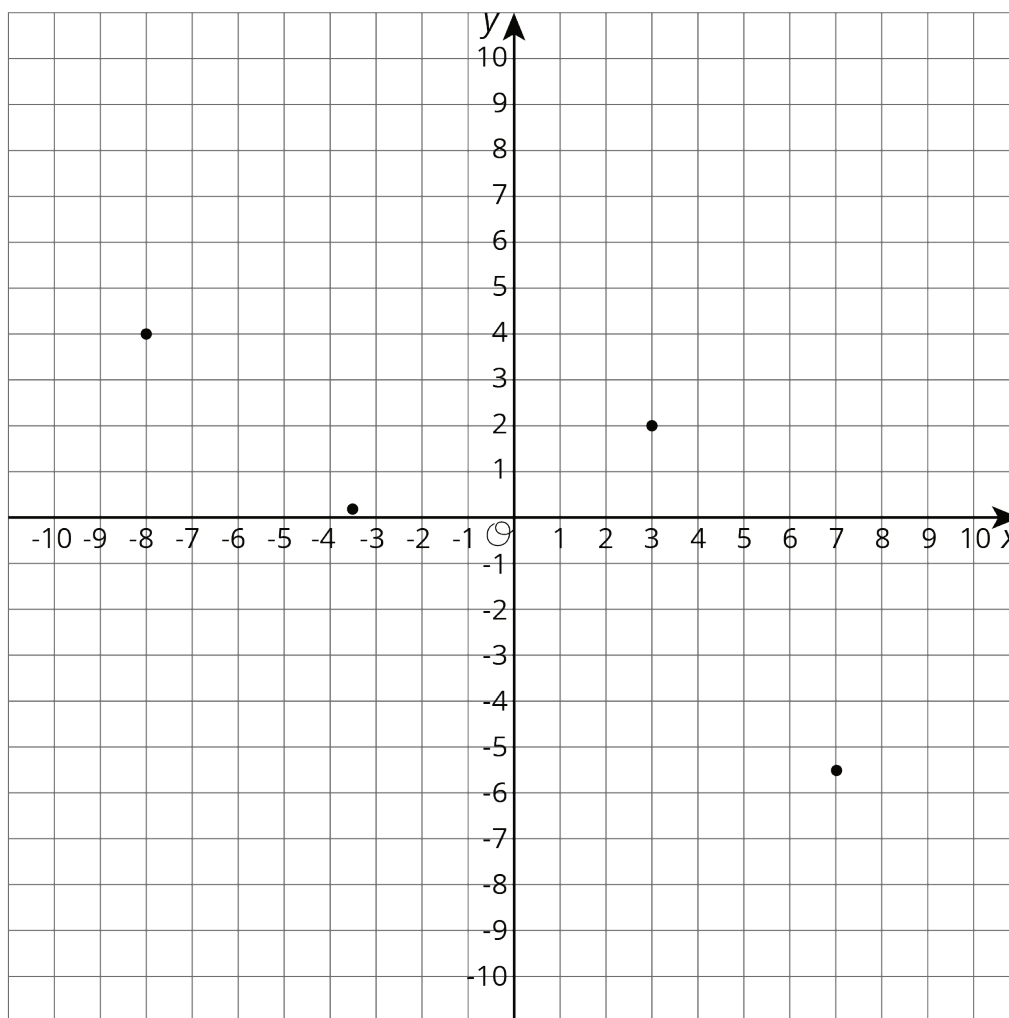


Lesson 12: Interpreting Points on a Coordinate Plane

Let's examine what points on the coordinate plane can tell us.

12.1: Unlabeled Points

Label each point on the coordinate plane with the appropriate letter and ordered pair.



$A = (7, -5.5)$

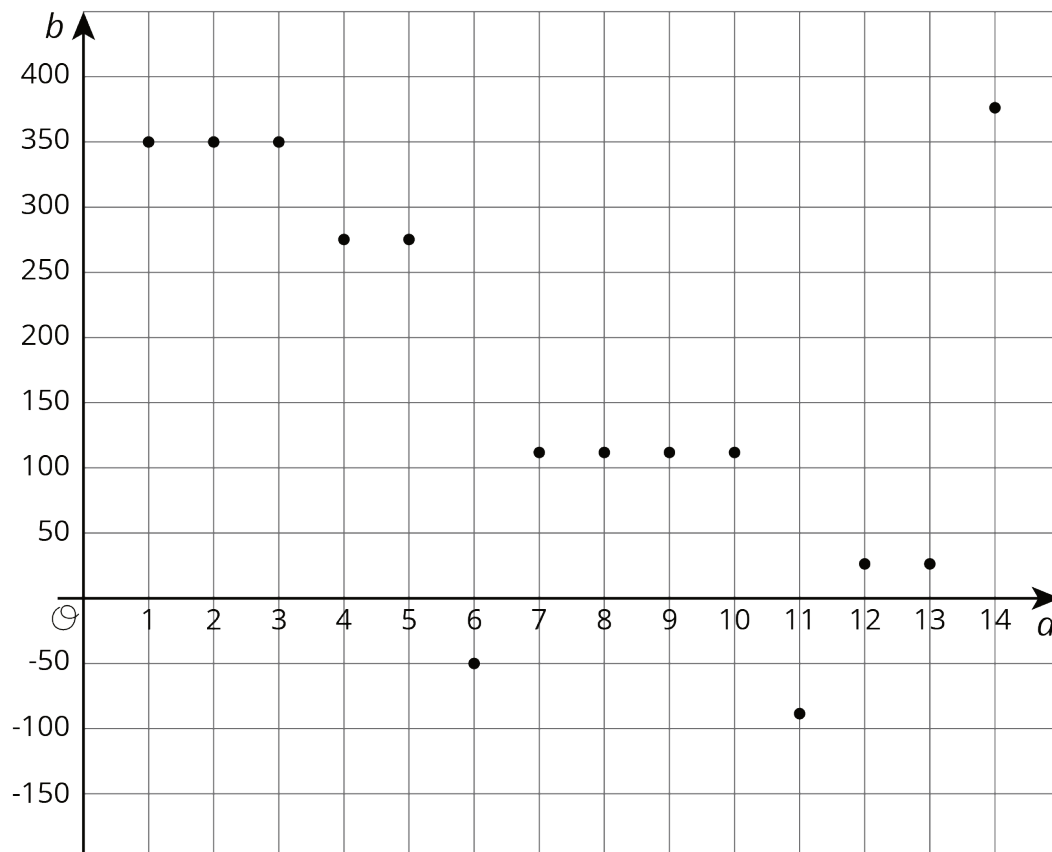
$B = (-8, 4)$

$C = (3, 2)$

$D = (-3.5, 0.2)$

12.2: Account Balance

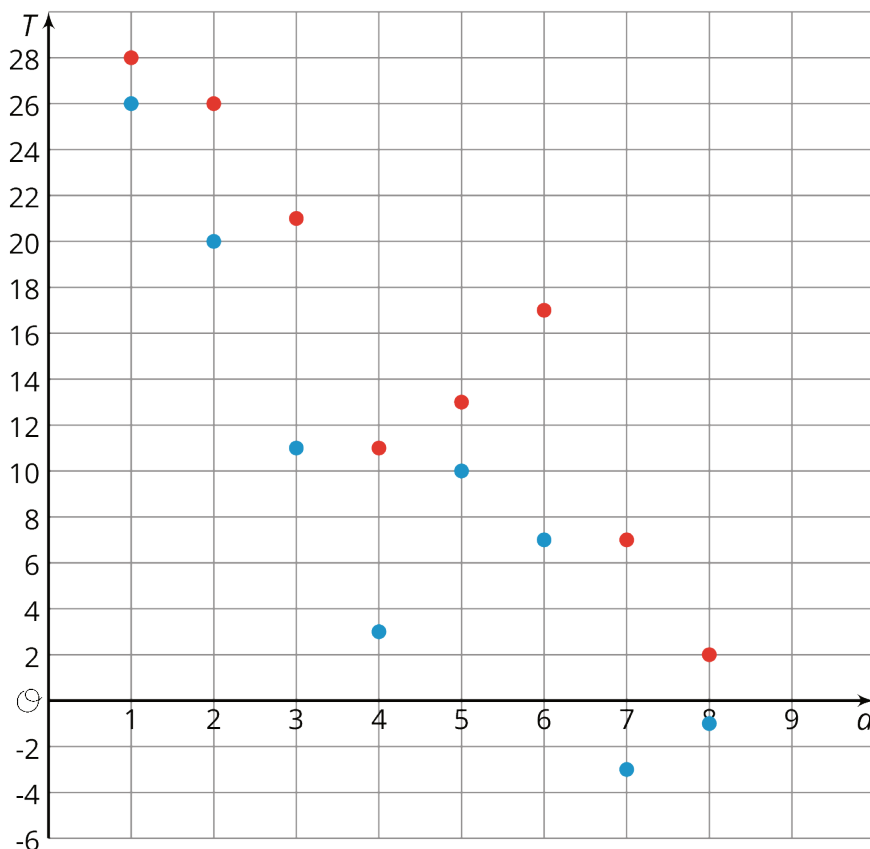
The graph shows the balance in a bank account over a period of 14 days. The axis labeled b represents account balance in dollars. The axis labeled d represents the day.



1. Estimate the greatest account balance. On which day did it occur?
2. Estimate the least account balance. On which day did it occur?
3. What does the point $(6, -50)$ tell you about the account balance?
4. How can we interpret $|-50|$ in the context?

12.3: High and Low Temperatures

The coordinate plane shows the high and low temperatures in Nome, Alaska over a period of 8 days. The axis labeled T represents temperatures in degrees Fahrenheit. The axis labeled d represents the day.



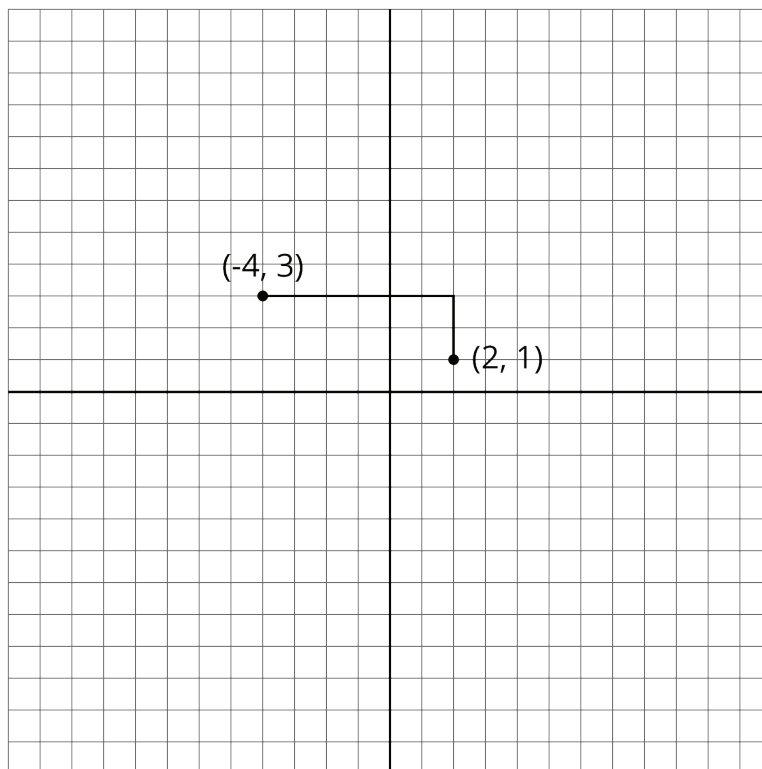
1.
 - a. What was the warmest high temperature?
 - b. What was the coldest high temperature?
 - c. Write an inequality to compare the warmest and coldest high temperatures.

2.
 - a. What was the coldest low temperature?
 - b. What was the warmest low temperature?
 - c. Write an inequality to compare the warmest and coldest low temperatures.

3.
 - a. On which day(s) did the *largest* difference between the high and low temperatures occur? Write down this difference.
 - b. On which day(s) did the *smallest* difference between the high and low temperatures occur? Write down this difference.

Are you ready for more?

To get from the point $(2, 1)$ to $(-4, 3)$ you can go two units up and six units to the left, for a total distance of eight units. This is called the “taxicab distance,” because a taxi driver would have to drive eight blocks to get between those two points on a map.



1. Find as many points as you can that have a taxicab distance of eight units away from $(2, 1)$. What shape do these points make?

2. The point $(0, 3)$ is 4 taxicab units away from $(-4, 3)$ and 4 taxicab units away from $(2, 1)$.
- Find as many other points as you can that are 4 taxicab units away from *both* $(-4, 3)$ and $(2, 1)$.

 - Are there any points that are 3 taxicab units away from both points?

Lesson 12 Summary

Points on the coordinate plane can give us information about a context or a situation. One of those contexts is about money.

To open a bank account, we have to put money into the account. The account balance is the amount of money in the account at any given time. If we put in \$350 when opening the account, then the account balance will be 350.

Sometimes we may have no money in the account and need to borrow money from the bank. In that situation, the account balance would have a negative value. If we borrow \$200, then the account balance is -200.

A coordinate grid can be used to display both the balance and the day or time for any balance. This allows to see how the balance changes over time or to compare the balances of different days.

Similarly, if we plot on the coordinate plane data such as temperature over time, we can see how temperature changes over time or compare temperatures of different times.