

Today's Materials



via [Denyse®](#) on [GIPHY](#)

- calculator
 - pencil
 - packet
 - focus and attention
-

Using Graphs to Find Average Rate of Change

Lesson 7

Temperature

Drop

Warm Up 7.1

Poll the Class

(5 Min)

Pg 27

Who Do You Agree With?

Here are the recorded temperatures at three different times on a winter evening.

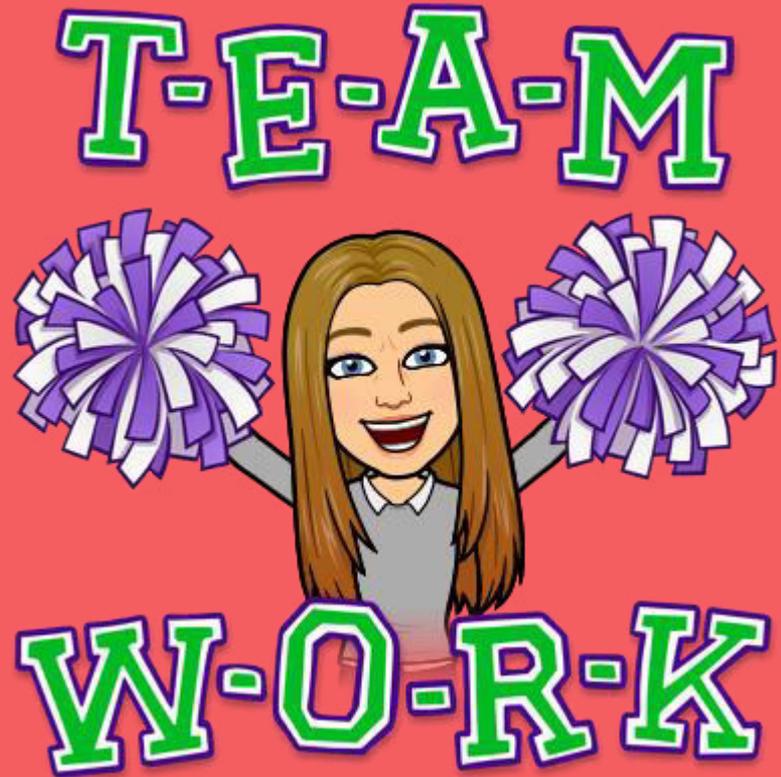
- Tyles says the temperature dropped faster between 4pm and 6pm.
- Mai says the temperature dropped faster between 6pm and 10pm.

time	4 p.m.	6 p.m.	10 p.m.
temperature	$25^{\circ}F$	$17^{\circ}F$	$8^{\circ}F$



Students choose an option

Let's measure
how quickly
the output of
a function
changes.





- ❑ I understand the meaning of the term “average rate of change”.
 - ❑ When given a graph of a function, I can estimate or calculate the average rate of change between two points.
-

Pg. 28

Drop Some More!

7.2 Activity
(20 min)

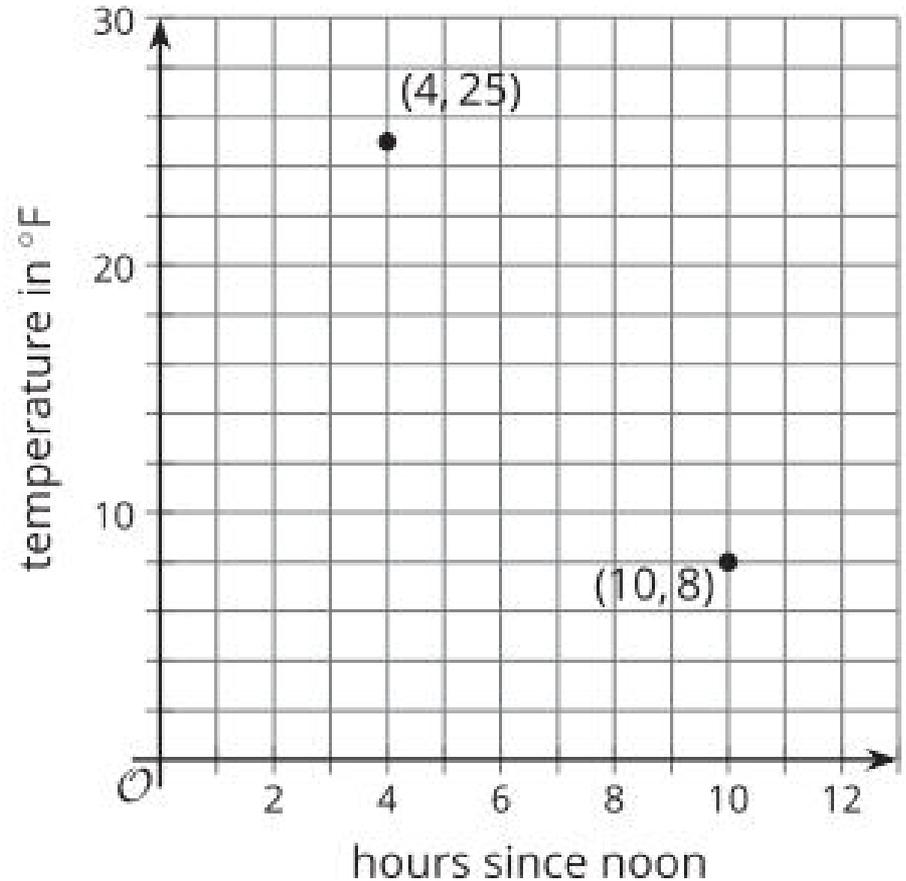


How did the temperature change between 4 p.m. and 10 p.m.?

How much did it fall?

Can we tell how fast, or at what rate, the temperature was falling? If so, how? If not, why not?

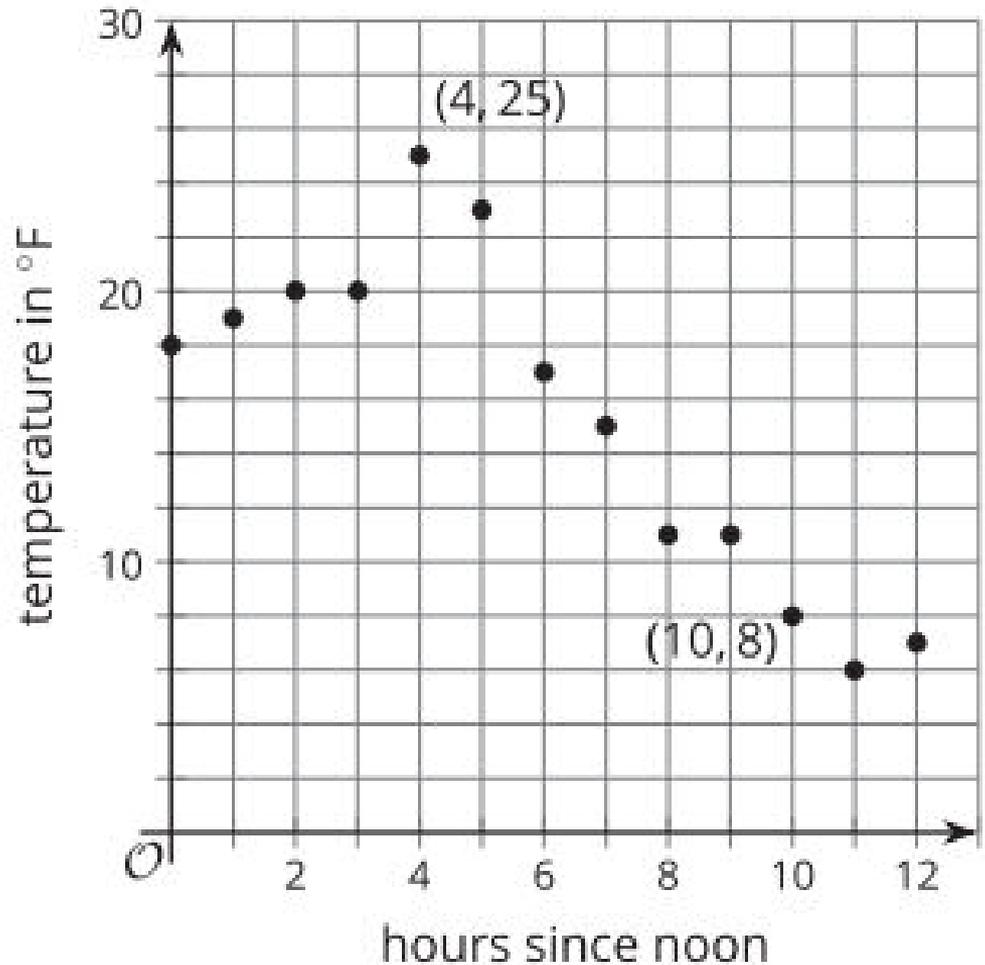
The same winter evening.....



What do you notice?
What do you wonder?

30 seconds quiet think
time *before* you respond.

Quiet think time means
silence people!



Students, write your response!

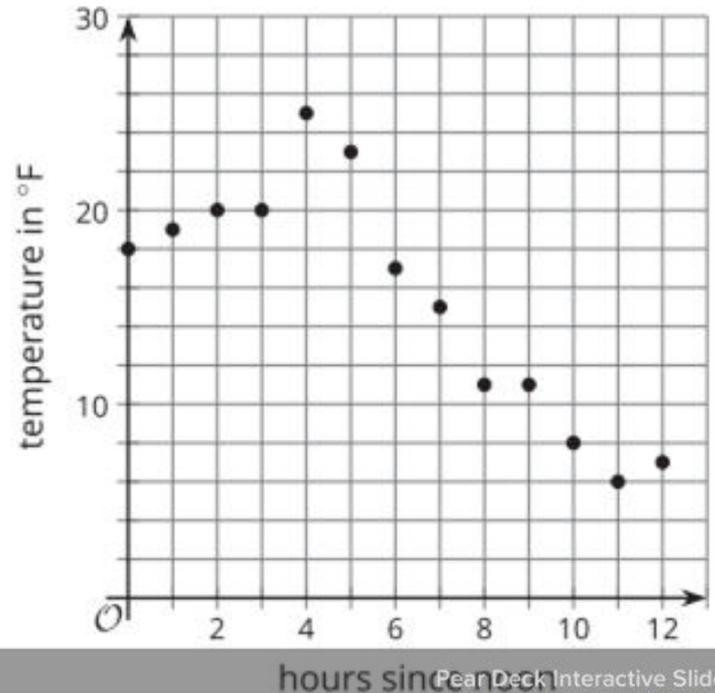
The table and graph show a more complete picture of the temperature changes on the same winter day. The function T gives the temperature in degrees Fahrenheit, h hours since noon.

h	$T(h)$
0	18
1	19
2	20
3	20
4	25

6	17
7	15
8	11
9	11
10	8
11	6

Describe what h is.

Describe what $T(h)$ is.

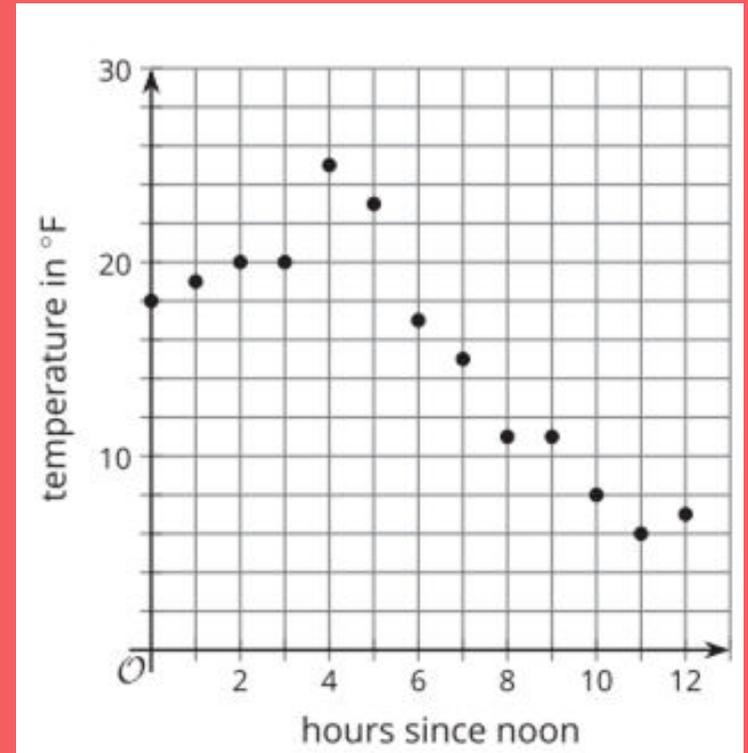


Students, write your response!

- Complete #1 and 2 with your group.

How'd you do?

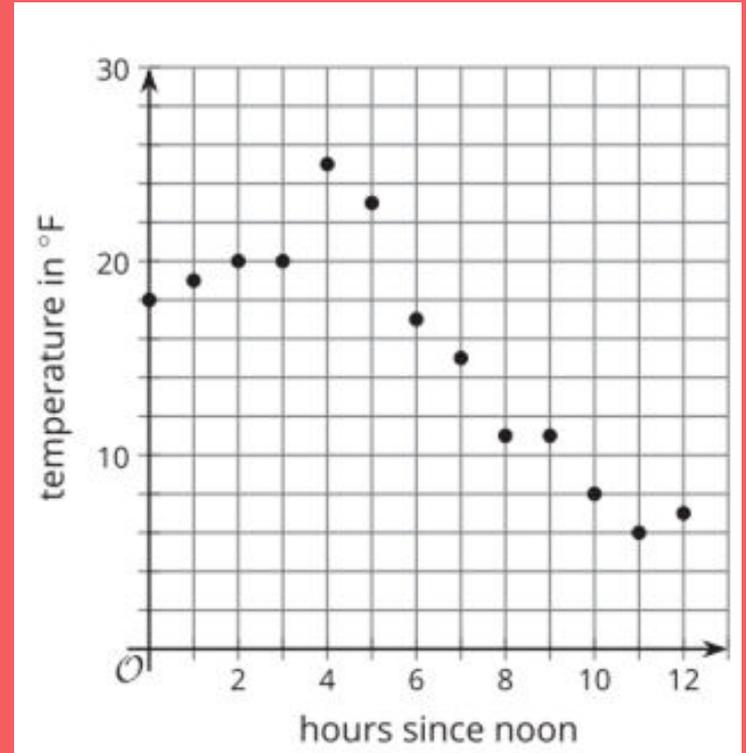
1. Average Rate of Change
 - a. Noon-1pm
 - b. Noon-4pm
 - c. Noon-Midnight
- a. 1 degree F/hour b. 1.75 degree F/hour c. -0.92 degree F/hour



How'd you do?

2. Remember Mai and Tyler's disagreement? Use average rate of change to show which time period - 4pm to 6pm OR 6pm to 10pm- experienced a faster temperature drop.

4pm-6pm 4 degree drop/1 hour
6pm-10pm 2.25 degree drop/1hour



Population of Two States

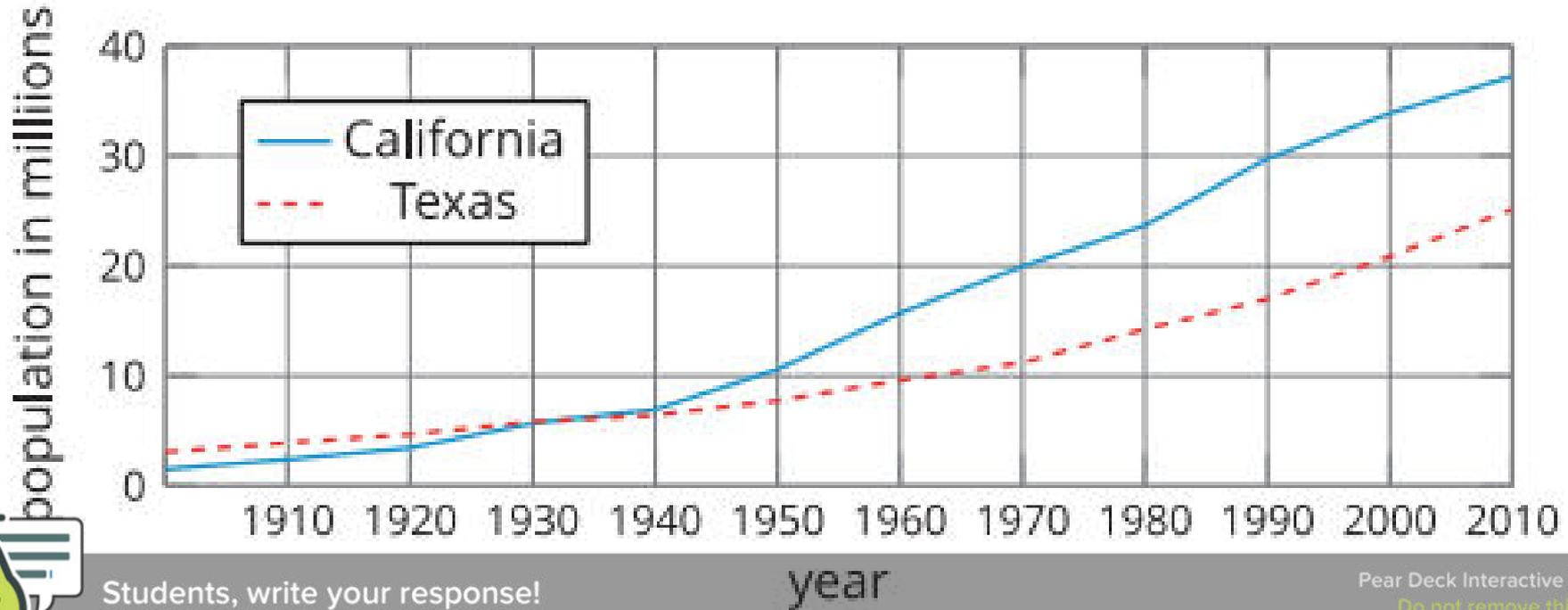
Activity 7.3 (10 min)

- Stronger and Clearer

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The graphs show the population of California and Texas over time.

What do you notice about the graph???

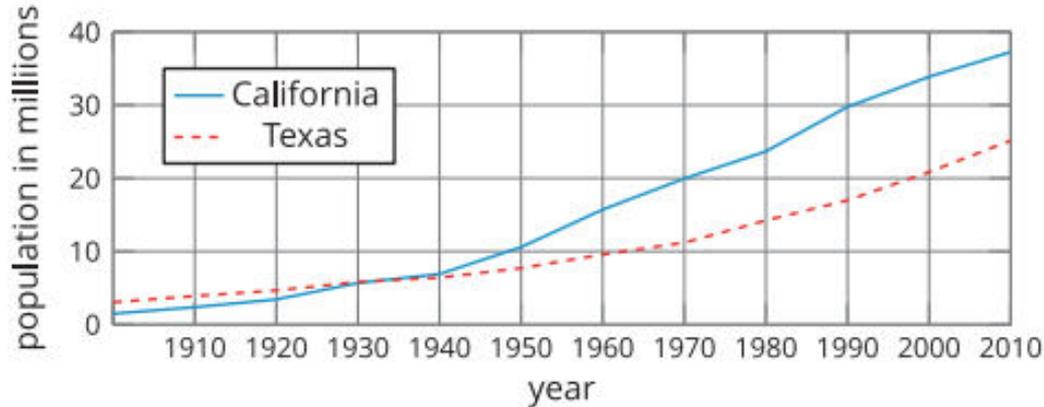


Students, write your response!

Complete #1 and #2

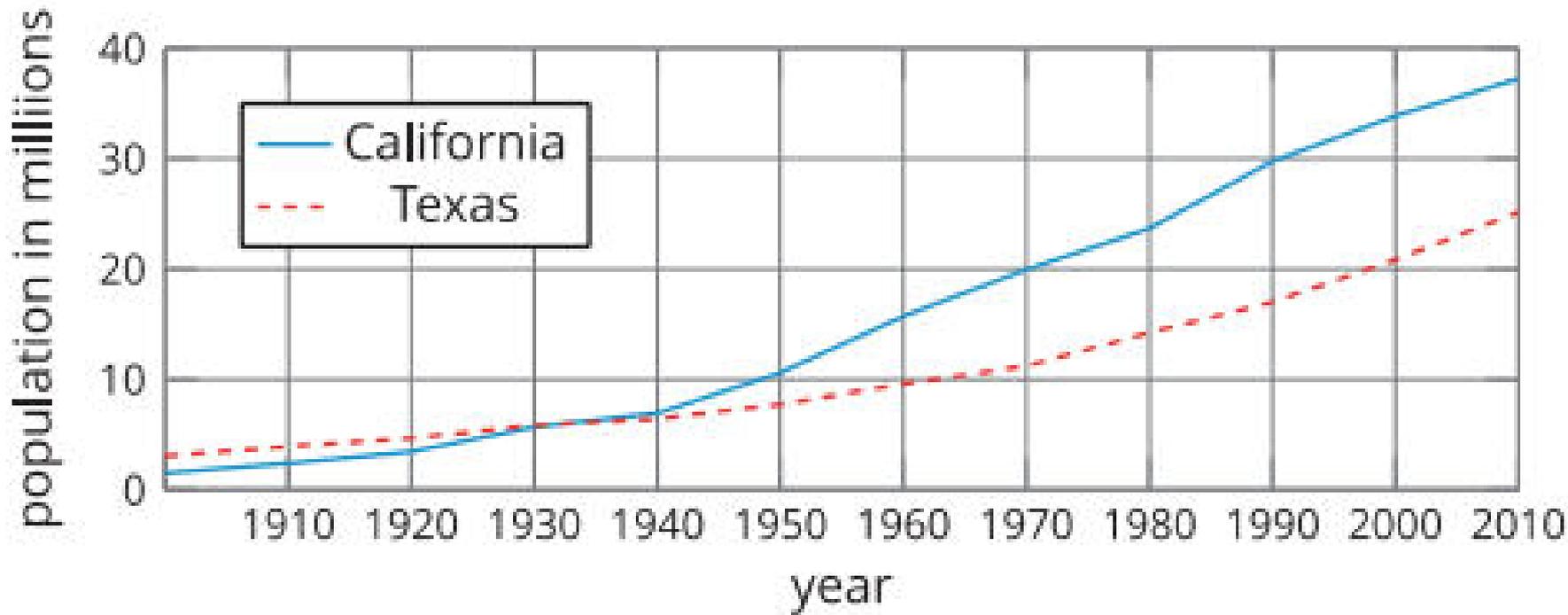
Begin working with Quiet Think Time (1 min.)

Share your thinking as a team.



1a. $\frac{37-20}{2010-1970} = \frac{17}{4} = 0.425$ million per year

b. $\frac{25-11}{2010-1970} = \frac{14}{40} = 0.35$ million per year



2. Which state's population grew more quickly between 1900 and 2000? How do you know?



Students, write your response!

How would you explain average rate of change to a classmate who is absent today?

What does it tell us?

How do you find it?



Students, write your response!

Today's Goals

How'd we do?



- ❑ I understand the meaning of the term “average rate of change”.
 - ❑ When given a graph of a function, I can estimate or calculate the average rate of change between two points.
-

Population of a City

7.4
Cool Down