

UNIT PLANNING TOOL

Planning Focus: Coordinate plane and their applications **Module(s)/Unit(s)** Unit 6

CCSS.MATH.CONTENT.5.G.A.1

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x -axis and x -coordinate, y -axis and y -coordinate).

CCSS.MATH.CONTENT.5.G.A.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Mathematical practices being emphasized:

Make sense of problems and persevere in solving them. (#1)

Model with mathematics. (#4)

Look for and make use of structure. (#7)

Essential Questions

- How does the coordinate system work?
- How do coordinate grids help you organize information?
- How might a coordinate grid help me understand a relationship between two numbers?

Key Concepts

- Transfer data from charts to graphs and graphs to charts
- Understand that graphs are a visual representation of information called data
- Interpret data from graphs
- Classify 2D shapes (on a coordinate grid)
- Extend numerical patterns

Visual Models/ Algorithms/ Diagrams for Compendium

The collage includes:

- A coordinate plane with four quadrants labeled with signs: $(-, +)$, $(+, +)$, $(-, -)$, and $(+, -)$.
- A coordinate grid with a triangle plotted in the first quadrant, with vertices labeled A, B, C, and D.
- A circular diagram with a grid overlay, possibly representing a circle or a specific geometric shape.

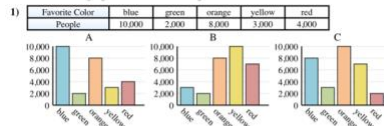
This section contains:

- A line graph titled "Highest Temperatures, 2011" showing temperature in degrees Celsius (C) on the y-axis (ranging from -15 to 35) and months on the x-axis (J, F, M, A, M, J, J, A, S, O, N, D). The graph shows a seasonal curve peaking in August.
- A coordinate grid with the four quadrants labeled with Roman numerals: II (top-left), I (top-right), III (bottom-left), and IV (bottom-right).

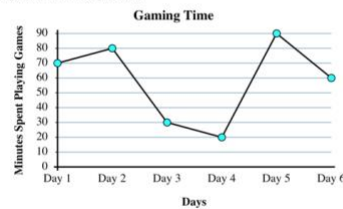


Pre Assessment

Circle the graph (A, B or C) best represents the information in the table.



The graph below shows the minutes Tommy spent playing video games. Use the graph to answer the questions.



- 1) Which day did he spend the most time playing games?
- 2) Which day did he spend the least time playing games?

Which letter best shows -24?



Determine the number that correctly fills in the blank in the function machine.

In	4	5	9	8
Out	20	25	45	10

In	12	24	48	54	30
Out	2	4	8	9	

Connections (Real World Applications)

- Cartography
- Air traffic control
- Art
- Scaling
- Graphing data
- Technology – touchscreens
- Gaming
- Radar – military, satellites

Language Functions/Structures

Functions: Explain. Describe. Compare

Structures: I drew ____ because _____. I used a number line and started at _____.

On the graph, _____ correlates to _____ because _____.

The y-axis is different than the x-axis because _____.

This graph shows _____ and this graph shows _____. They are similar/different because _____.

Why did you _____? I _____ because _____. The tool I used was _____.

Vocabulary

- | | | |
|----------------------------|--------------------------------|-----------------------|
| • axis/axes | • horizontal | • rule |
| • coordinates | • intersection of lines | • vertical |
| • coordinate plane | • line | • x-axis |
| • coordinate system | • ordered pairs | • x-coordinate |
| • first quadrant | • origin | • y-axis |
| | • point | • y-coordinate |

Focus and Motivation

Animations – Ordered Pairs – studyjams.scholastic.com

Coordinate Plane – brainpop.com

Chants – Mental Math Addition Bugaloo (DLeNM chant bank)

Literature – *The Fly on the Ceiling* by Dr. Julie Glass

A Place for Zero by Angeline Sparagna LoPresti

Less than Zero by Stuart J. Murphy

Game – Battleship Web based classicwebgames.com

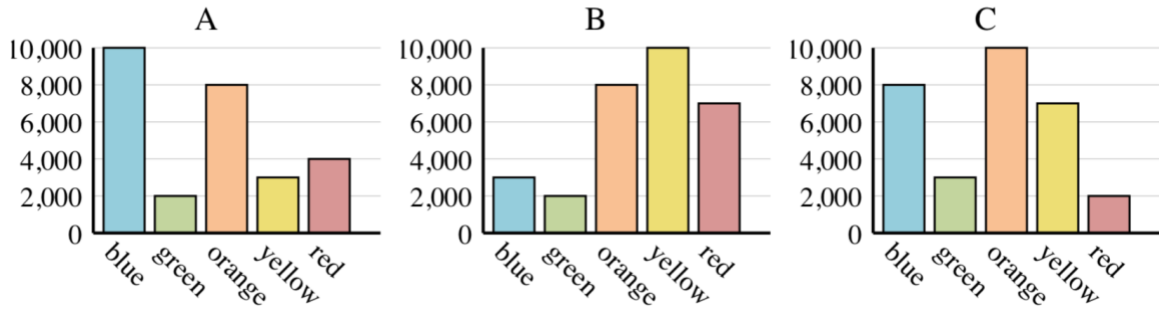
Battleship Web based sheppardsoftware.com

Name _____ Date _____

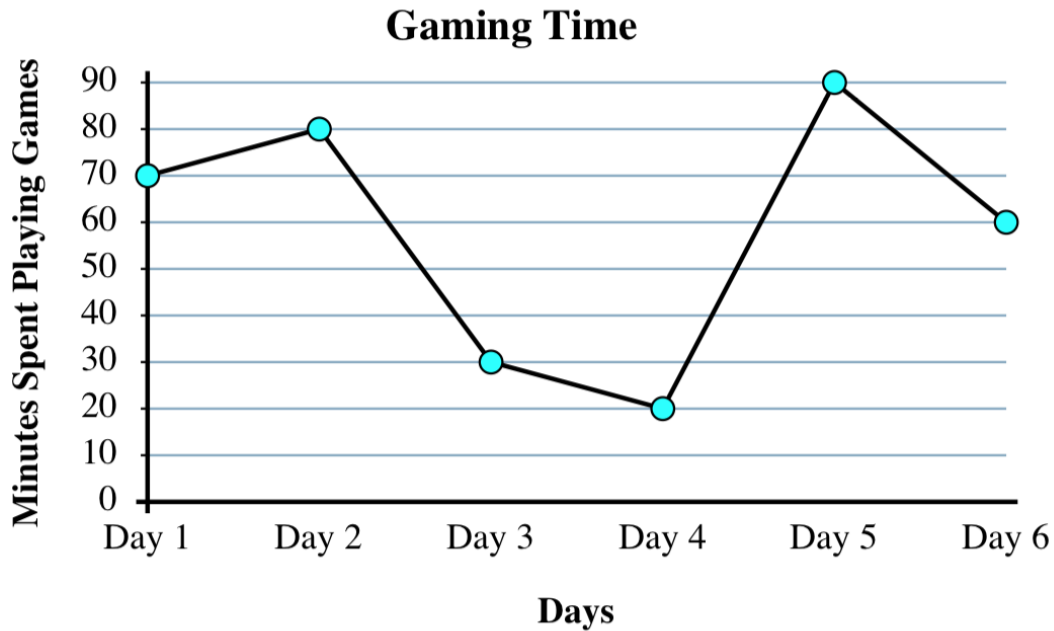
Circle the graph (A, B or C) best represents the information in the table.

1)

Favorite Color	blue	green	orange	yellow	red
People	10,000	2,000	8,000	3,000	4,000



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- 2) Which day did he spend the least time playing games?

Which letter best shows -24?



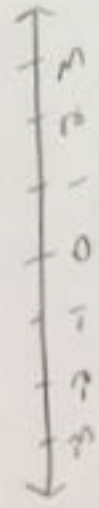
Determine the number that correctly fills in the blank in the function machine.

In	4	5	9		8
Out	20	25	45	10	40

In	12	24	48	54	30
Out	2	4	8	9	

Number Lines

Horizontal \rightarrow x-axis

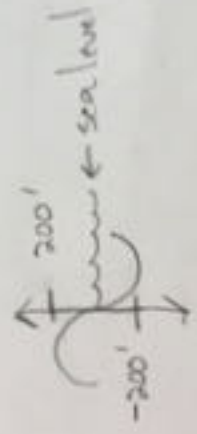


- used in sports (football)
- used with money
 - \rightarrow \$ owned $+10$
 - \rightarrow \$ borrowed -10

Vertical \updownarrow y-axis

- temperature
 - \uparrow 75°
 - \downarrow -75°

- elevation



Geometry Coordinate Planes

Application

- used to make maps to show location



air traffic control



- Invented by Rene Descartes (1700s)
- he wanted to describe a location at any point

Coordinate Plane Grid

x-axis



Coordinate Pair (x, y) marks the spot

- move \rightarrow First
- move \downarrow Second

we know...

Inquiring Coordinate Planes - we want to know...

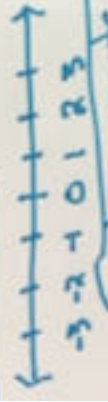
Mathematical Standards and Practices

we will relate the structure of number lines to values of positive integers on the coordinate plane.

we will make sense of solving real world problems involving points on the coordinate plane

Number Lines

Horizontal \rightarrow x-axis



used in sports (football)

money
owe \$
own \$

temperature
10°
-10°

elevation
-200'
sea level

Geometry Coordinate Plane

Application

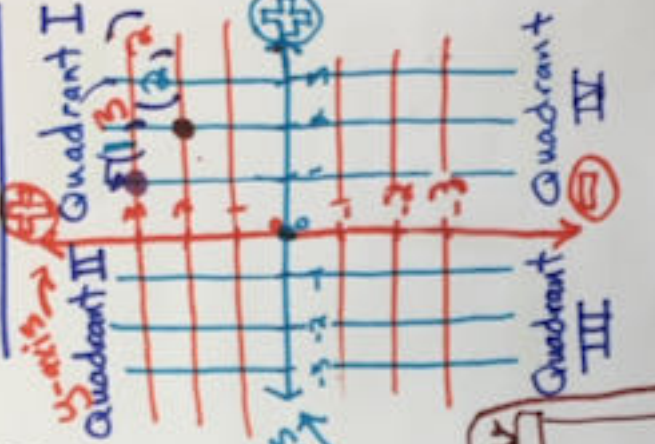
maps ^{using} latitude



air traffic control



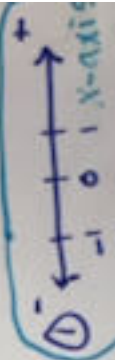
Coordinate Plane



ins
Use the coordinate plane

Coordinate Pair (a)

(x, y) marks the spot

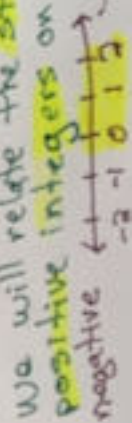


First +

Second -

y-axis

Mathematical Standards and Practices
We will relate the structure of number lines to values of positive integers on the coordinate plane.



10° money
-10°