2.1 Modeling with expressions and equations.

1. Marissa has decided to start babysitting on the weekends to earn extra money. She thinks that ten dollars an hour is a fair amount to ask for. Let $h$ represent the number of hours that Marissa will babysit for. Write an expression that models the amount of money she would earn for an entire night of sitting.

2. After talking to a friend, Marissa decides that she is not charging enough. She had decided to charge $12 per hour plus a $10 flat fee (to cover travel expenses and such). Write an expression that models the amount of money she would earn for an entire night of sitting with her new prices. (you should still use $h$ to represent the number of hours Marissa sits)

3. Marissa babysat last Saturday night and made $46. Use your expression from number 2 and the total she made on Saturday night to write an equation that models this situation.

4. Solve your equation from number 3 to determine the number of hours that Marissa worked on Saturday. Be sure to write your answer in a full sentence.

5. The next weekend Marissa is asked to babysit for a family with five children! She thinks that $12 per hour is not enough to watch five kids! So she has decided to charge the $10 flat fee, $12 per hour for a maximum of 2 children, then add $5 per extra child. Let $h=$ number of hours worked and let $c=$number of extra children over 2. Write an expression that models the amount of money Marissa will earn for an entire night of sitting.

6. Marissa babysat last night for the Smith family and earned $80 in total. Use your expression from number 5 and the total she made on last night to write an equation that models this situation.

We cannot solve this equation because it has two variables.

7. Use your equation from number 6 and the fact that Marissa babysat for 5 hours last night to determine the total number of children in the Smith family.
Write an **equation** that models each of the following situations. Be sure to **DEFINE a variable** if you need to!

8. The sum of negative ten and half of a number is zero.

9. Fourteen is equal to the difference between five and three times a number.

10. Solve your equation from #8:

11. Solve your equation from #9:

Consecutive numbers are #s that come one, right after the other like 2 and 3 or 78 and 79.

12. If n is the first number, what number do we need to add to n to get the next, consecutive number?

13. If x is the first number, what number is next? What number comes after that?

**Write an equation that models each of the following:**

14. The sum of 2 consecutive integers is 27.

15. The sum of 3 consecutive integer is 54.

16* The sum of 3 consecutive ODD integers is 21.

17 The sum of 3 consecutive EVEN integers is 72.