be 5 pairs. They will need 5 balloons and 5 x 4 = 20 strings altogether.*	*5 [balloons] and 20 [strings]*
8.	At a birthday party, Peter, Quentin, Ron, Sujitha, and Tanisha are sitting around a table. Quentin sits in the chair between Peter and Sujitha. Tanisha is <u>not next</u> to Sujitha. Who is sitting on either side of Tanisha? *We know that Quentin is sitting between Peter and Sujitha.* *Since Tanisha is not next to Sujitha, she must be next to Peter.* *This leaves only one spot of Ron*  	*Peter and Ron*
9.	Kyra received 7 shiny coins for her birthday from Grandma Jean. The coins add up to $0.48. There was at least one coin of each type. What coins did she receive? ___ quarter(s) ____ dime(s) ____ nickel(s) ____ penny(pennies)	*1 quarter* *1 dime* *2 nickels* *3 pennies*
10.	Find Cynthia's birthday based on the following clues. • Cynthia's birthday is on the 31st day of the month. • Her cousins, who is only 5 months younger than her will celebrate his birthday on the day of Halloween.	*May 31*
11.	Annie is turning 8 years old this year. Joshi is three times as old as Daniel is this year. If their total age is 60 years, how old is Joshi? *Annie is 8* *Daniel* ■ *Joshi* ■■■ } 60 *1) 60 – 8 = 52 is Daniel and Joshi together* *2) 52 ÷ 4 = 13 years old is Daniel* *3) 13 × 3 = 39 years old is Joshi*	*39 [years old]*
12.	Emma got a jar of candies for a birthday present. She and her friends ate half the candies on her birthday. The next day, they ate three-quarters of the number of candies that they had eaten the day before. There were eight candies left. How many candies were in the jar to begin with? ***Draw the model. 8 candies*** *make 1/8 of the jar. Thus, there were 64 candies to begin with.* 	*64 [candies]*
13.	March 28, 2014 was a Friday. Timothy celebrated his 10th birthday on that day. On February 24, his parents celebrated their 15 years wedding anniversary. What day of the week was February 24, 2014? *2014 was not a leap year, so there were 28 days in Feb. The number of days from Feb 24 to Mar 28 would be 32 days. 32 ÷ 7 = 4R4.* *Since Feb 28, 2014 was also a Friday, if we work backward, we will find Feb 24, 2014 must have been Monday.*	*Monday*

14. Twins Ella and Lucy's parents have created a birthday gift policy, whereby Ella receives $10 on her 10th birthday, and each birthday thereafter, she gets a $2 raise. So, on her 11th birthday, she received $12, and on her 12th birthday, she received $14, and so on, until her 30th birthday.
Their parents gave Lucy, on the other hand, a penny on her 10th birthday. When she turned 11, she received two pennies, and when she turned 12, she received four pennies.
When the twins expressed their concerns that this was not a fair policy. Do you think it is a fair policy? Why?
Hint: Make an organized chart.

No, it is not fair.

By their 30th birthday, Ella would have received much less amount of money than Lucy.

Age	10	11	12	13	14	15	16	17	18
Ella	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00
Lucy	0.01	0.02	0.04	0.08	0.16	0.32	0.64	1.28	2.56

Age	19	20	21	22	23	…	28	29	30
Ella	28.00	30.00	32.00	34.00	36.00	…	46.00	48.00	50.00
Lucy	5.12	10.24	20.48	40.96	81.92	…	2621.44	5242.88	10,486.76

If we make a chart, it would be clear that Lucy would be receiving more money after she turns 22 years old.

15. Tony was celebrating his 10th birthday on October 1, 2019. It was a Tuesday. What day would it be when he is turning 13 years old?

Saturday

3 years later, means there will be 365 + 366 (2020 is a leap year) + 365 = 1096 days,
1096 ÷ 7 = 156 R 4, or 156 full weeks and 4 more days, so it will be Tue + 4 = Saturday

16. Andy has birthday on the same day with Nate. Andy is three times Nate' age. In ten years, Andy will be twelve years older than Nate. What are their ages now?

Nate is 6 years old

Andy is 18 years old

Act it out. The difference between their ages is always 12 years, because every year they are both getting 1 year older.

Nate's age now:
Andy's age now:

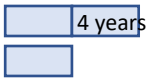
Two of the units worth 12 years. So, 1 unit = 6 years.
Nate must be 6 years old, and Andy, who is 12 years older than Nate, must be 18 years old.

17. Ryan is now 4 years older than Erik.
Five years ago, Ryan was twice as old as Erik. How old was Ryan 5 years ago?

8 years old

The difference in age is always the same 4 years, because every year both kids are getting older by exactly 1 year.

Ryan's age 5 years ago:
Erik's age 5 years ago:



Five years ago, Ryan was 8 years old.

18. Lynn was born in 2014. Lynn saved a nickel every day starting at the age of 4. If today, October 1, 2020 and Lynn has accumulated $47.55, what date was she born?

February 23, 2014

1) *$47.55 ÷ 0.05 = 951 days since she started to save money*
2) *From January 1st to October 1st, 2020: 31(Jan) + 29 (Fab. 2020 is a leap year) + 31 (Mar)+ 30 (Apr) + 31 (May) + 30 (Jun) + 31 (Jul) + 31(Aug) + 30 (Sep) + 1 (Oct) = 275 days in 2020*
3) *951 – 275 – 365 (2019 year) = 311 days left to count back in 2018*
4) *365 – 311 = 54 days from the beginning of 2018 is her birthday*
5) *54 -31(Jan) = 23 of February 2018 she started to collect money. So, she was born on February 23, 2014.*

Solution is available on October 23, 2020 at www.mathinaction.org