**Task #1:**

1. Write about a real-life situation in which variable *y* depends on variable *x.* In other words, if y increases, so does x. How would it appear in a graph?

2. Now write about a real-life situation in which variable *y* decreases as variable *x* increases.

How would it appear in a graph?

3. In a coordinate graph of two related variables, when do the points lie in a straight line?

**Task #2:**

Margo is a librarian for the east branch of the Harrison City Library. Each year she adds new books,

both fiction and nonfiction, to the library’s collection. This year her budget limits her to no more than

75 new books. Library policy states that new fiction books can be no more than half the number of

nonfiction books.

1. If *x* represents the number of nonfiction books and *y* represents the number of fiction books, write

a system of inequalities that models Margo’s situation.



2. Graph this system of inequalities.

3. What information is revealed in your graph?

4. What is the greatest number of fiction books that Margo can buy this year?

**Task #3:**

Graph the region indicated by each pair of inequalities below.

1. *y* ≤ –2*x* + 7 and *y* ≥ 4*x* + 3 2. –3*x* + 2*y* > 6 and *y* ≤ –2*x* + 5



**Task #4:**

The temperature in Celsius of a block of hot metal as it cools is given by the function

*T*(*x*) = 95(1 – 0.45)x+ 20, where *x* is expressed in hours.

1. What is the starting temperature for this hot metal block?
2. What will the temperature be after 3 hours?
3. What will the temperature be when the block has finished cooling?

**Task #5:**

During their investigation of radioactive decay, a research group discovered that the equation

*f*(*x*) = 200(1 – 0.18)xfits their data. Unfortunately, one member of the group spilled coffee on the table

and made the data unreadable. Reconstruct what their table might have looked like using the chart

below. Explain what is being represented in the equation by 200 and 0.18.

|  |  |
| --- | --- |
| x | y |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |

**Task #6:**

A tennis ball has been dropped from the top of a tall building. The ball’s height in meters *t* seconds

after it is released can be represented by *h*(*t*) = –4.9*t2* + 150.

1. Find *h*(3) and explain what this represents in the situation described.

2. How much time will elapse (to the nearest .01 second) until the ball is at or less than 25 meters

above the ground?

3. When will the tennis ball hit the ground?