

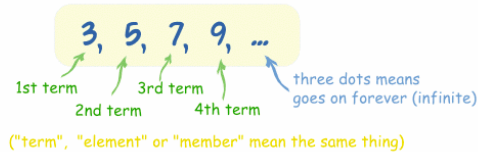
Name: _____ # _____ Homeroom teacher name: _____

Great Mathematicians are Pattern Seekers.
Know the language of patterns.

What is a Sequence?

A Sequence is a list of things (usually numbers) that are in order.

Sequence:



pattern

- repeated design or recurring sequence.
- an ordered set of numbers, shapes or other mathematical objects, arranged according to a rule.

Corresponding terms

Corresponding terms are those that appear in identical places in two similar situations.

Rule recap



Remember: We look for a number pattern in a sequence:

2, 4, 6, 8

+2 +2 +2

The rule is add 2 to the previous term.

4, 8, 10, 12

+4 +4 +4

The rule is add 4 to the previous term.

In Order

When we say the terms are "in order", we are free to define **what order that is!** They could go forwards, backwards ... or they could alternate ... or any type of order we want!

Analyzing **numerical patterns** with powers of ten.

x	10^{-3}	10^{-2}	10^{-1}	10^0	10^1	10^2	10^3	10^4
y	.001		.1	1	10		1,000	

What **pattern** do you see notice in **sequence x**:

--

Does sequence x increase or decrease from left to right:

--

What pattern do you see in sequence y:

--

Does sequence y increase or decrease from left to right?

--

What is the relationship between corresponding terms in sequence x and sequence y:

1) Fill in the missing terms.

2) What pattern do you notice in sequence x

3) What pattern do you notice in sequence y

4) How do the corresponding terms in x and y relate?

x	y
$1/10 \times 1/10 \times 1/10$	.001
$1/10 \times 1/10$	.01
$1/10 \times 1$	
1×10	10
10×10	
$10 \times 10 \times 10$	1,000
$10 \times 10 \times 10 \times 10$	10,000
	100,000
$10 \times 10 \times 10 \times 10 \times 10 \times 10$	

1. Study the pattern below.
2. Add the missing terms.

term	1	2	3	4	5	6	7	8	9	10
Sequence x	1	2	3		5	6		8		10
Sequence y	10	20		40		60	70		90	

Describe sequence x

Describe sequence y

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

Graph the relationship on the coordinate grid on the next page. Describe what do you notice about the graph?

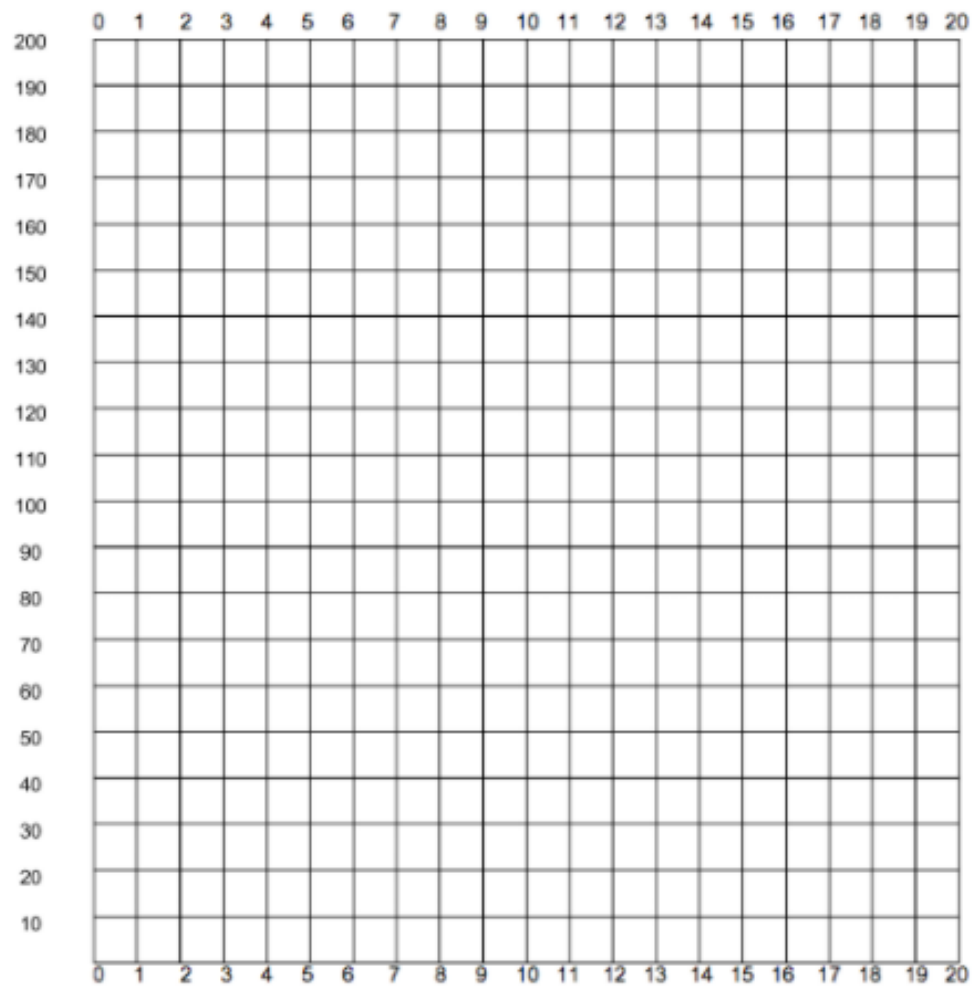
Title:

Y
a
X
i
s

v
e
r
t
i
c
a
l

a
x
i
s

Title:



Title:

x axis horizontal axis

Base Ten Place Value System Pattern Problem

Each day that Mark worked as a magician he made \$100. Complete the sequence below that shows how much Mark made in 10 days.

Day (x)	1	2	3		5	6		8		10
\$ (y)	100	200		400		600	700		900	

Describe sequence x (days). Does it increase. If so, by how much?

--

Describe sequence y. How does it “grow” or “change over time?”

--

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

--

Graph the relationship on the coordinate grid on the next page. Describe what do you notice about the graph?

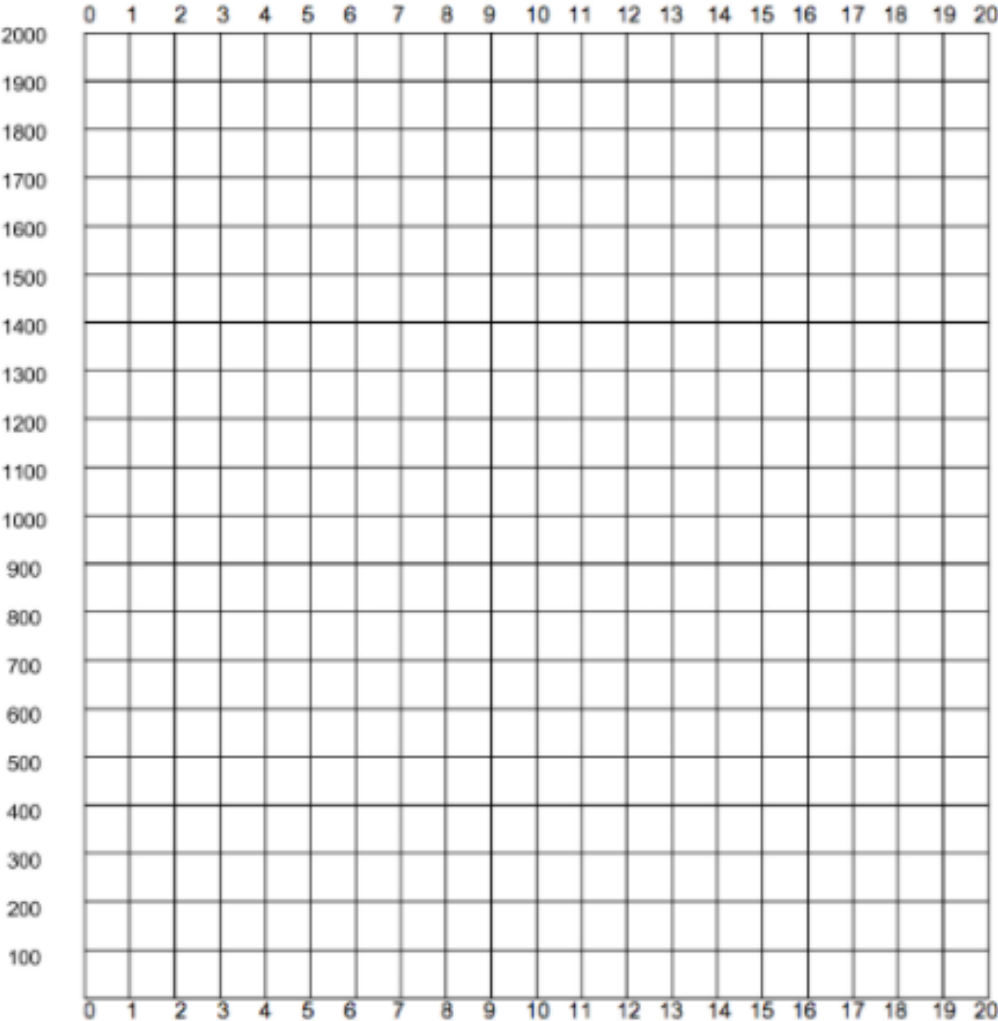
Title:

Y
a
X
i
s

v
e
r
t
i
c
a
l

a
X
i
s

Title:



Title:

x axis horizontal axis

Complete the Base-Ten Place Value System Patterns Below

x	10^1	10^3	10^5	10^7		10^{11}
y	10	1,000		10,000,000	1,000,000,000	

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

x	10^1	10^2	10^3	10^4		10^6
y	100	1,000	10,000	100,000	1,000,000	

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

x	10^1	10^2	10^3	10^4		10^6
y	20	200	2,000		200,000	

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

x	10	10 X 10	10X10X10	10X10X10X10	10X10X10X10X10	10X10X10X10X10X10
y	10	100	1,000		100,000	

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

System Patterns Below

x	10^1	10^2	10^3	10^4	10^5	10^6
y	10	10 X 10		10X10X10X10		

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

Analyze the pattern below

x	1/10	1/100		1/10,000	1/100,000	
y	.1	.01	.001	.0001		.000001

Describe sequence x (days). Does it increase. If so, by how much?

Describe sequence y. How does it “grow” or “change over time?”

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

Make up your own Base Ten Place Value System Patterns

Describe sequence x (days). Does it increase. If so, by how much?

--

Describe sequence y. How does it “grow” or “change over time?”

--

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

--

Make up your own Base Ten Place Value System Patterns

Describe sequence x (days). Does it increase. If so, by how much?

--

Describe sequence y. How does it “grow” or “change over time?”

--

Describe the relationship between corresponding terms in sequence x and sequence y. If possible use an algebraic equation to describe the relationship.

--

