

Bell Work:

1. What is the rule for Power of Powers?
2. What do you do with negative exponents?
3. Simplify $(2u^4v^{-2})^4(3u^{-3}v^5)$.
4. Simplify $\frac{(12x^4y^{-3}z^6)(6x^{-3}y^6z^2)}{24x^7y^{-6}z^{-2}}$.

Today, you will learn about number relationships, find the domain and range, and how to write the domain and range in set notation and interval notation.

Domain

Range

Number Relationships

What is a number relationship?

A number relationship is when one group of numbers is paired up with another group of numbers.

The first group is called the **domain**.

Also known as the input numbers, x -numbers, or beginning numbers.

The second group is called the **range**.

Also known as the output numbers, y -numbers or ending numbers.

There are 4 ways to represent a number relationship.

1. Ordered pairs

$(-2, 5), (-1, 3), (0, 1), (1, -1), (2, -3)$

2. Tables

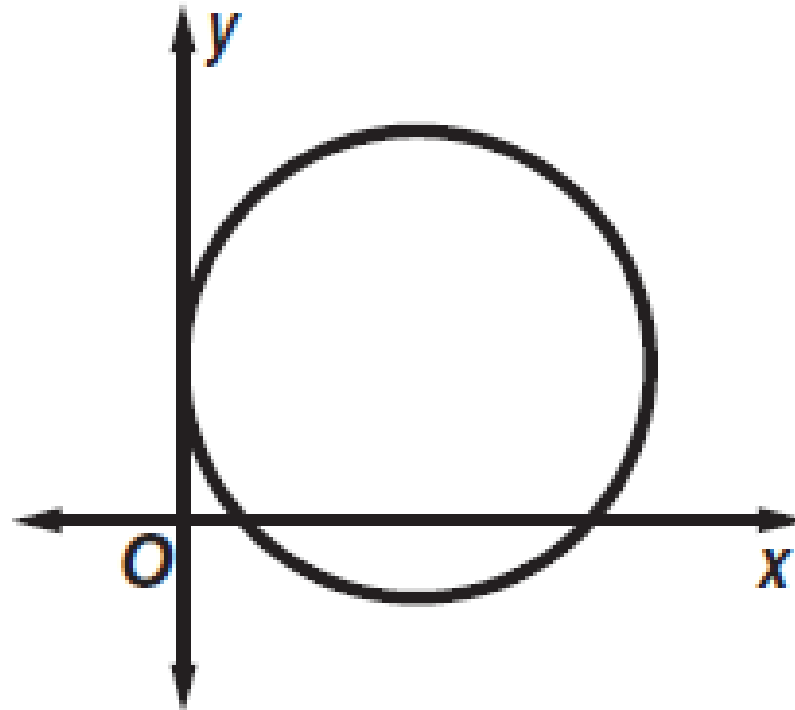
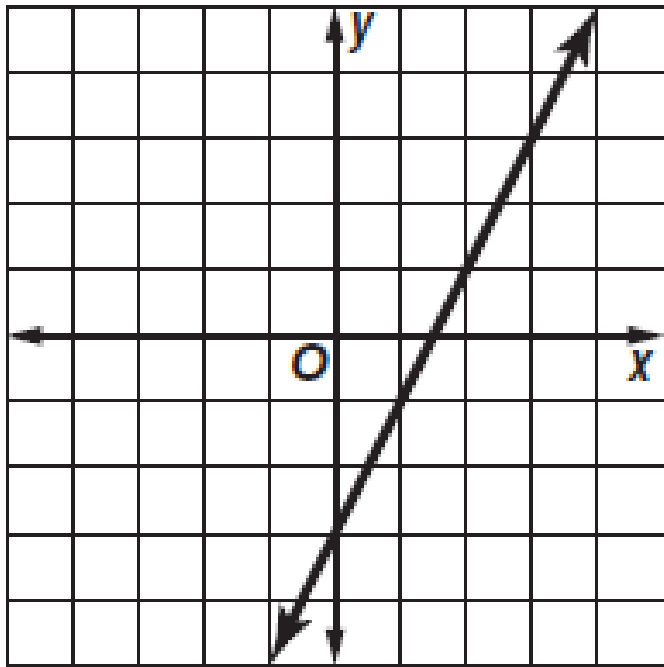
x	y
2	-2
-1	-1
-2	0
-1	1
2	2

HR	50	73	49	47	48
RBI	147	160	128	141	131

Source: *The World Almanac*

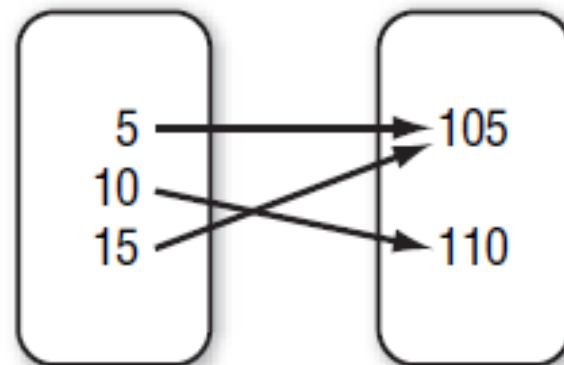
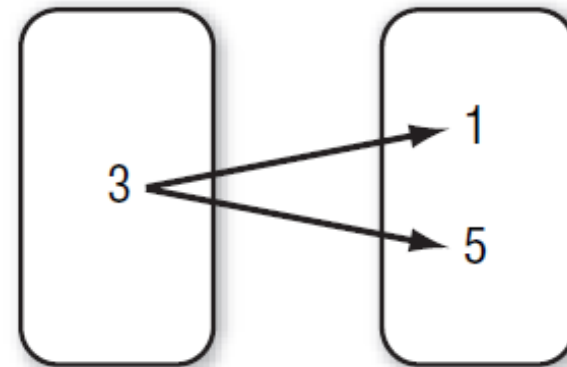
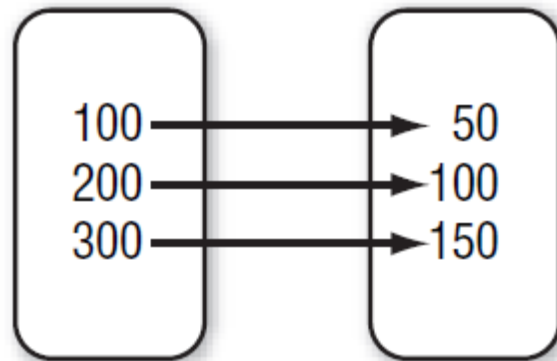
There are 4 ways to represent a number relationship.

3. Graphs



There are 4 ways to represent a number relationship.

4. Mappings



Find the domain and range of each number relationship.

1. $(-2, 5), (-1, 3), (0, 1), (1, -1), (2, -3)$

Domain: $(-2, -1, 0, 1, 2)$

Range: $(-3, -1, 1, 3, 5)$

The domain are the x-numbers or beginning numbers.

The range are the y-numbers or ending numbers.

2.

x	y
2	-2
-1	-1
-2	0
-1	1
2	2

Domain: $(-1, -2, 2)$

Range: $(-2, -1, 0, 1, 2)$

Only write numbers only once.

Put the numbers in numerical order.

Find the domain and range of each number relationship.

3.

Average High Temperatures	
Month	Temperature
Jun	82°
Jul	88°
Aug	93°
Sep	82°

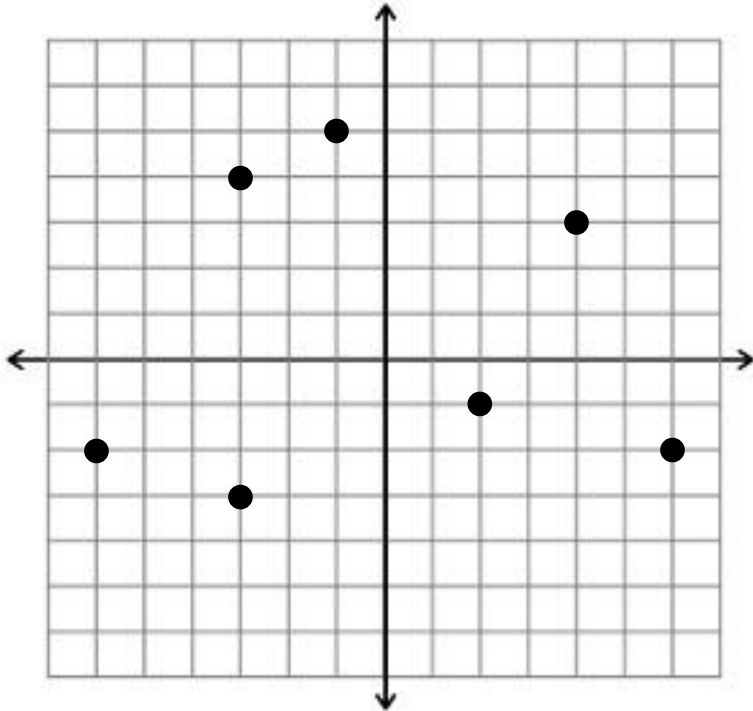
Domain: (Jun, Jul, Aug, Sep)

Range: (82°, 88°, 93°)

The domain and range can be words with charts and tables.

Find the domain and range of each number relationship.

4.



*Go left to right to find the
x-coordinates for the domain.*

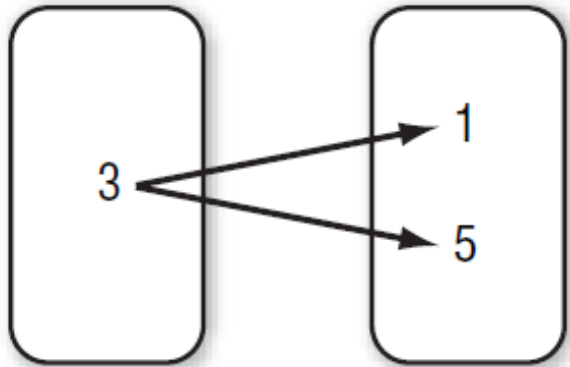
Domain: $(-6, -4, -1, 2, 4, 6)$

Range: $(-3, -2, -1, 3, 4, 5)$

*Go bottom to top to find the
y-coordinates for the range.*

Find the domain and range of each number relationship.

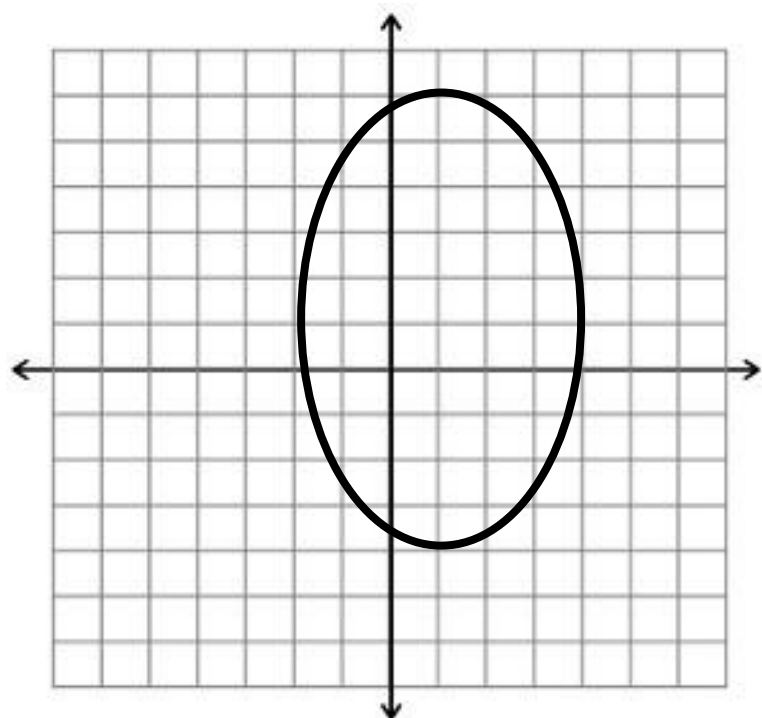
5.



Domain: (3)

Range: (1, 5)

Find the domain and range of each number relationship.



**Set
Notation**

Domain: $\{x \mid -2 \leq x \leq 5\}$

Range: $\{y \mid -4 \leq y \leq 6\}$

**Interval
Notation**

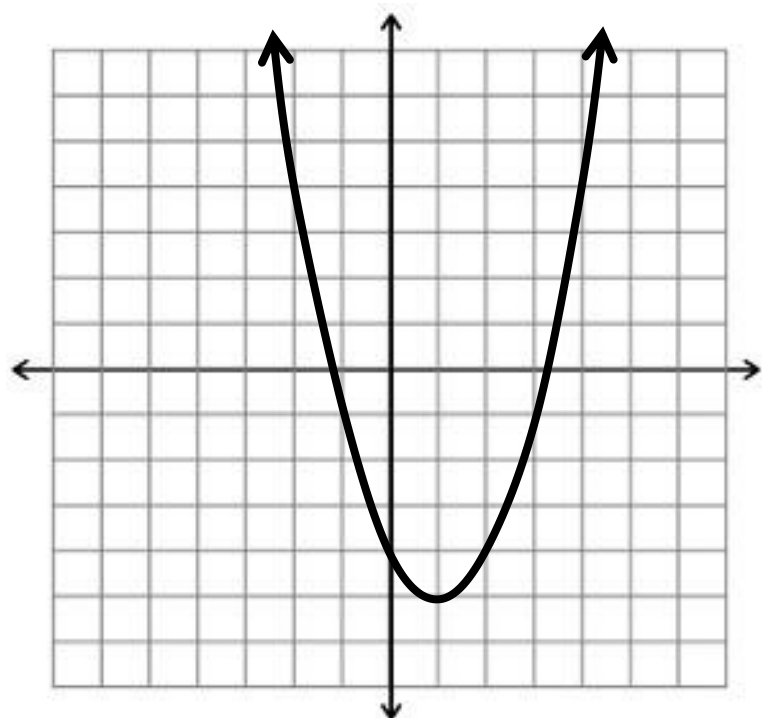
$[-2, 5]$

$[-4, 6]$

*Set notation uses braces $\{ \}$.
The least numbers for the
domain is -2 and the greatest
number is 5. The range goes
from -4 to 6.*

*Interval notation uses
brackets $[]$ and parenthesis
 $()$. Brackets to include the
number and parenthesis to
exclude the number.*

Find the domain and range of each number relationship.

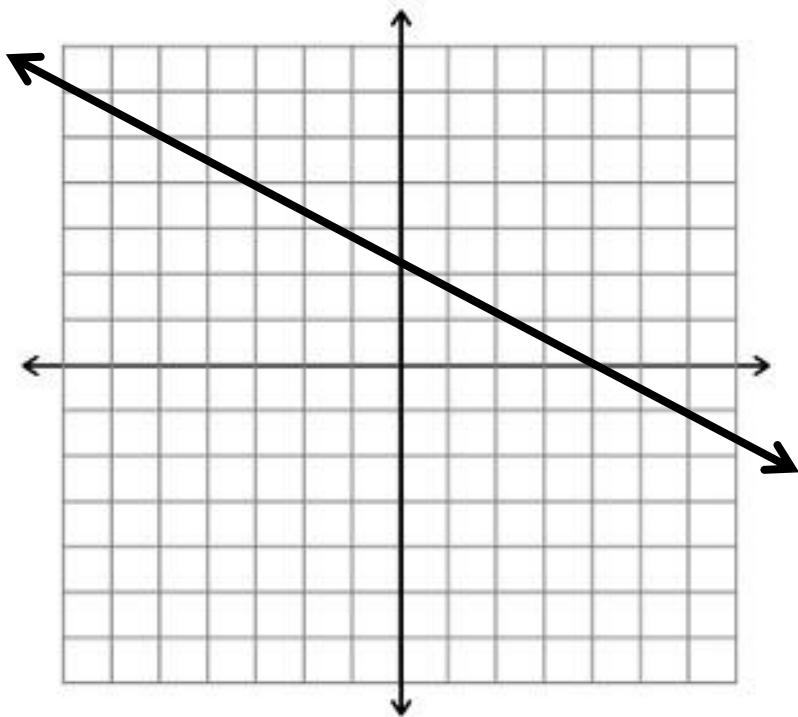


	Set Notation	Interval Notation
Domain:	$\{x \mid x \in \mathbb{R}\}$	$(-\infty, +\infty)$
Range:	$\{y \mid y \geq -5\}$	$[-5, +\infty)$

X can be any real number. The \in means that x is an element of the real number system. Y can be any number greater than 5.

Use parenthesis when infinity, either positive or negative, is used.

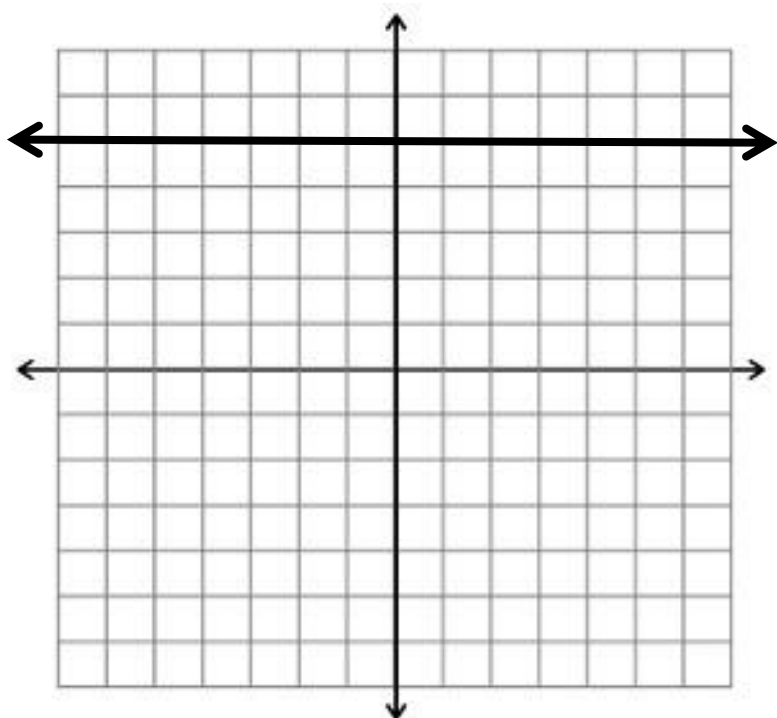
Find the domain and range of each number relationship.



	Set Notation	Interval Notation
Domain:	$\{x \mid x \in \mathbb{R}\}$	$(-\infty, +\infty)$
Range:	$\{y \mid y \in \mathbb{R}\}$	$(-\infty, +\infty)$

Both the domain and range goes onto infinity in both directions.

Find the domain and range of each number relationship.



	Set Notation	Interval Notation
Domain:	$\{x \mid x \in \mathbb{R}\}$	$(-\infty, +\infty)$
Range:	$\{y \mid y = 5\}$	$[5]$

The range is just 1 number, 5.

What is a number relationship?

What are the 4 ways to represent a number relationship?

What is the domain?

What is the range?

Assignment

Domain and Range Worksheet