

1. A town has an initial population of 70000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	69977	69965	69937	69925	69897	69885	69857	69845	69817

2. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that all parts of the path are equal length.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 6 mph, 10 mph when traveling down a hill, and 8 mph when traveling along a flat portion.

3. For the information provided below, construct a linear model that describes her total budget, B , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$600 educational expense each year. Before college, Aubrey saved up \$10000. She knows she will need to pay \$1200 in rent a month, \$50 for food a week, and \$48 in other weekly expenses.

4. What is the **best** way to describe the domain of the scenario below?

Chemists commonly create a solution by mixing two products of differing concentrations together. A 10% and 30% solution can make an acid solution of some value between these, such as a 24% acid solution. The chemist wants to make differing solution percentages of 7 liters each.

5. What is the **best** way to describe the domain of the scenario below?

Hannah plans to pay off a no-interest loan from her parents. Her loan balance is \$1,000. She plans to pay \$35 at the end of every week until her balance is \$0. How many weeks will it be until she has paid off her loan?

6. For the information provided below, construct a linear model that describes her total costs, C , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$400 educational expense each year. Before college, Aubrey saved up \$10000. She knows she will need to pay \$1200 in rent a month, \$80 for food a week, and \$56 in other weekly expenses.

7. For the information provided below, construct a linear model that describes the total distance of the path, D , in terms of the time spent on a particular path *if we know that the time spent on each path was equal*.

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 6 mph, 10 mph when traveling down a hill, and 7 mph when traveling along a flat portion.

8. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h .

Veronica needs to prepare 210 of blended coffee beans selling for \$4.00 per pound. She has a high-quality bean that sells for \$4.83 a pound and a low-quality bean that sells for \$2.88 a pound.

9. A town has an initial population of 40000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	40018	40046	40058	40086	40098	40126	40138	40166	40178

10. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h .

Veronica needs to prepare 200 of blended coffee beans selling for \$4.23 per pound. She has a high-quality bean that sells for \$5.06 a pound and a low-quality bean that sells for \$2.53 a pound.

11. A town has an initial population of 60000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	60060	60180	60540	61620	64860	74580	103740	191220	453660

12. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that all parts of the path are equal length.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 5 mph, 10 mph when traveling down a hill, and 7 mph when traveling along a flat portion.

13. For the information provided below, construct a linear model that describes her total budget, B , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$1000 educational expense each year. Before college, Aubrey saved up \$8000. She knows she will need to pay \$800 in rent a month, \$80 for food a week, and \$40 in other weekly expenses.

14. What is the **best** way to describe the domain of the scenario below?

Fred is a store manager at Publix. The store normally orders two pallets of water bottles a week and sells 1000 bottles per day. However, a hurricane is coming and Fred expects water bottle sales to increase tenfold for three days, then decrease by half of normal sales for four days. How many more pallets of water bottles should Fred order the week before the hurricane?

15. What is the **best** way to describe the domain of the scenario below?

Two UFPD are patrolling the campus on foot. To cover more ground, they split up and begin walking in different directions. Office A is walking at 3 mph while Office B is walking at 5 mph.

16. For the information provided below, construct a linear model that describes her total income, I , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$800 educational expense each year. Before college, Aubrey saved up \$8000. She knows she will need to pay \$1100 in rent a month, \$70 for food a week, and \$64 in other weekly expenses.

17. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that all parts of the path are equal length.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 5 mph, 12 mph when traveling down a hill, and 8 mph when traveling along a flat portion.

18. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h .

Veronica needs to prepare 160 of blended coffee beans selling for \$4.10 per pound. She has a high-quality bean that sells for \$4.98 a pound and a low-quality bean that sells for \$2.38 a pound.

19. A town has an initial population of 20000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	20160	20640	22560	30240	60960	183840	675360	2641440	1050576

20. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the low-quality coffee beans h .

Veronica needs to prepare 130 of blended coffee beans selling for \$2.94 per pound. She has a high-quality bean that sells for \$4.16 a pound and a low-quality bean that sells for \$2.39 a pound.

21. A town has an initial population of 30000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	30055	30097	30147	30205	30255	30297	30347	30405	30455

22. For the information provided below, construct a linear model that describes the total distance of the path, D , in terms of the time spent on a particular path *if we know that the time spent on each path was equal*.

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 4 mph, 8 mph when traveling down a hill, and 5 mph when traveling along a flat portion.

23. For the information provided below, construct a linear model that describes her total budget, B , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$1000 educational expense each year. Before college, Aubrey saved up \$11000. She knows she will need to pay \$700 in rent a month, \$50 for food a week, and \$40 in other weekly expenses.

24. What is the **best** way to describe the domain of the scenario below?

Hannah plans to pay off a no-interest loan from her parents. Her loan balance is \$1,000. She plans to pay \$35 at the end of every week until her balance is \$0. How many weeks will it be until she has paid off her loan?

25. What is the **best** way to describe the domain of the scenario below?

Hannah plans to pay off a no-interest loan from her parents. Her loan balance is \$1,000. She plans to pay \$35 at the end of every week until her balance is \$0. How many weeks will it be until she has paid off her loan?

26. For the information provided below, construct a linear model that describes her total costs, C , as a function of the number of months, x she is at UF.

Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a \$400 educational expense each year. Before college, Aubrey saved up \$7000. She knows she will need to pay \$900 in rent a month, \$80 for food a week, and \$56 in other weekly expenses.

27. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that the time spent on each path was equal.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 4 mph, 11 mph when traveling down a hill, and 7 mph when traveling along a flat portion.

28. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h .

Veronica needs to prepare 120 of blended coffee beans selling for \$3.37 per pound. She has a high-quality bean that sells for \$3.91 a pound and a low-quality bean that sells for \$2.85 a pound.

29. A town has an initial population of 20000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	20200	20800	23200	32800	71200	224800	839200	3296800	1312720

30. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the low-quality coffee beans h .

Veronica needs to prepare 120 of blended coffee beans selling for \$2.69 per pound. She has a high-quality bean that sells for \$3.89 a pound and a low-quality bean that sells for \$2.11 a pound.