

# Unit 4 Lesson 9: Increasing and Decreasing Functions

## 1 Comparing Values (Warm up)

### Student Task Statement

For each pair of numbers, write =, <, or > in the blank to make a true equation or inequality. Be prepared to share your reasoning.

1.  $-6$  \_\_\_\_\_  $-9$

2.  $\frac{7}{3}$  \_\_\_\_\_  $\frac{13}{6}$

3.  $5.2$  \_\_\_\_\_  $\frac{53}{11}$

4.  $5(3 - 6)$  \_\_\_\_\_  $15 - 6$

5. Let  $f(x) = 5 - 2x$ .

a.  $f(3)$  \_\_\_\_\_  $f(5)$

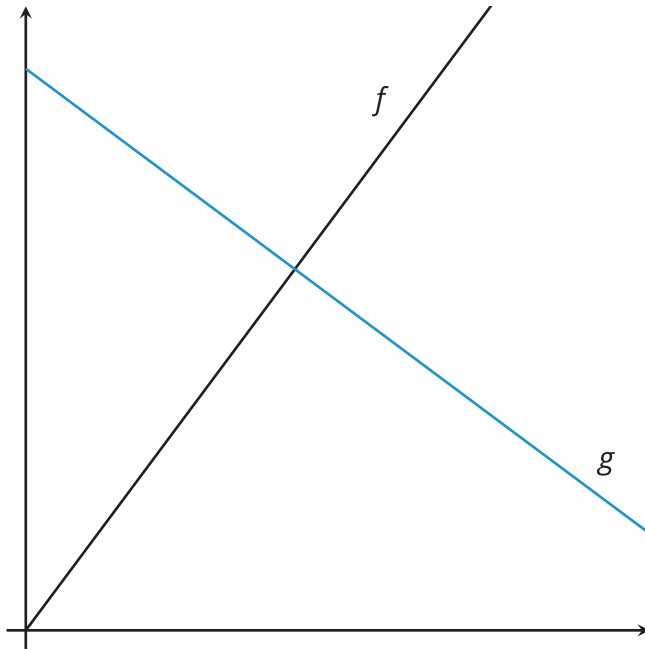
b.  $f(-3)$  \_\_\_\_\_  $f(-4)$

c.  $f(-1)$  \_\_\_\_\_  $f(1)$

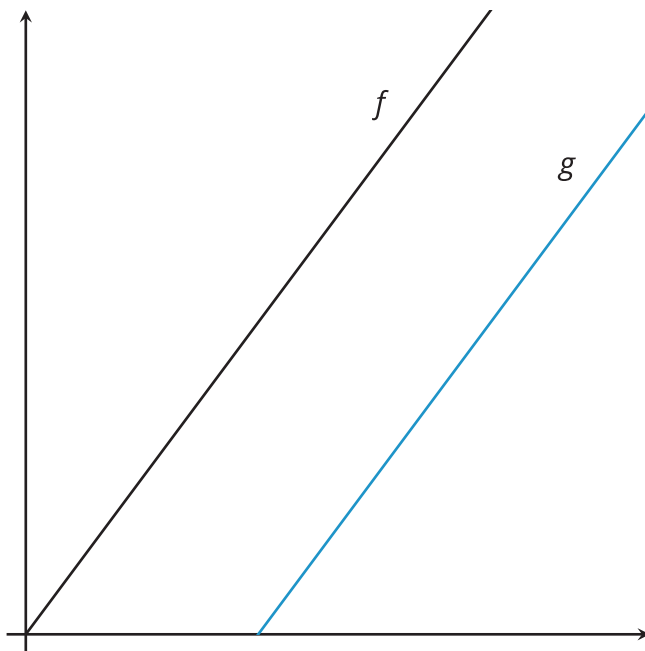
## 2 What Could It Be?

### Student Task Statement

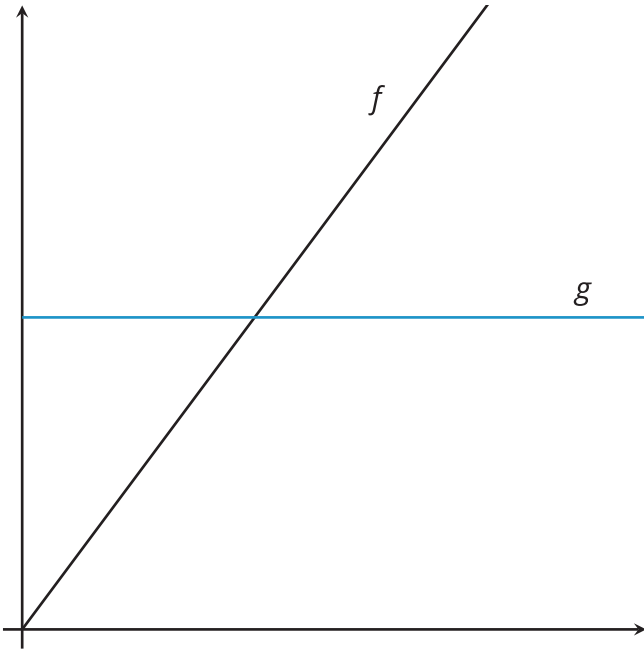
Describe  $f(x)$  and  $g(x)$  with a situation that could fit the given graphs. Explain your reasoning.



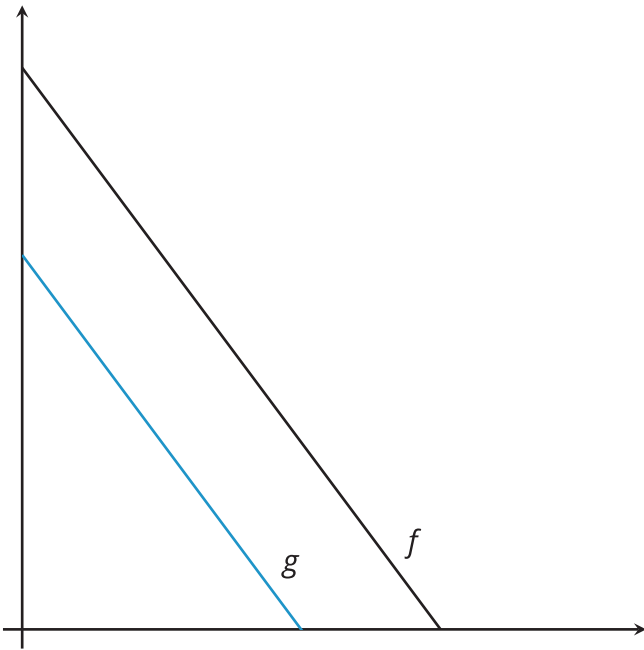
1.



2.



3.



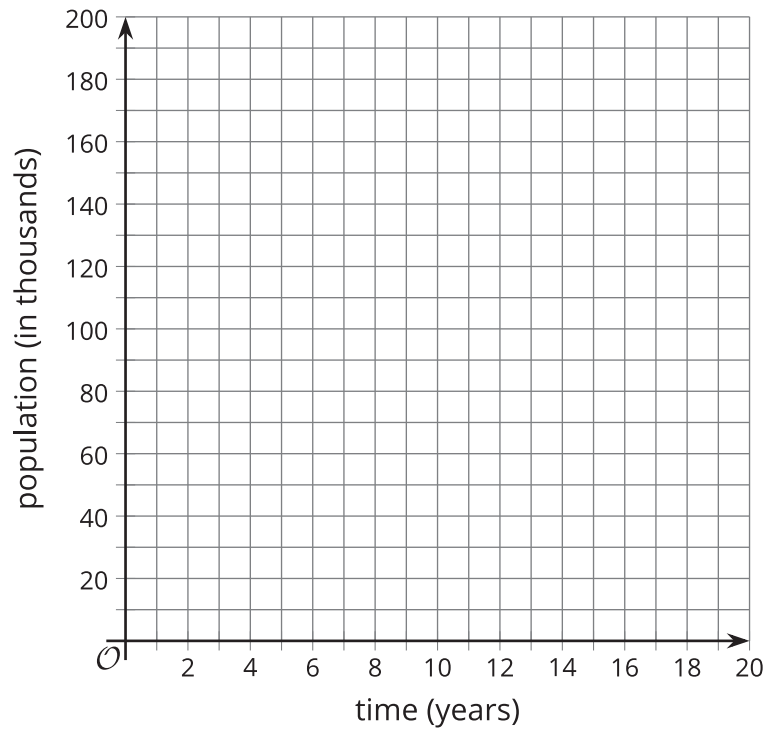
4.

### 3 Cities, Towns, and Villages

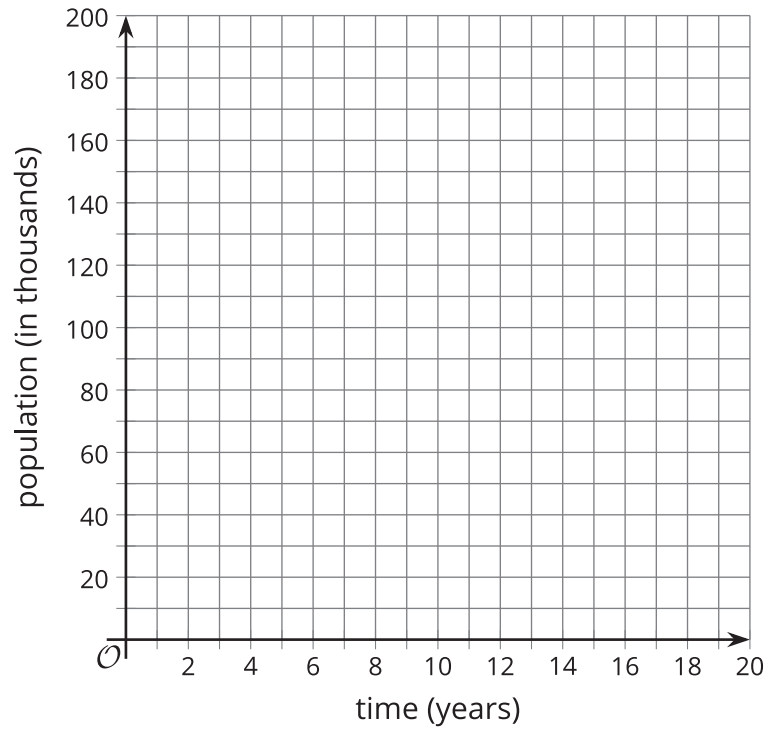
#### Student Task Statement

Draw an example of a graph that shows two functions as they are described. Make sure to label the functions.

1. The population of 2 cities as functions of time so that city A always has more people than city B.



2. The population of 2 towns as functions of time so that town A is larger to start, but then town B gets larger.



3. The population of 2 villages as functions of time so that village A has a steady population and village B has a population that is initially large, but decreases.

