Increasing and decreasing Intervals

Date:

Standards

- F.IF.4 - For a function, interpret key features of graphs such as intervals where the function is increasing, decreasing, positive, or negative;
- F.IF.5 - Relate the domain of a function to its graph

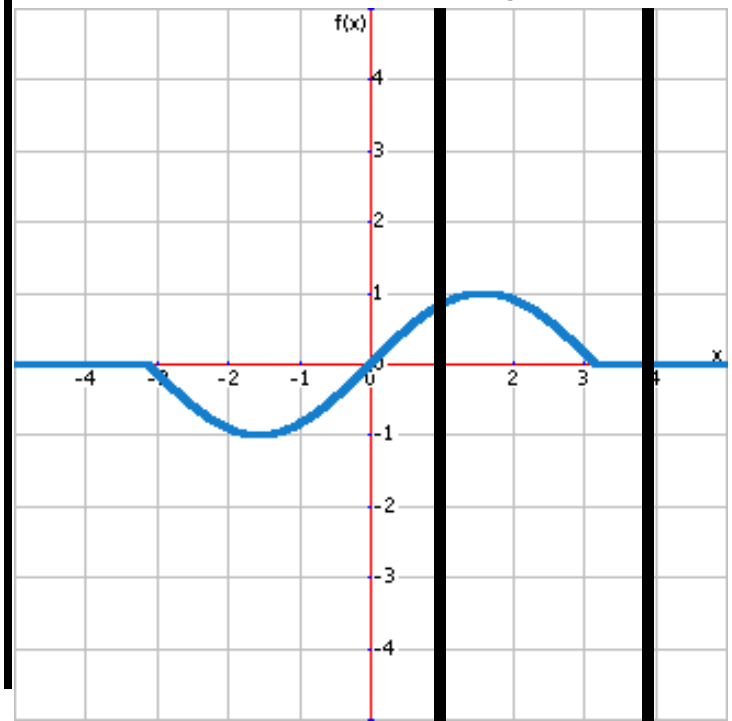
Essential Questions

- What is an interval?
- What are the different behaviors of an interval?
- How can I identify the behavior of an interval?

What is an interval?

Interval: A space between two objects, points, units, or period of time

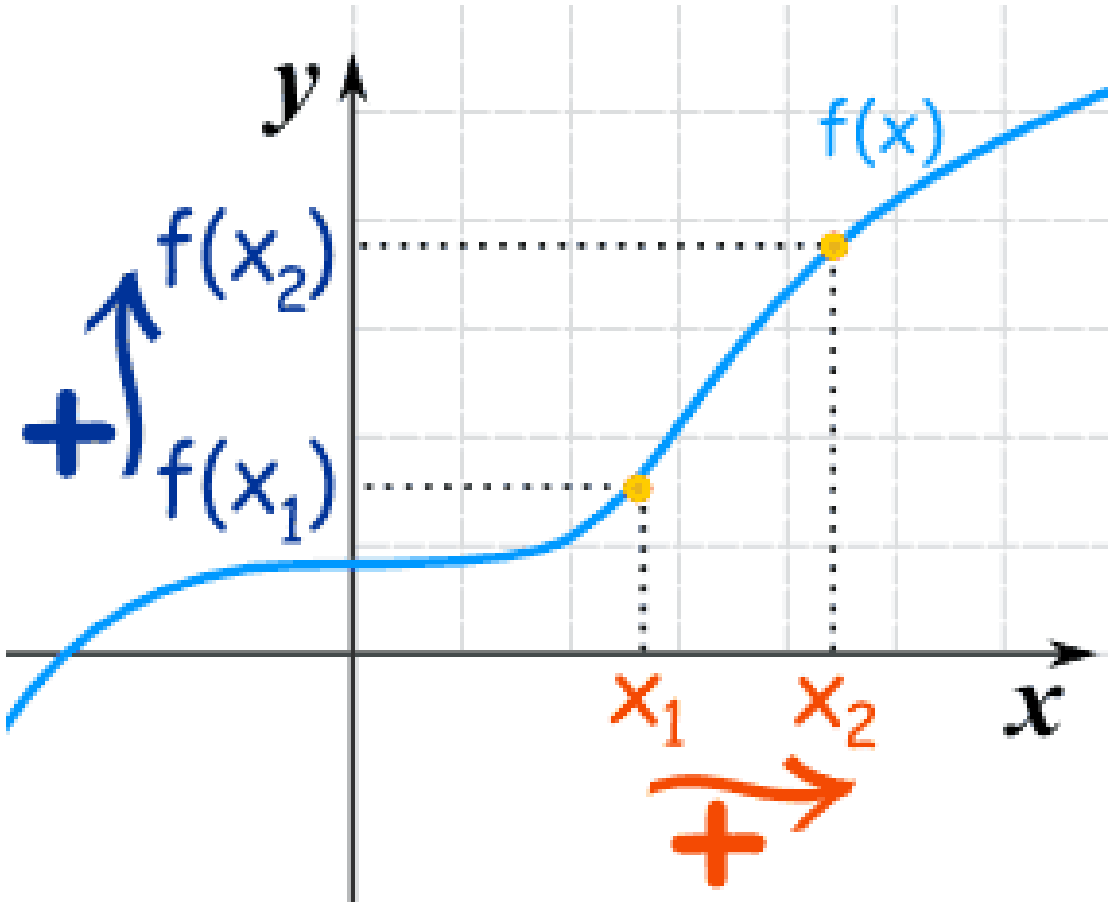
Interval notation : is a way of writing the set for an interval using the interval's endpoints



$1 < x < 4$

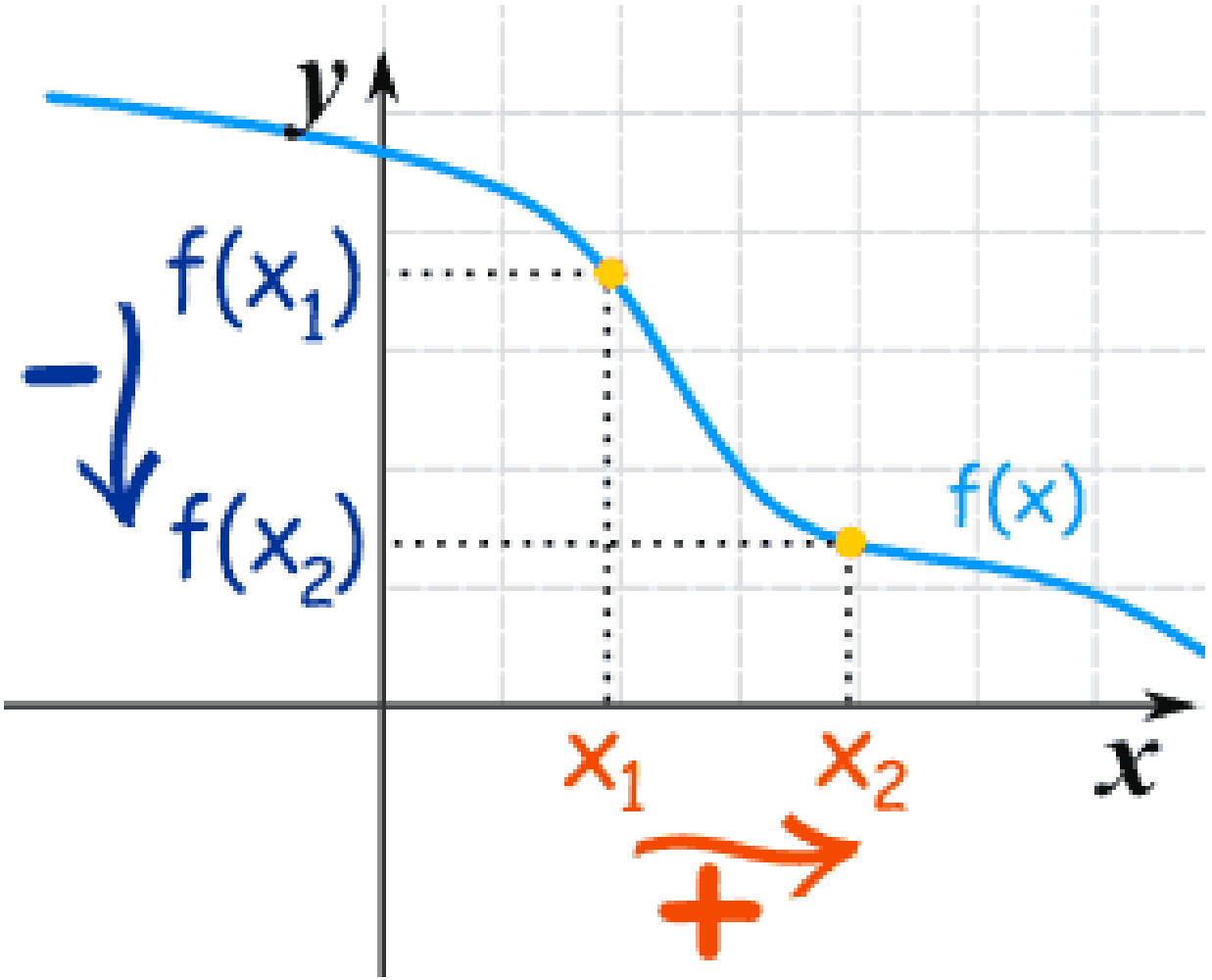
What are the different behaviors of an interval?

Increasing Interval: All intervals where a graph or a function is increasing



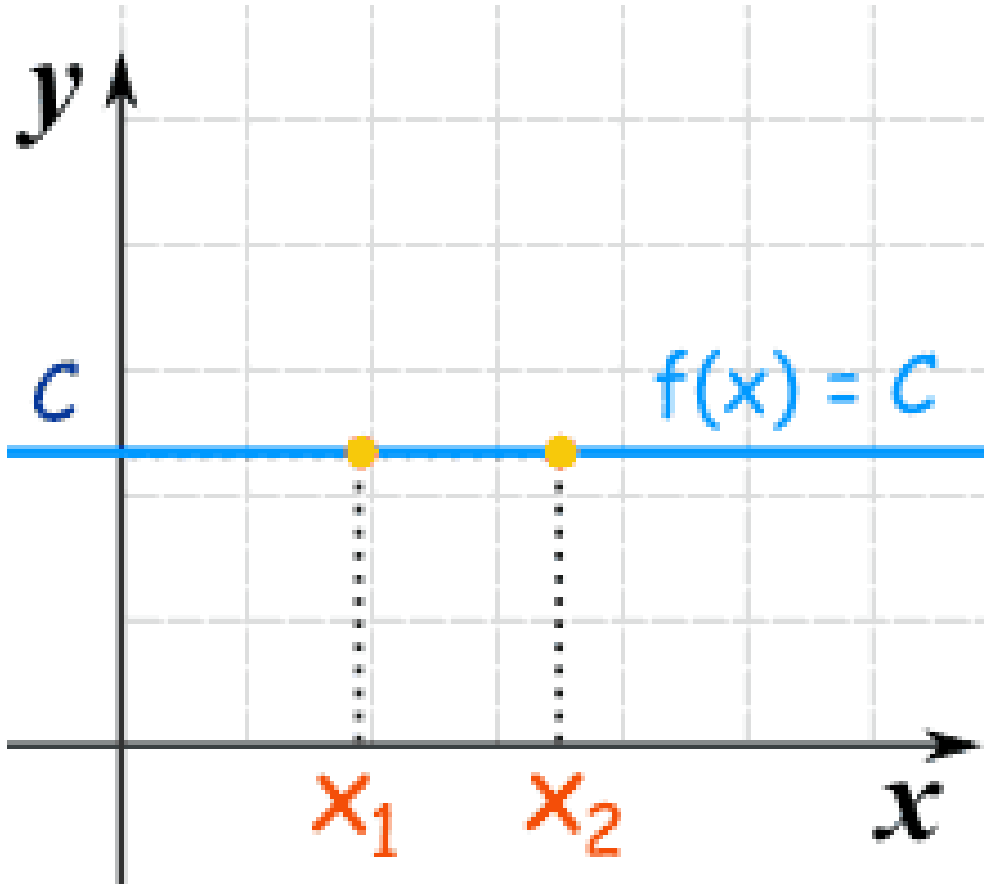
What are the different behaviors of an interval?

Decreasing interval: All intervals where a graph or a function is decreasing.



What are the different behaviors of an interval?

Constant Interval: All intervals where a graph or a function is constant (neither increasing or decreasing).

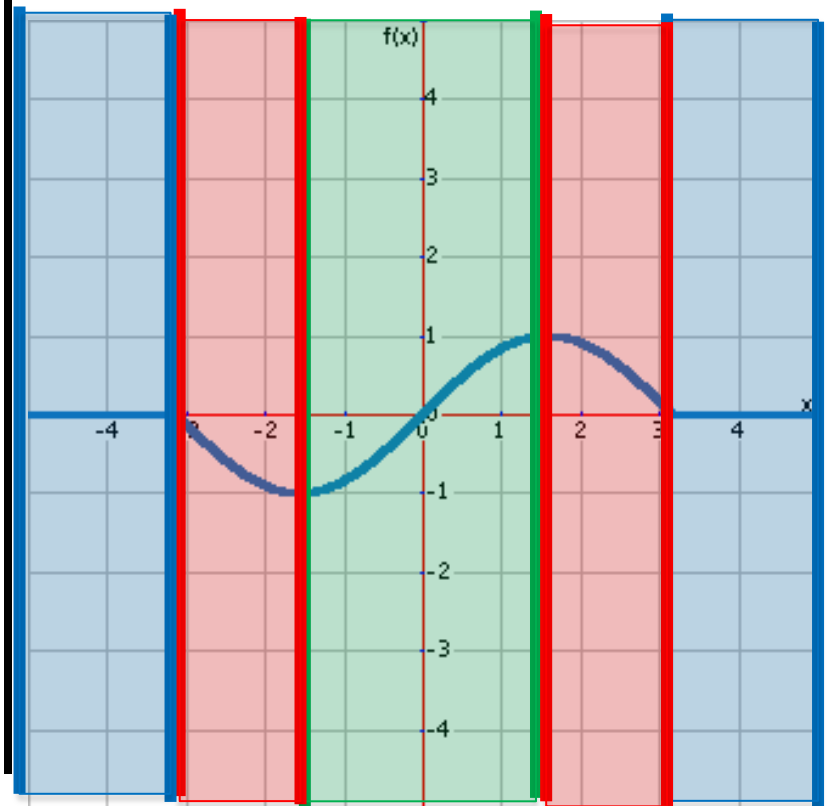


How can I identify the behavior of an interval?

**ALWAYS read the graph left to right.

1. Determine all the x-coordinates of the **start** of the interval where the graph is decreasing/increasing/constant

2. Determine all the x-coordinates of the **end** of the interval where the graph is decreasing/increasing/constant



Increasing:

-1.5 < x < 1.5

Decreasing:

-3 < x < -1.5

1.5 < x < 3

Constant:

-5 < x < -3

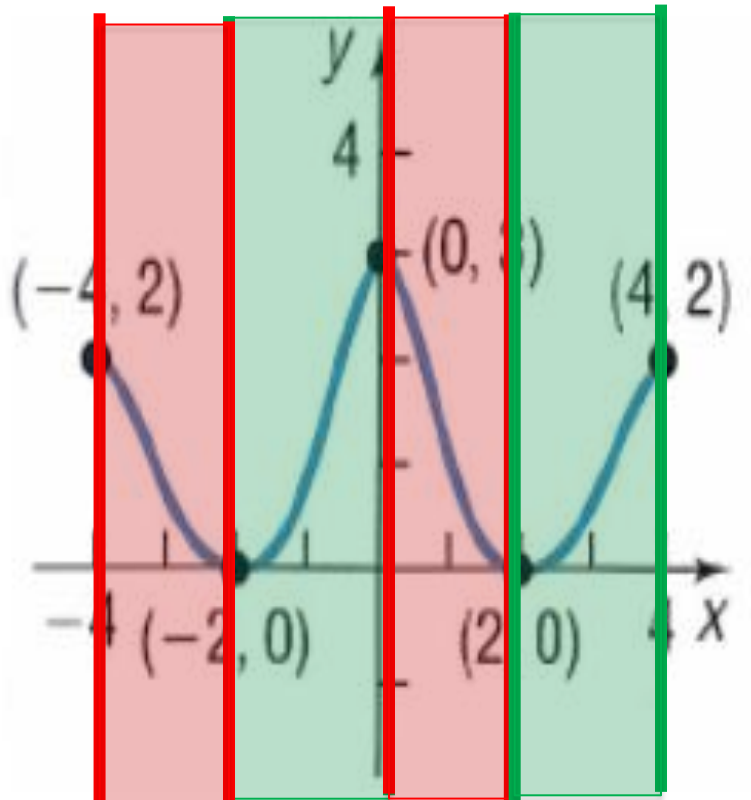
3 < x < 5

How can I identify the behavior of an interval?

**ALWAYS read the graph left to right.

1. Determine all the x-coordinates of the **start** of the interval where the graph is decreasing/increasing/constant

2. Determine all the x-coordinates of the **end** of the interval where the graph is decreasing/increasing/constant



Increasing:

$-2 < x < 0$

$2 < x < 4$

Decreasing:

$-4 < x < -2$

$0 < x < 2$

Constant:

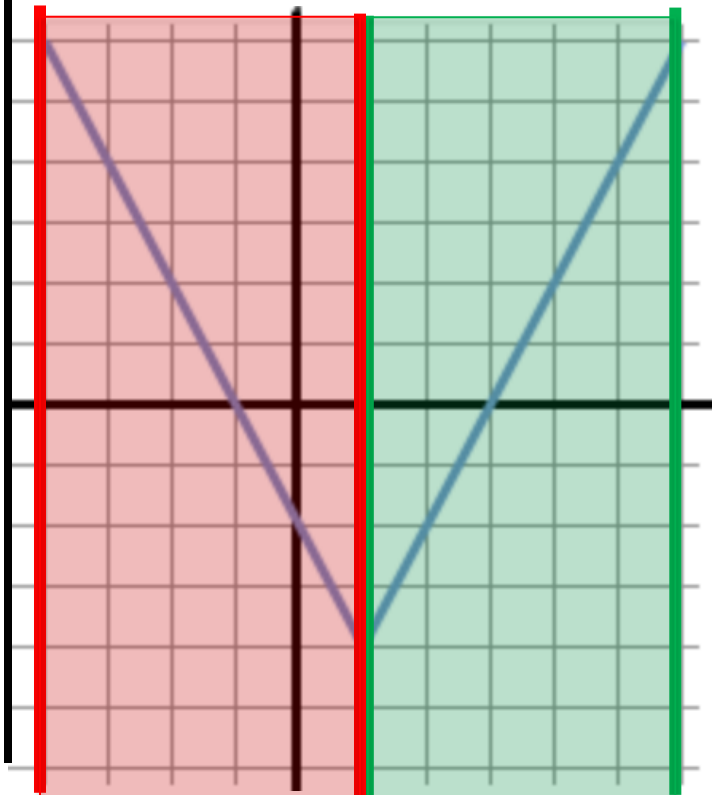
None

How can I identify the behavior of an interval?

**ALWAYS read the graph left to right.

1. Determine all the x-coordinates of the **start** of the interval where the graph is decreasing/increasing/constant

2. Determine all the x-coordinates of the **end** of the interval where the graph is decreasing/increasing/constant



Increasing:

1 < x < 6

Decreasing:

-4 < x < 1

Constant:

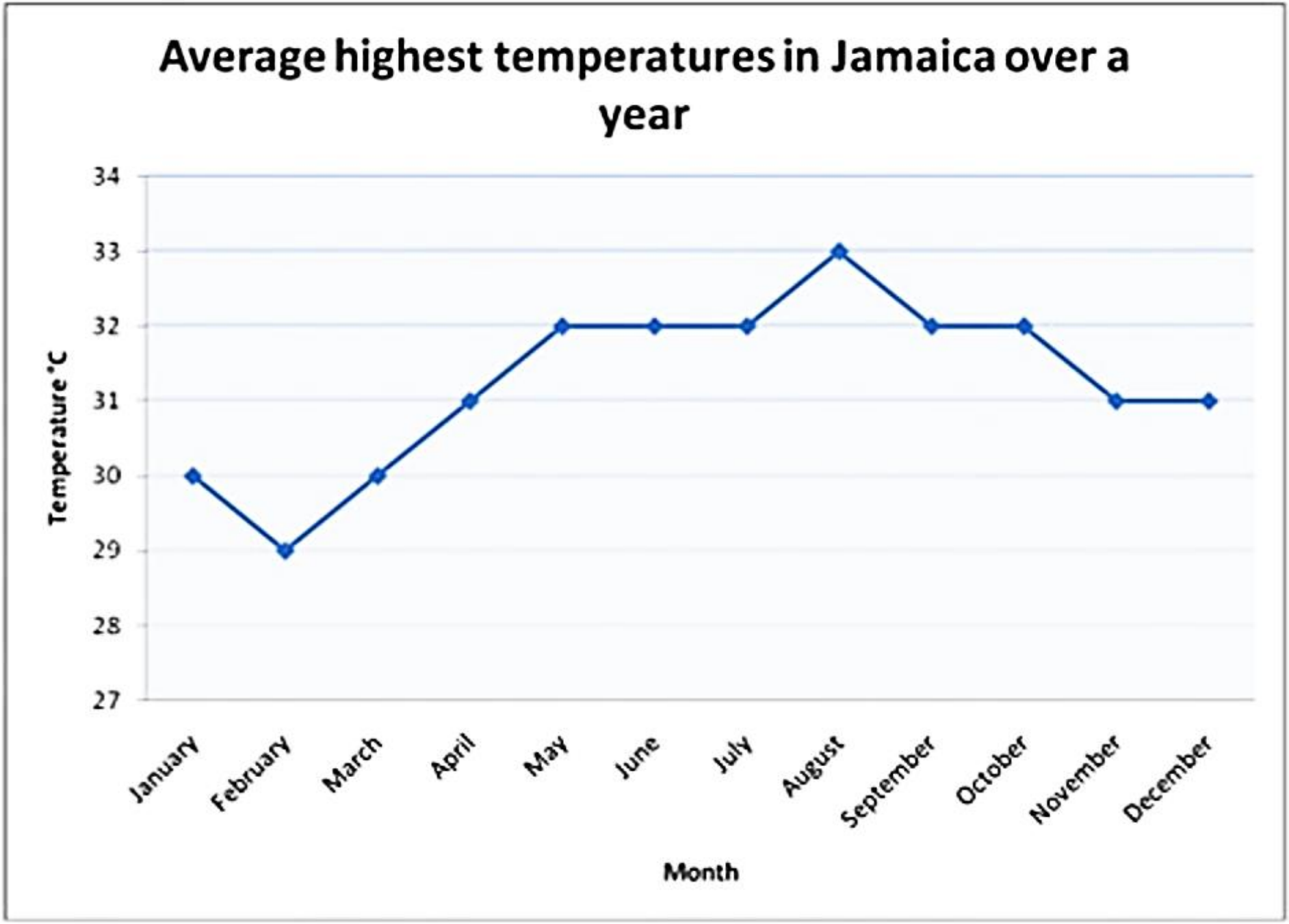
None

REFLECTION:

1) Answer one essential question.
2) How have previous lessons helped or connect with this lesson?
3) What are you still confused on or what new info did you learn?

Homework

1. Which month had the highest temperature?
2. Which month had the lowest temperature?
3. What is the range of temperatures in Jamacia over the year?
4. On what intervals was the temp. increasing?
5. On what intervals was the temp. decreasing?
6. On what intervals was the temp. constant?


Average highest temperatures in Jamaica over a year
34
33
32
31
30
29
28
27
Temperature °C
January
February
March
April
May
June
July
August
September
October
November
December
Month