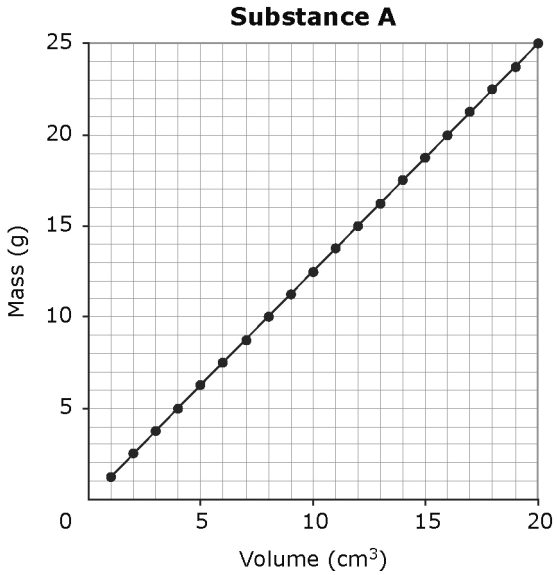
Chapter 9 Gifted and Enrichment Answers

1. Example: Graphing the number of people able to be seated versus the number of identical tables used and graphing cost versus the number of identical plants purchased are linear relations that would be appropriate to graph as discrete points. Data about things that are not reasonable to break into parts, such as people, tables, and plants should be graphed as discrete points. Graphing the height of a plant over time and graphing the temperature of water as it is heated are linear relations that would be appropriate to graph as straight lines. While specific measurements would be taken and plotted as points, it is appropriate to join the points creating a line because both height and temperature go through all values between those that are measured. The situation in #2 below is appropriate to graph as a line. The situation in #4 below is also appropriate to graph as a line because the numbers are very large and the sheer number of bottles would appear as a line when graphed.

2.

Volume (cm^3)	Mass (g)
1	1.25
2	2.50
3	3.75
4	5.00
5	6.25
6	7.50
7	8.75
8	10.00
9	11.25
10	12.50
11	13.75
12	15.00
13	16.25
14	17.50
15	18.75
16	20.00
17	21.25
18	22.50
19	23.75
20	25.00



b) Mass per volume is density.

3. Since the 95% acid solution has a volume of 25 cm^3,

V(acid) = 95% of 25
= 0.95 × 25
= 23.75

V(water) = 25 – 23.75
= 1.25

For a solution to be 50% acid, the volume of acid and water must be the same. Since the volume of acid is 23.75 cm^3 and water is being added, the solution will be 50% acid when the volume of water is also 23.75 cm^3. The volume of the 50% solution will be 2 × 23.75, or 47.50 cm^3.

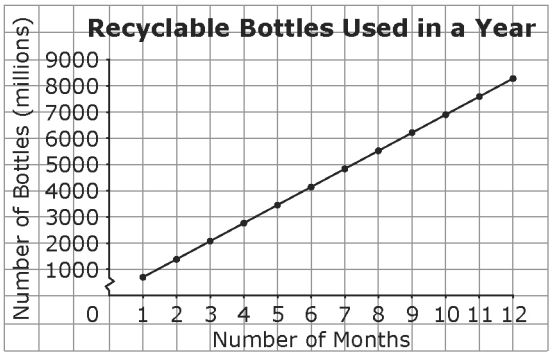
Water Volume (cm^3)	Time (s)
1.25	0
3.50	1
5.75	2
8.00	3
10.25	4
12.50	5
14.75	6
17.00	7
19.25	8
21.50	9
23.75	10

In 10 s the solution will be 50% acid.

Chapter 9 Gifted and Enrichment Answers continued

4. Example: Graph the cumulative consumption of water in bottles over 12 months.

Number of Months	Number of Bottles (millions)
1	690
2	1380
3	2070
4	2760
5	3450
6	4140
7	4830
8	5520
9	6210
10	6900
11	7590
12	8280



8 280 000 000 is a lot of bottles to be recycled. If 23 000 000 people filled reusable bottles from the tap daily, there would be 23 000 000 bottles in use over the year and they would still be reusable for the next 12 months.