**Barron’s Let’s Review Regents – Algebra I**

# Chapter 9: Creating and Interpreting Equations from Real-World Scenarios

## 9.1 Creating and Interpreting Linear Equations

Many real-world scenarios can be modeled with two-variable linear equations. The scenarios generally have a fixed part, which is the same for every situation, and a variable part, which changes depending on the situation. These equations often resemble the slope-intercept form .

**Identifying the Fixed and Variable Parts of a Real-World Scenario**

**Interpreting Linear Equations**

When an equation has the form , *b* generally represents the *fixed* part and the *mx* is the *variable* part. The variable part is the part that changes depending on the value of *x*.

### Check Your Understanding of Section 9.1

1. Multiple-Choice
2. It costs $10 to go to the movies and $3 for each bag of popcorn. What equation relates the total cost © to the number of bags of popcorn purchased (P)?  
   **(1)**
3. A salad costs $6 for the lettuce and $2 for each topping. Which equation relates the total cost (C) to the number of toppings purchased (T)?  
   **(4)**
4. A tablet computer costs $400 and $2 for each app. Which equation relates to the total cost (C) to the number of apps purchased (A)?  
   **(4)**
5. An ice cream store collects $5 for each ice cream. At the end of the day, the store must pay $300 total for all the employees. Which equation relates the total amount of money remaining (M) after paying the employees the number of ice creams sold(I).  
   **(2)**
6. A cable TV plan costs $80 a month plus $10 extra for each premium channel. Which equation relates the monthly bill (B) to the number of premium channels ordered (C)?  
   **(2)**
7. Muhammad has saved $40. Each week he earns $15 delivering newspapers. Which equation relates the amount Muhammad has saved (S) to the number of weeks working?  
   **(3)**
8. Lydia wants to buy a DVD player and some DVDs. The equation that relates the total cost for the DVD player and N DVDs is   
   . What does the number in the equation represent?  
   **(1) The cost of the DVD player**
9. Amelia buys an empty sticker album and some sticker sheets. The equation that relates the total cost for the empty sticker album and N sticker sheets is   
   . What does the 0.75 in the equation represent?  
   **(2) The cost of each sticker sheet.**
10. Riley has a cell phone that requires a certain amount of money to be paid for each gigabyte of data. If the equation that relates the cost of the phone together with N gigabytes of data is , what is the cost of 1 gigabyte of data?  
    **(3) 5**
11. Colton is training to run a marathon. The first month he runs 1 mile a day. The second month he runs 3 miles a day. The third month he runs 5 miles a day. Which equation relates the number of months of training (M) to the distance he runs each day (D) in the Mth month?  
    **(4)**
12. Show how you arrived at your answers.
13. A teacher has a starting salary of $40,000 and each year she gets a $5,000 raise. Create an equation that relates her salary (S) to the number of years (Y) she has been working.
14. For a taxi ride, it costs a certain amount to get into the taxi and an additional amount for each mile driven. If the equation that relates the total cost (C) to travel M is . What do the numbers 2 and 4 represent?  
      
    2 represents the $2 cost per mile.  
    4 represents the $4 cost to get into the taxi.
15. A 5-foot tree was planted in the year 2000. This chart shows four sets of values where Y is the number of years since 2000 and H is the height of the tree in that year. Create an equation that relates H and Y.  
      
    Each year, the three feet each year.

|  |  |
| --- | --- |
| x | y |
| 0 | 5 |
| 1 | 8 |
| 2 | 11 |
| 3 | 14 |

1. Owen, who weighs 260 pounds, goes on a diet where he loses the same amount of weight each month. Below is a chart where M represents the number of months Own has been on the diet and W represents Owen’s weight after M months on the diet. Create an Equation that relates W and M.

|  |  |
| --- | --- |
| x | y |
| 0 | 260 |
| 1 | 258 |
| 2 | 256 |
| 3 | 254 |

1. Make up a real world situation that can be represented with the equation .  
     
   The cost of getting into a carnival is $20 and it costs $6 per ride.