

RATIONAL EXPRESSIONS AND FUNCTIONS

PROBLEM 3: STRESS TEST

Ionization meters measure radiation emitting from a mass in millirems per hour (mR/hr). These meters are often used to check for radiation leaks in industrial facilities that use irradiation during the manufacturing process. Recently during a radiation safety check, a technician noticed that when one of the plant workers walked past the meter, readings became higher than normal and when the worker walked away, the readings became much lower. The presence of this worker was disrupting the safety inspection.

After talking with the worker, the technician learned that this worker had just undergone a stress test during which radioactive isotopes were injected into her to monitor blood flow to the heart. They decided to determine how far away the worker had to stand so that the safety inspection could proceed without interruption.

They set up the following investigation. A tape measure was extended on the floor. The technician held the ionization meter and the worker walked away from the meter. The technician recorded the radiation emitted. The results are shown below.

Distance from Meter in Feet	MR/hr
1	2
2	.95
3	.56
4	.33
5	.22
6	.17
7	.15
8	.11
9	.07
10	.07
11	.07
12	.04
13	.04
14	.04

- Construct a scatterplot of the data. Describe the graph.
- Write an equation that describes the decrease in radiation measured as the worker walks away from the ionization meter.
- How far must the worker walk before the ionization meter registers 0 mR/hr? Justify your reasoning.