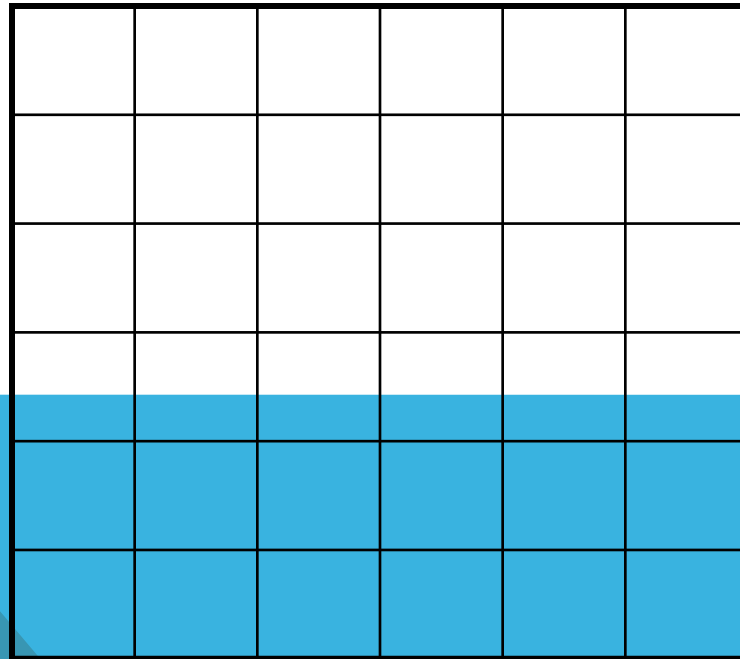


Read and plot coordinates in all  
quadrants

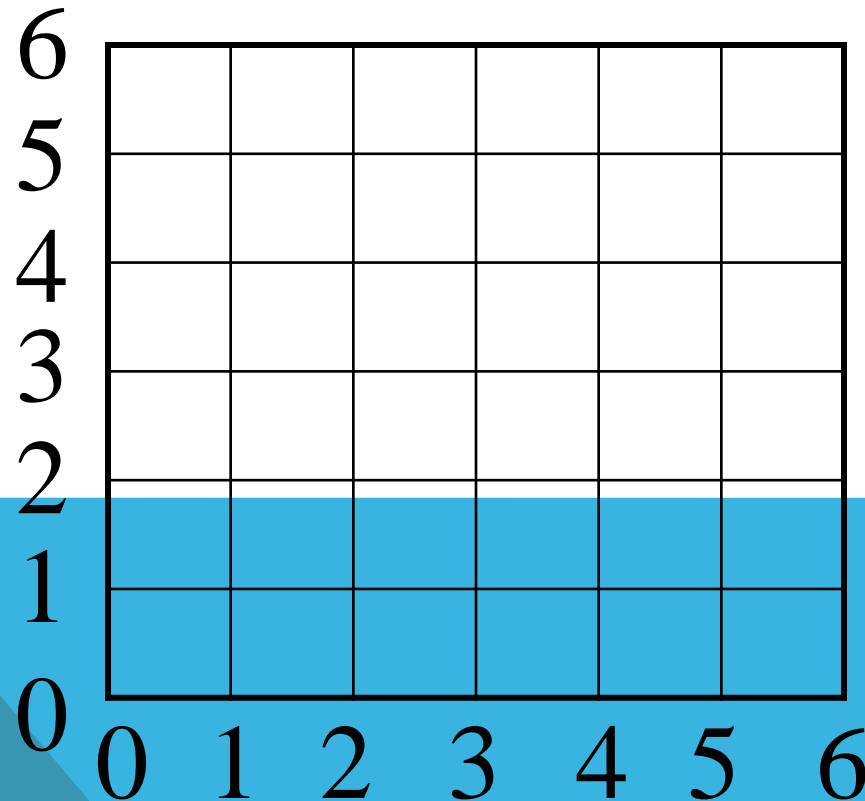
# DEFINITION

Grid - A pattern of horizontal and vertical lines, usually forming squares.



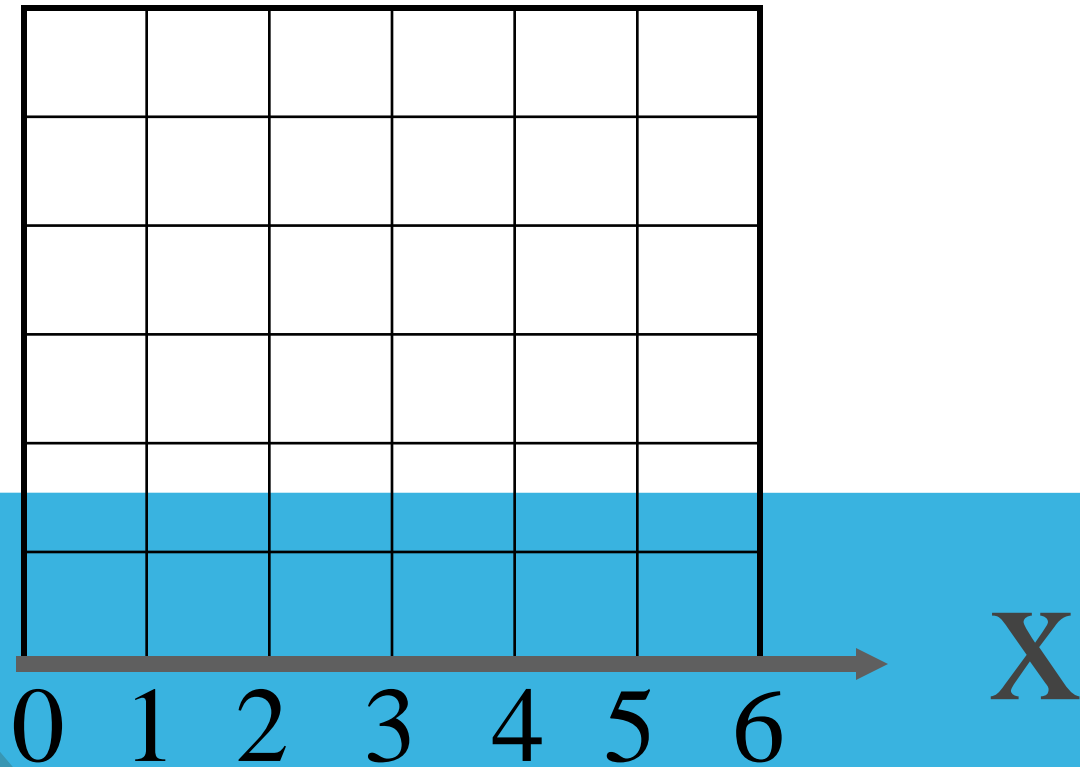
# DEFINITION

Coordinate grid - a grid used to locate a point by its distances from 2 intersecting straight lines.



# DEFINITION

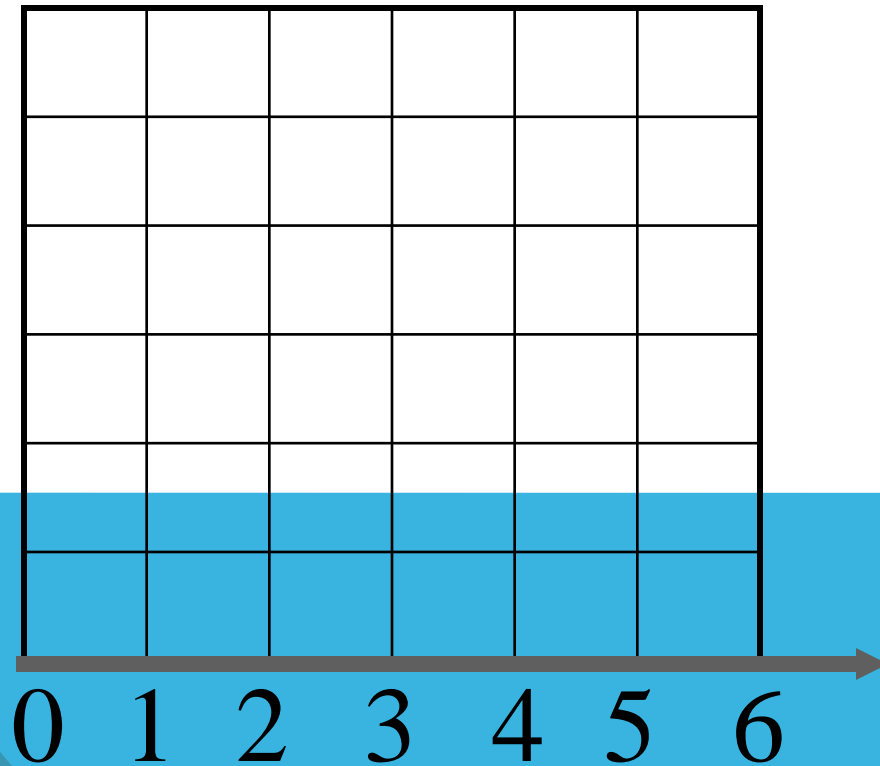
x axis – a horizontal number line on a coordinate grid.



HINT

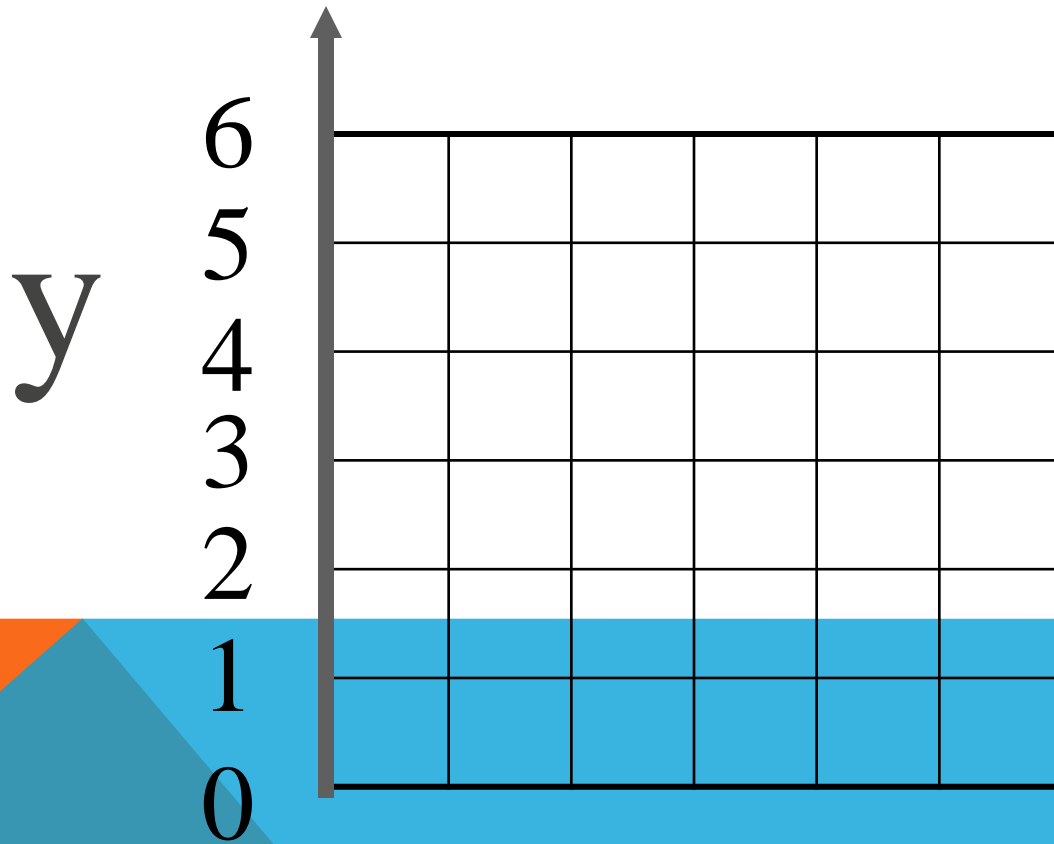
x 'is a cross'

(across 😊)



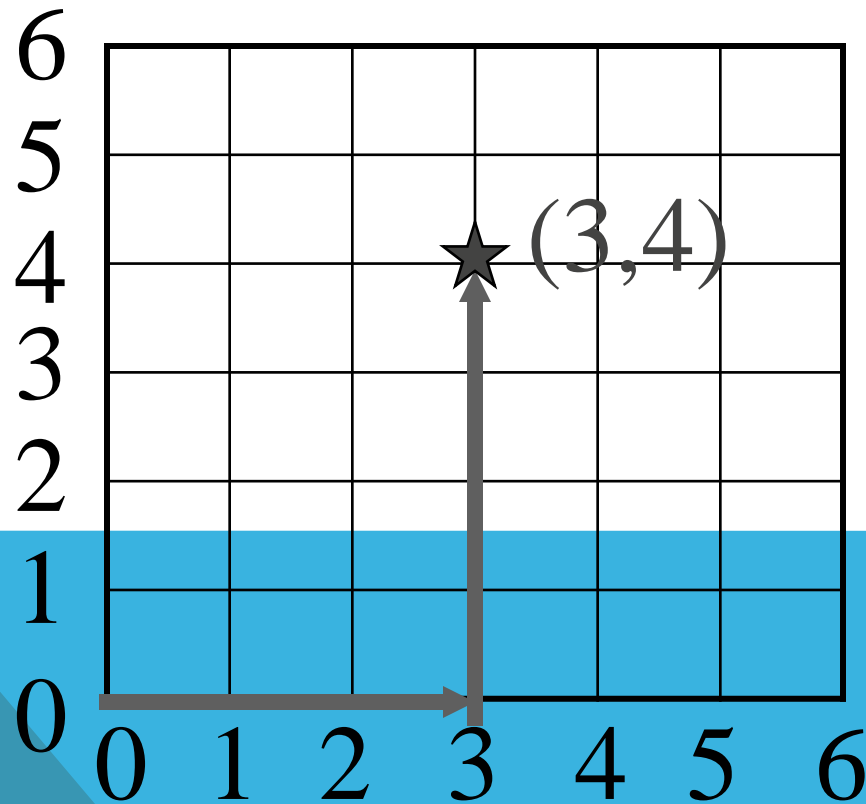
# DEFINITION

y axis – a vertical number line on a coordinate grid.



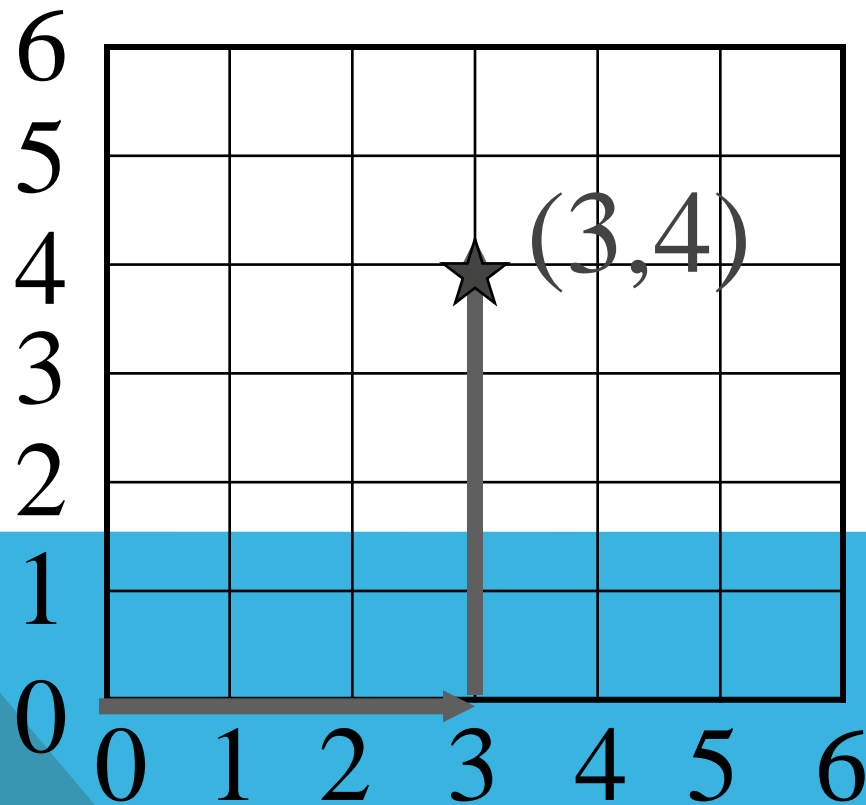
# DEFINITION

Coordinates - an ordered pair of numbers that give the location of a point on a grid.  $(3, 4)$



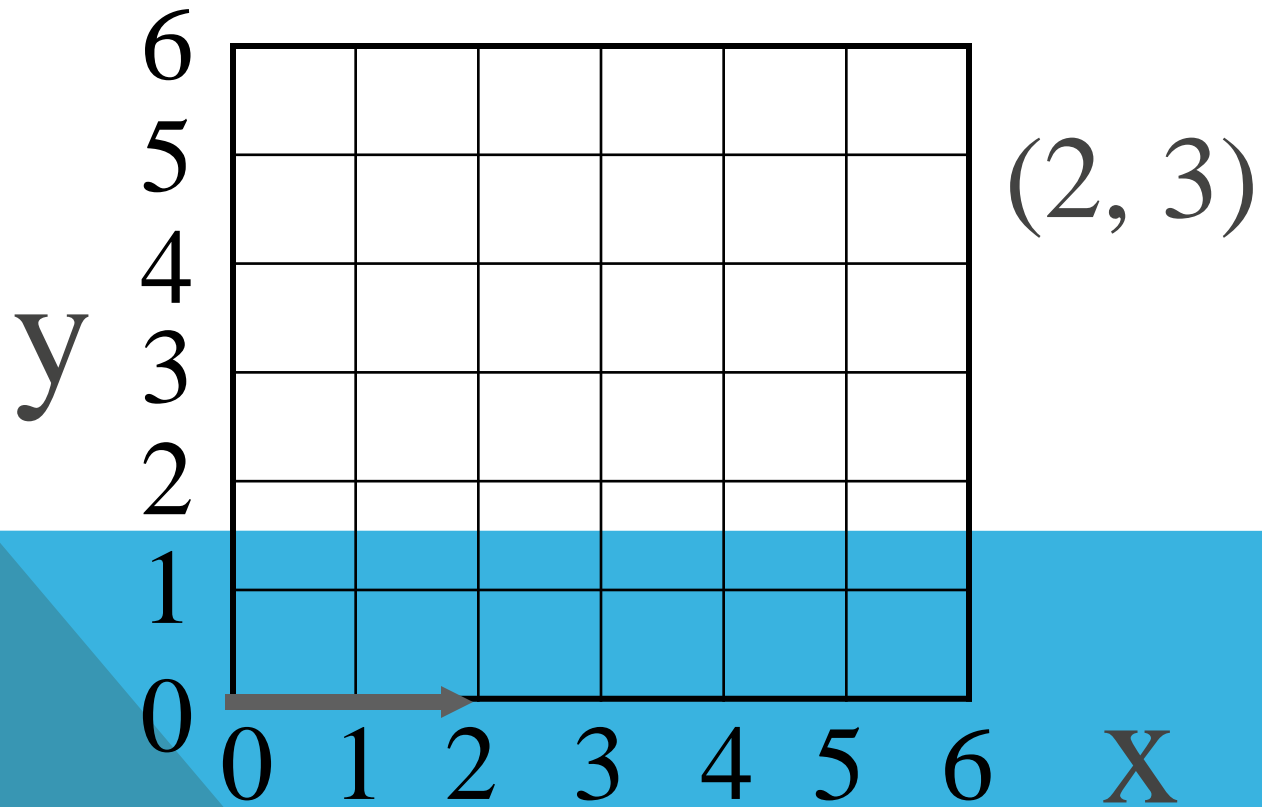
# HINT

The first number is always the x or first letter in the alphabet. The second number is always the y the second letter in the alphabet.



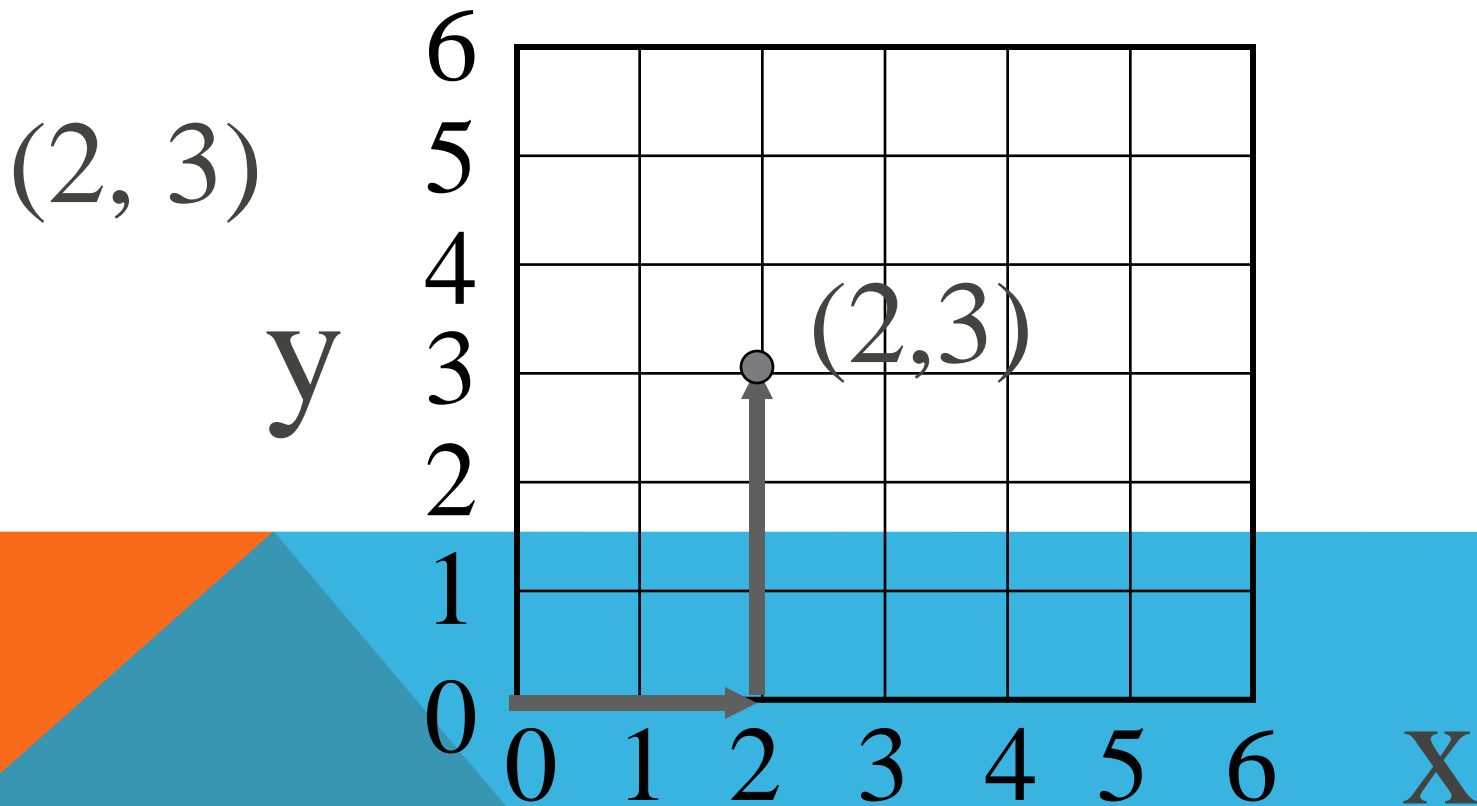
# HOW TO PLOT ORDERED PAIRS

Step 1 - Always find the x value first, moving horizontally



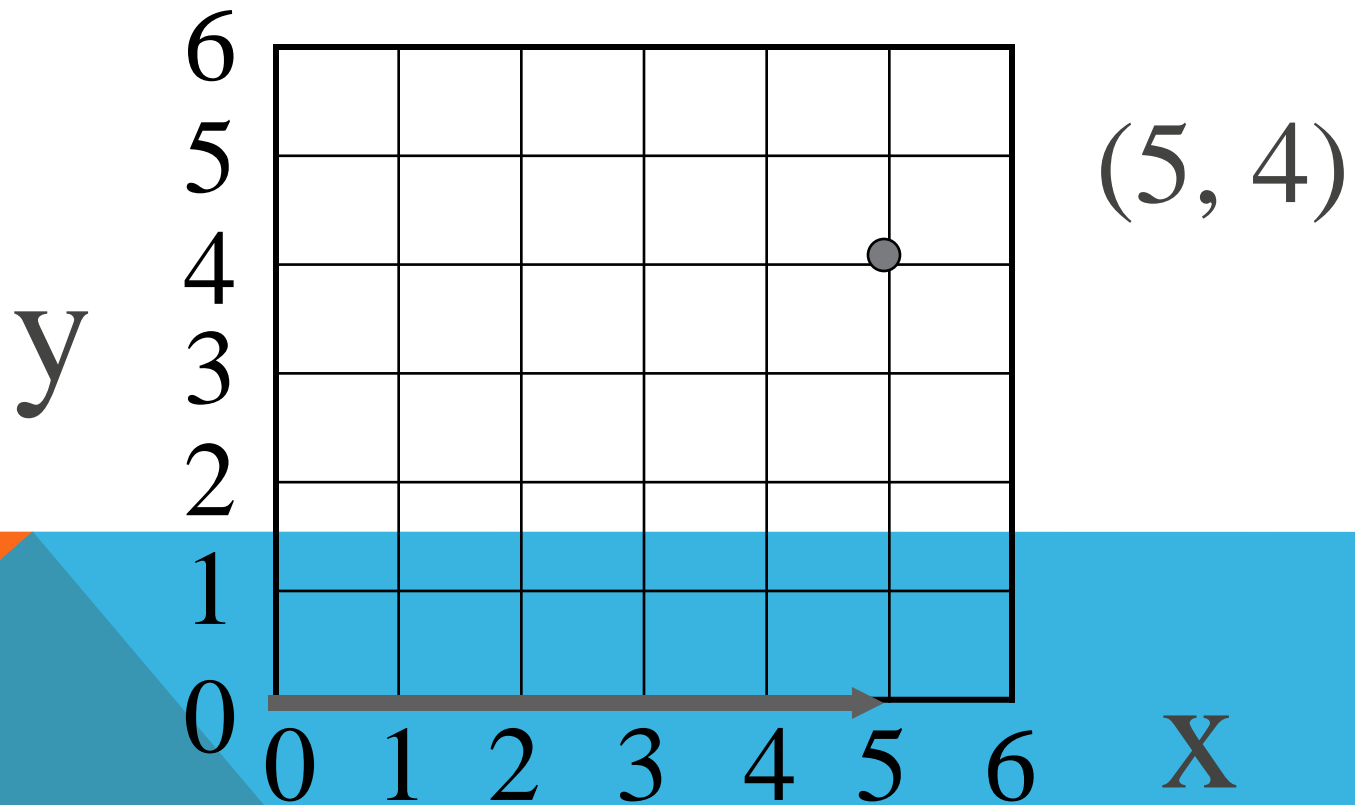
# HOW TO PLOT ORDERED PAIRS

Step 2 - Starting from your new position find the y value by moving vertically



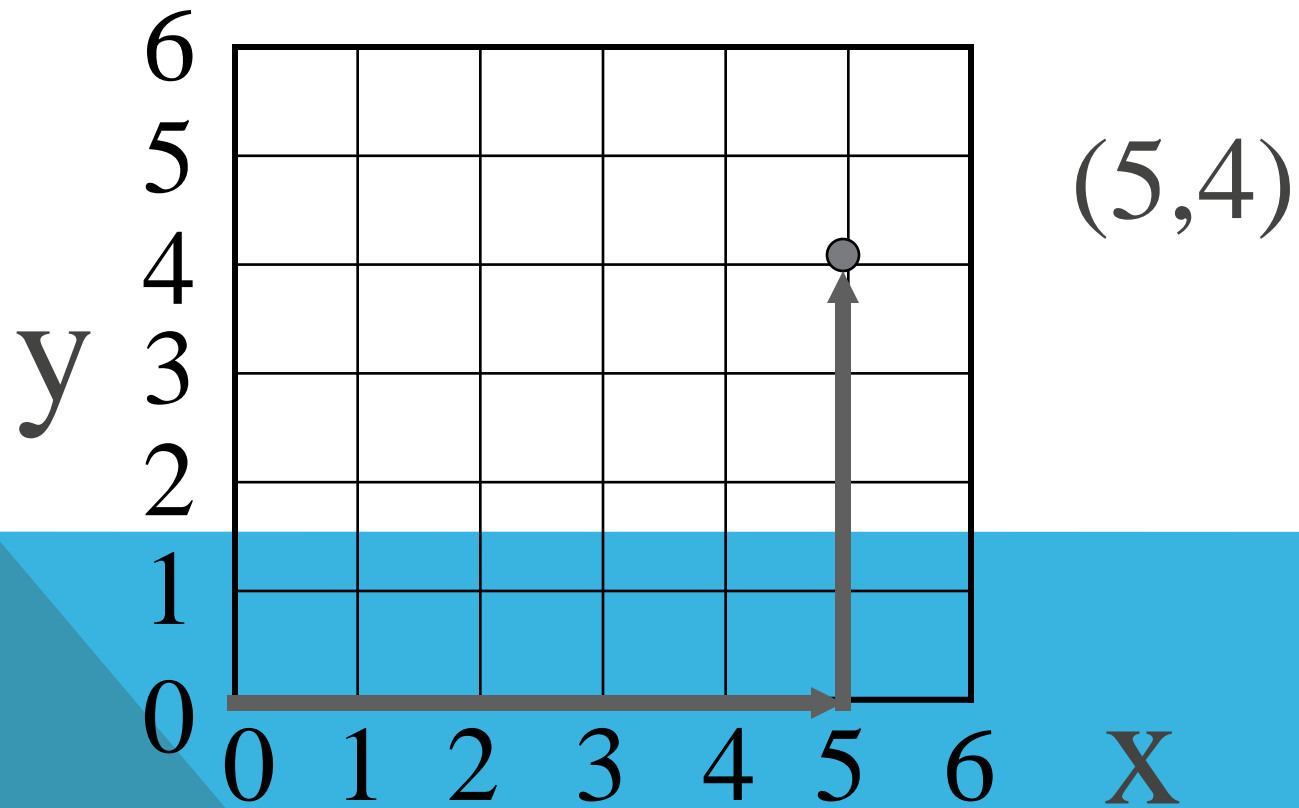
# HOW TO FIND ORDERED PAIRS

Step 1 - Find how far over horizontally the point is by counting to the right



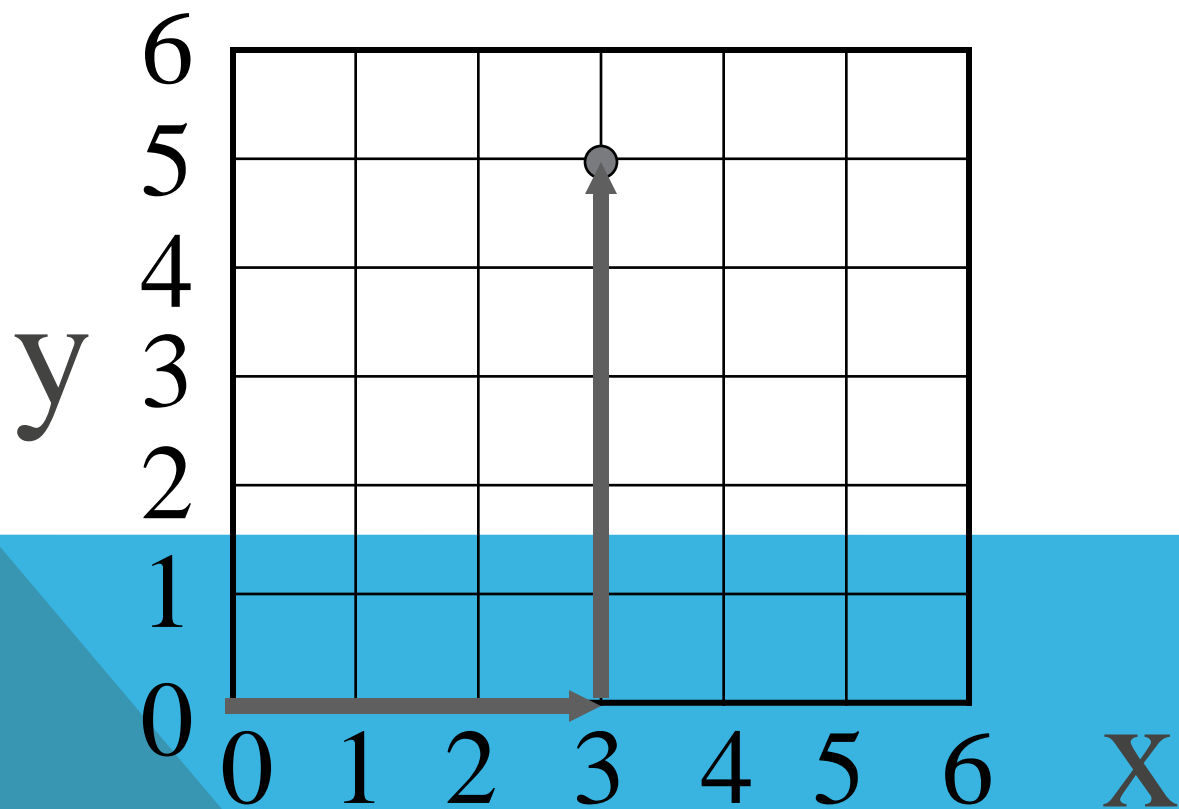
# HOW TO FIND ORDERED PAIRS

Step 2 - Now count how far vertically the point is by counting up



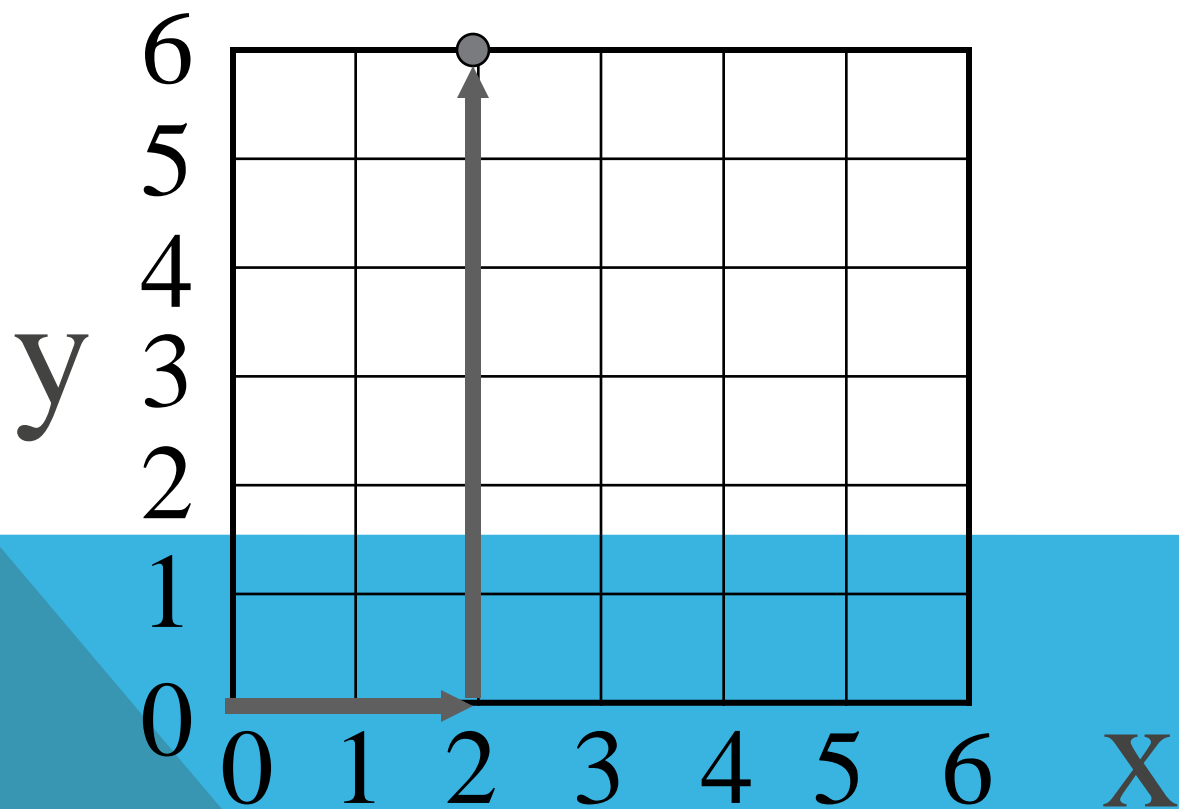
# WHAT IS THE ORDERED PAIR?

$(3, 5)$



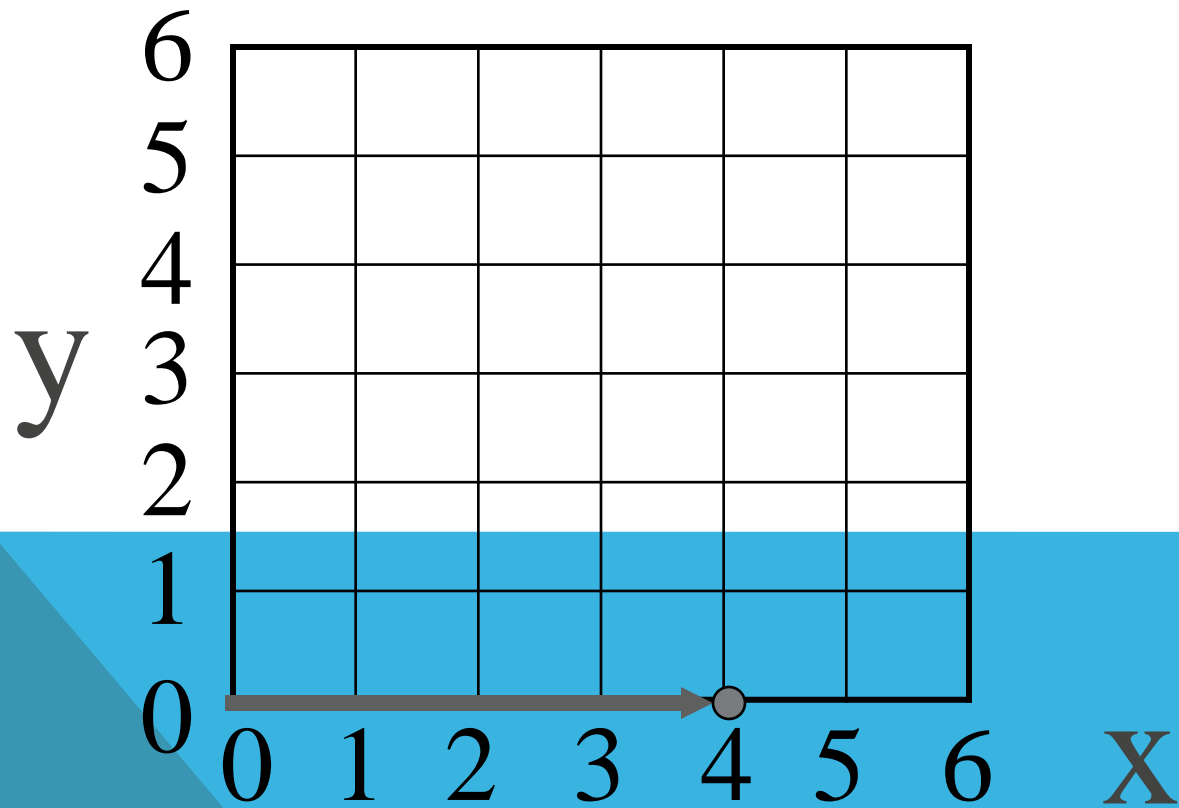
# WHAT IS THE ORDERED PAIR?

$(2, 6)$



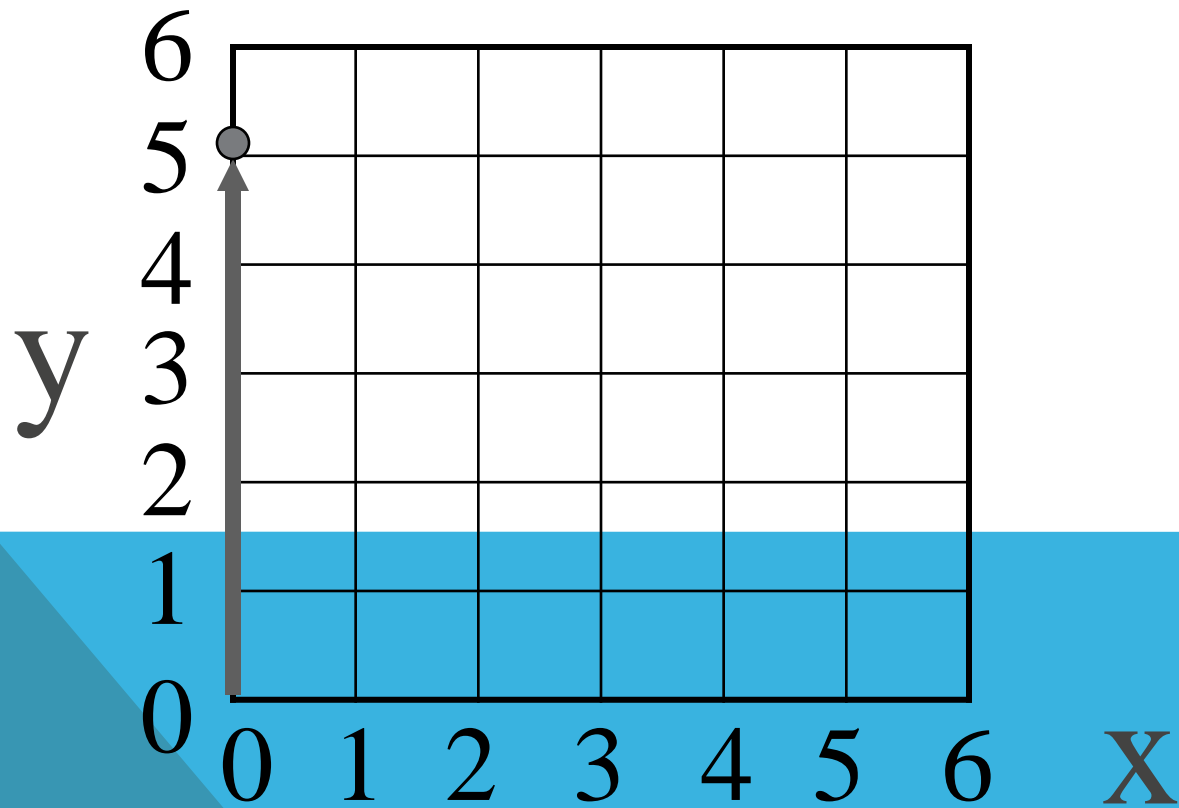
WHAT IS THE ORDERED PAIR?

$(4,0)$



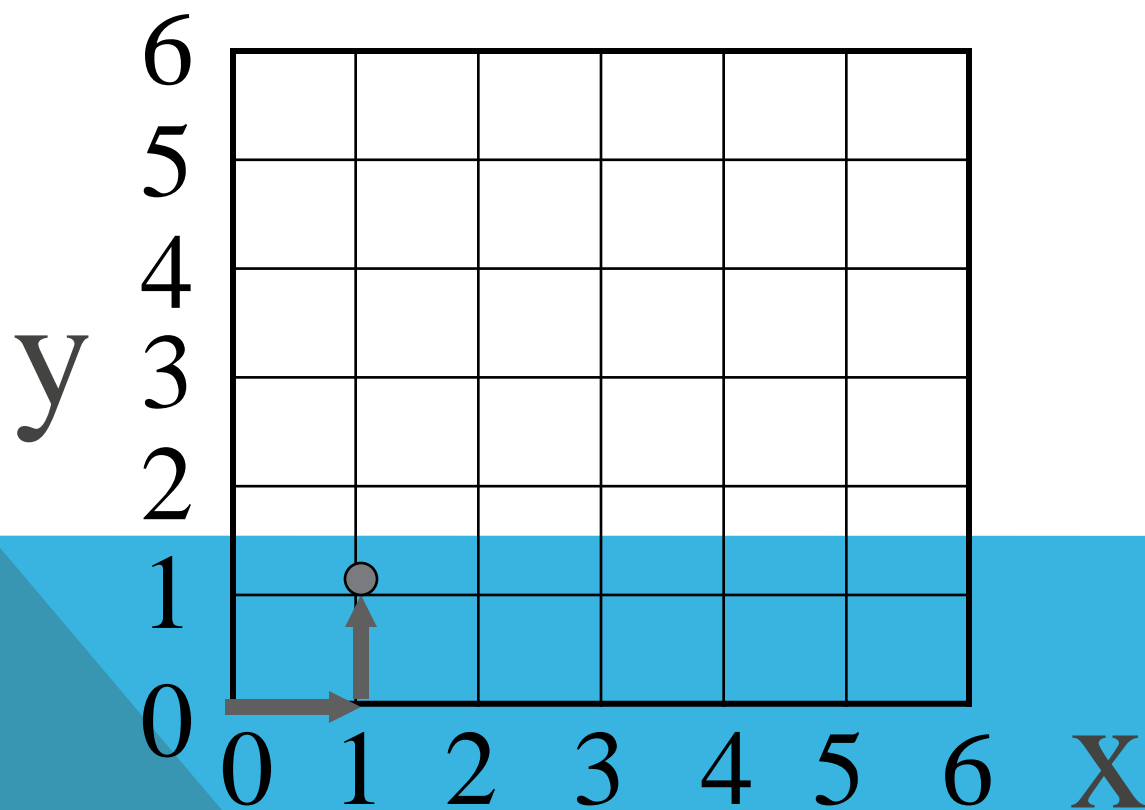
WHAT IS THE ORDERED PAIR?

$(0, 5)$

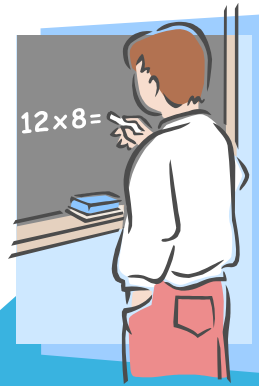


WHAT IS THE ORDERED PAIR?

$(1,1)$



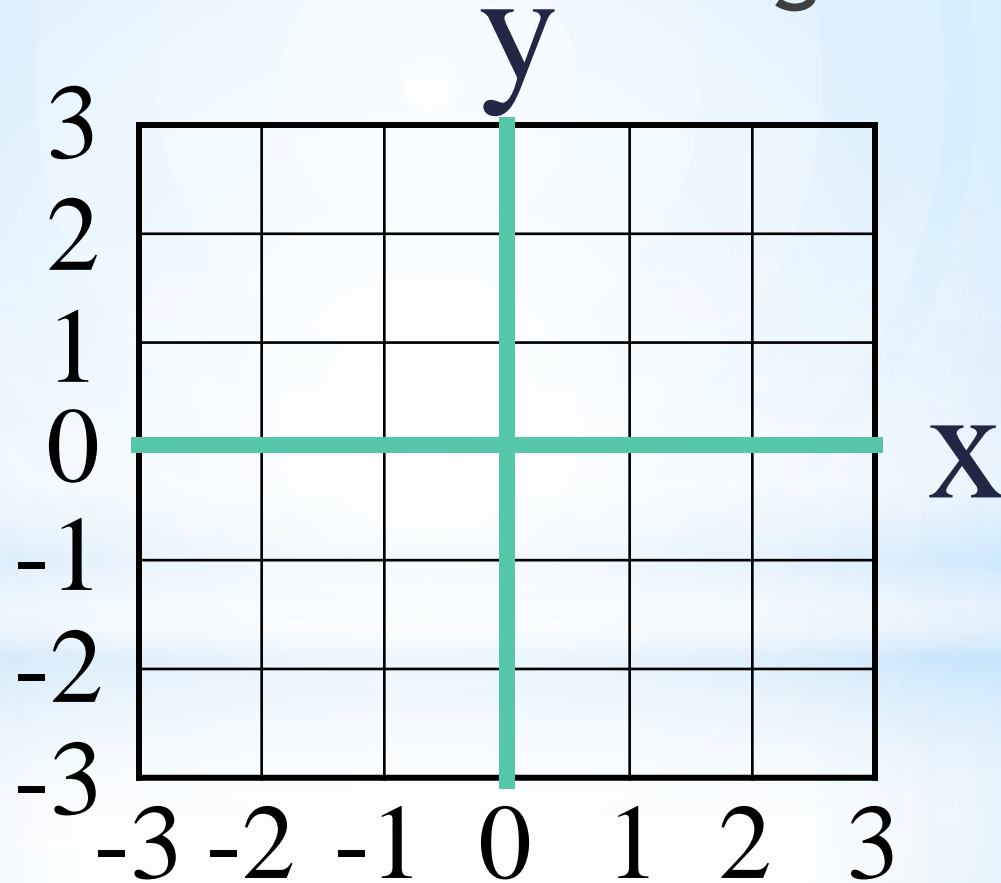
# Learning Objective



Read and plot coordinates in all quadrants

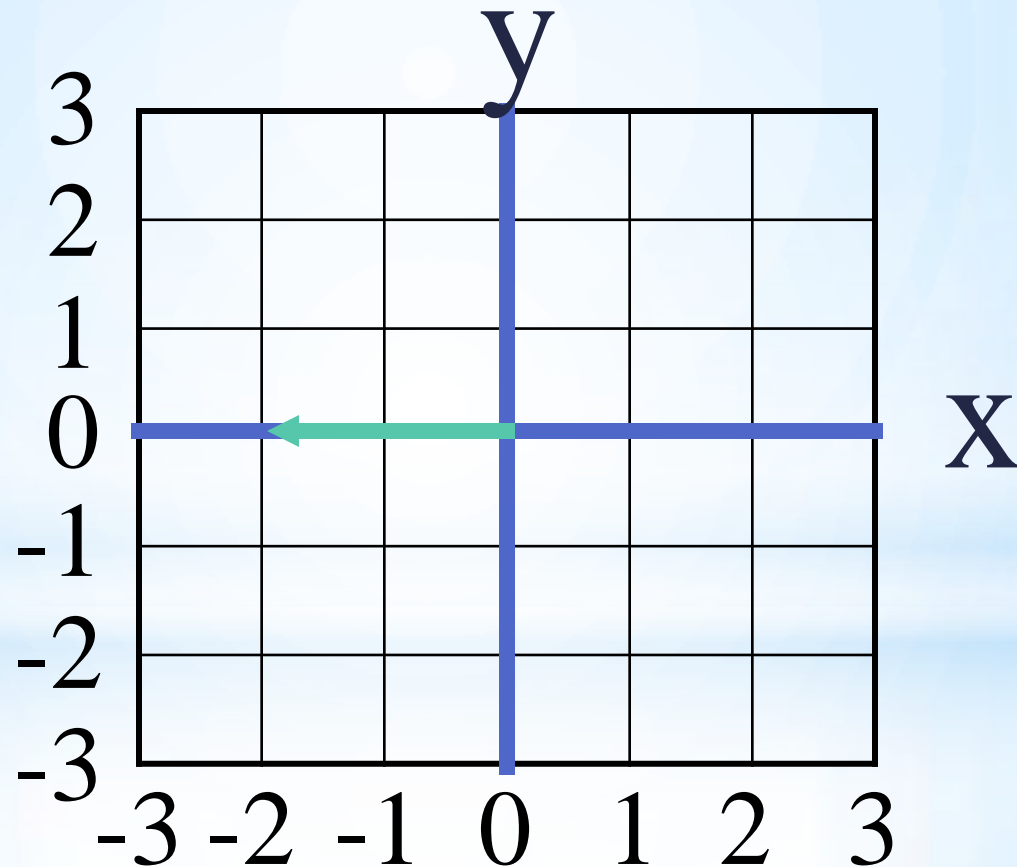
# \* Four Quadrants Grid

\* When the number lines are extended into the negative number lines you add 3 more quadrants to the coordinate grid.



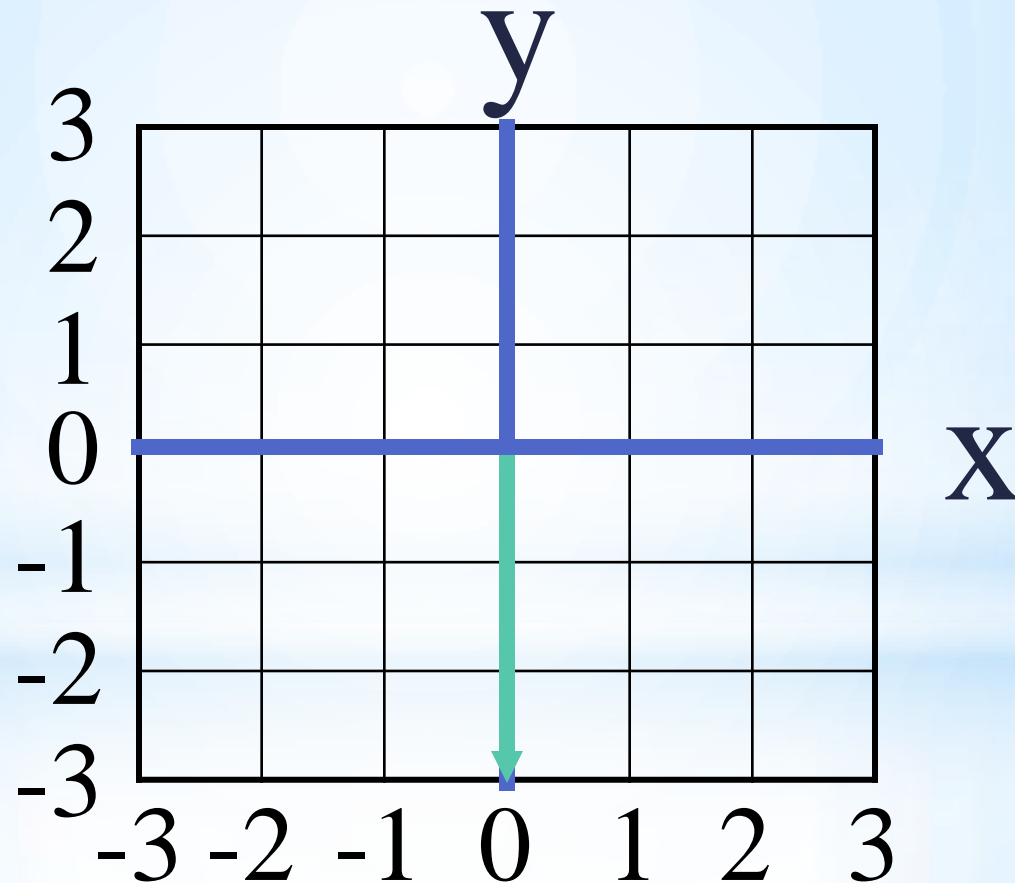
# \* Four Quadrants Grid

\* If the  $x$  is negative you move to the left of the 0.  $x = -2$

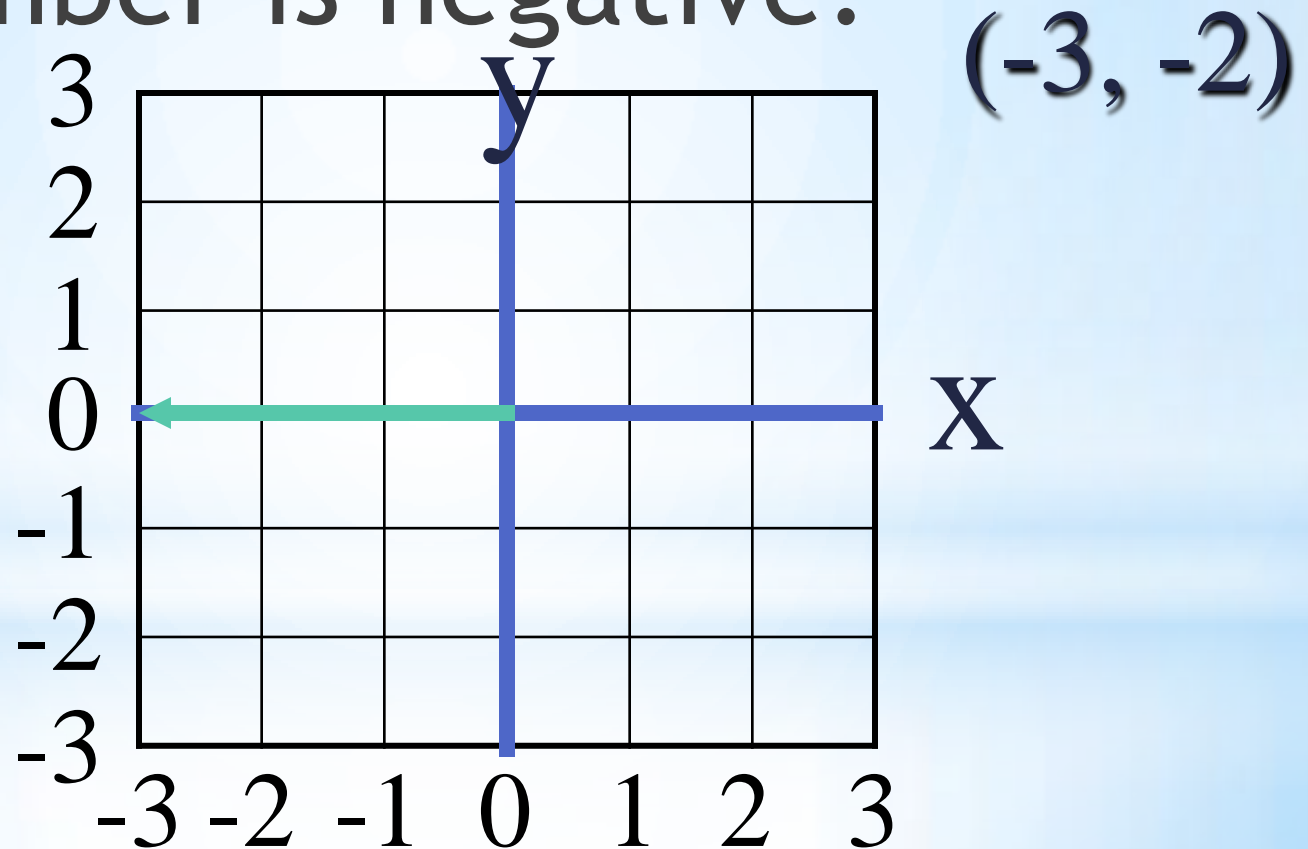


# \* Four Quadrants Grid

- \* If the  $y$  is negative you move down below the zero.  $y = -3$



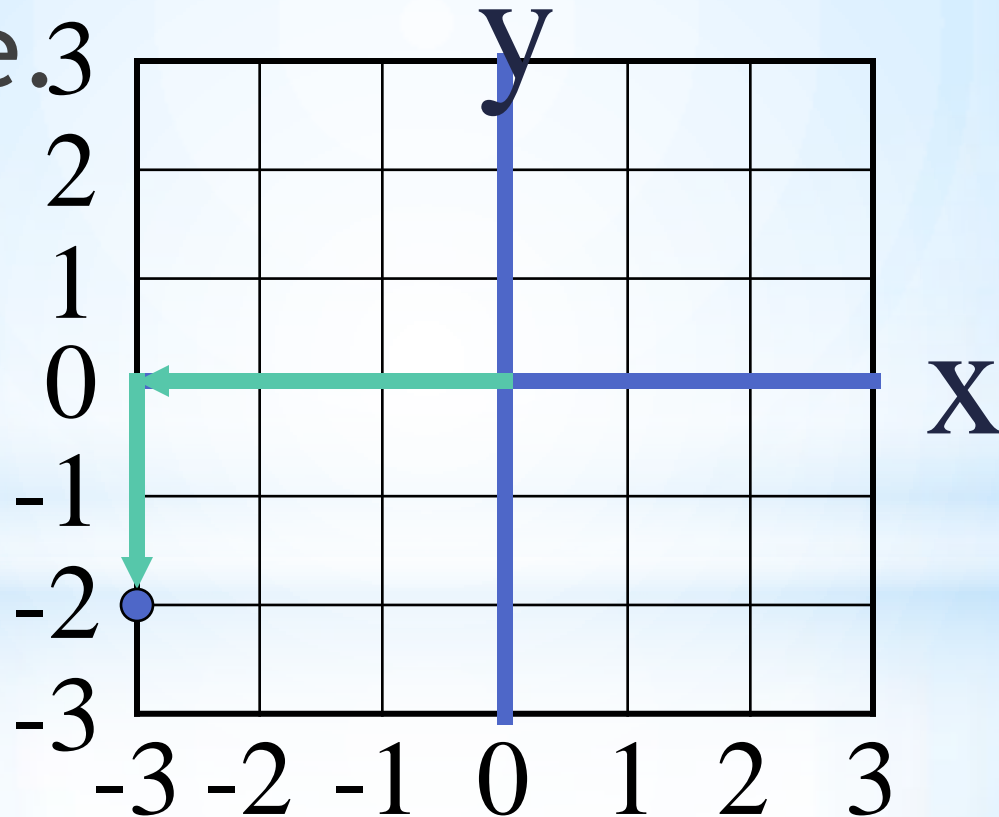
- \* **How to Plot in 4 Quadrants**
- \* **Step 1 - Plot the x number**  
first moving to the left when  
the number is negative.



# \* How to Plot in 4 Quadrants

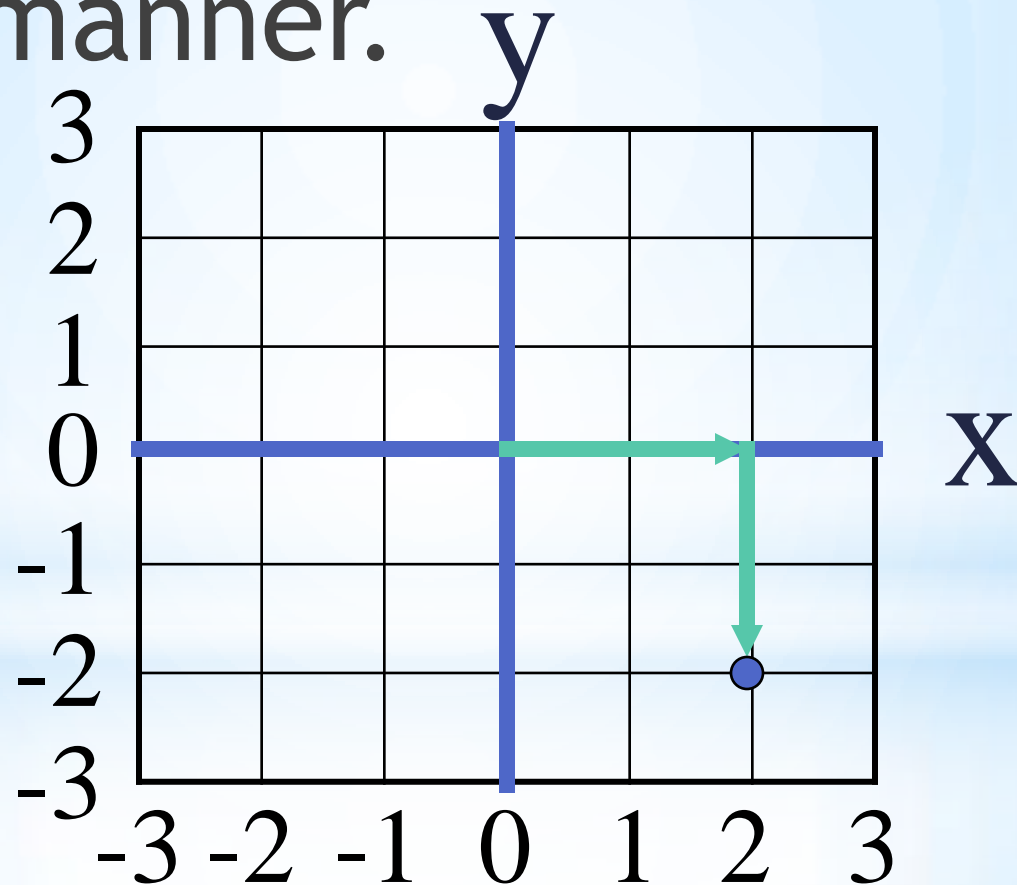
- \* Step 2 - Plot the y number moving from your new position down 2 when the number is negative.

$(-3, -2)$

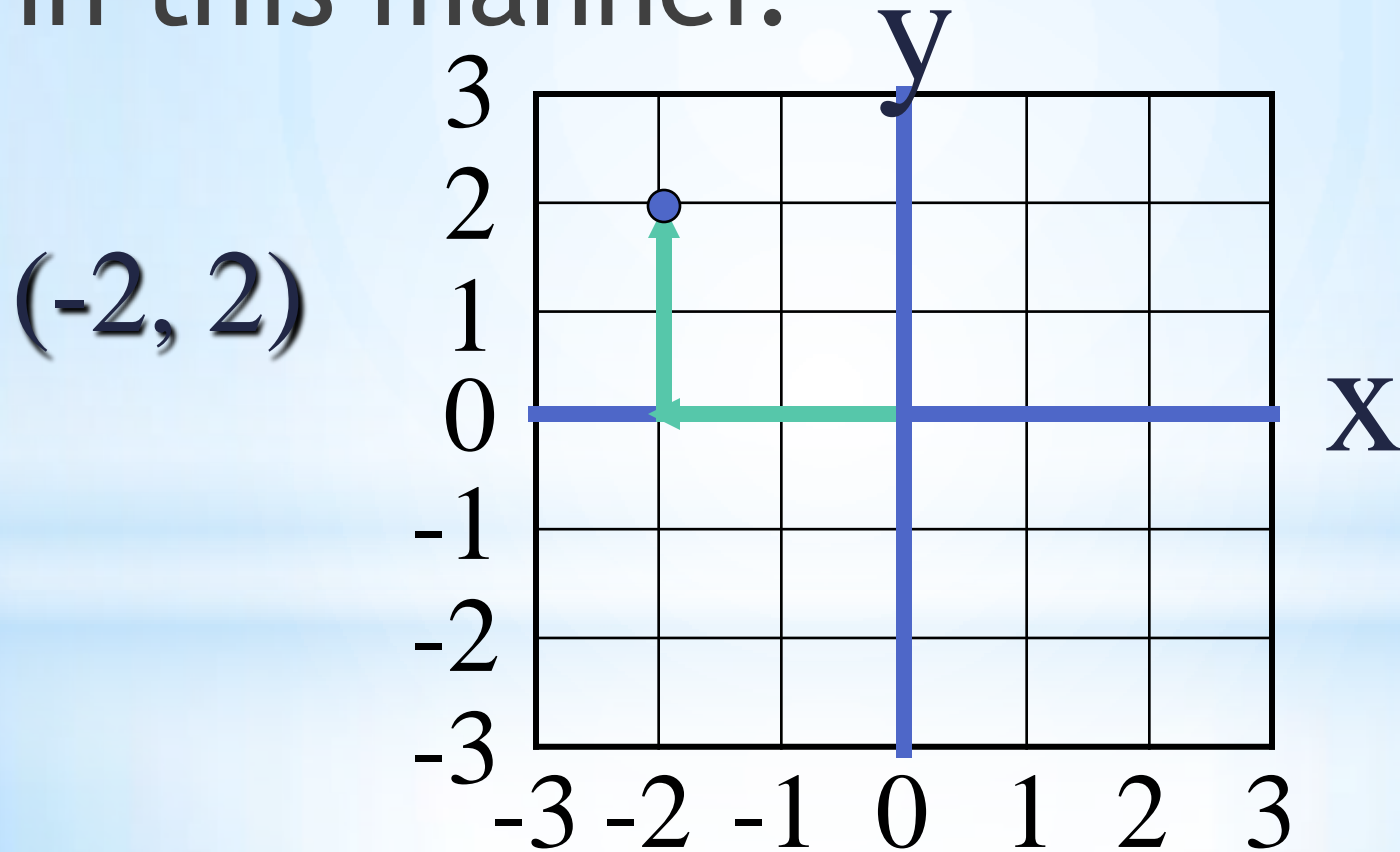


- \* **How to Plot in 4 Quadrants**
- \* When  $x$  is positive and  $y$  is negative, plot the ordered pair in this manner.

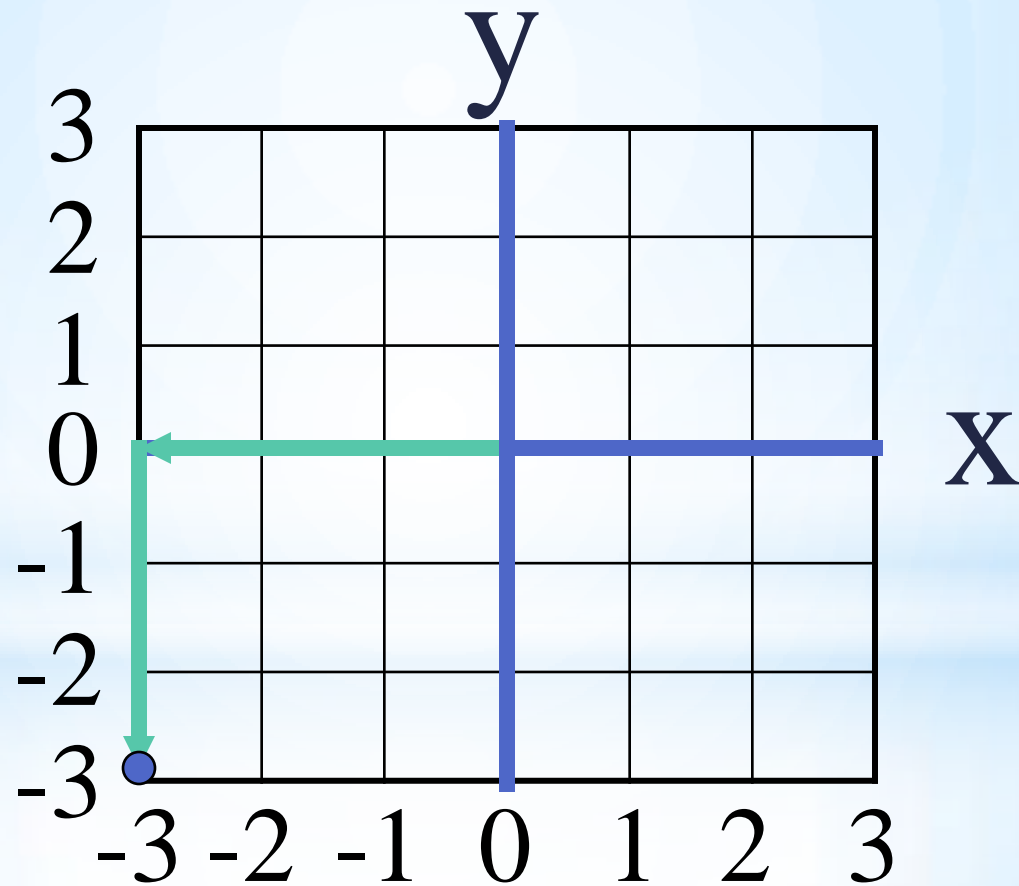
$(2, -2)$



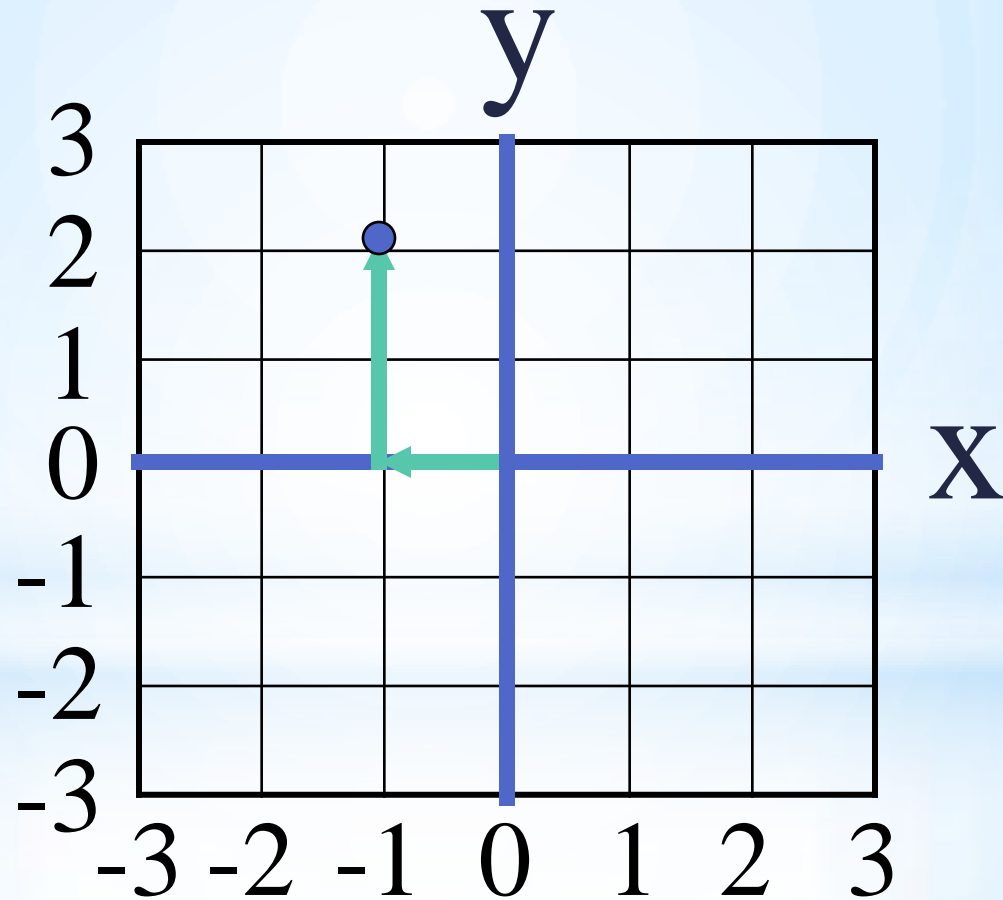
- \* **How to Plot in 4 Quadrants**
- \* When  $x$  is negative and  $y$  is positive, plot the ordered pair in this manner.



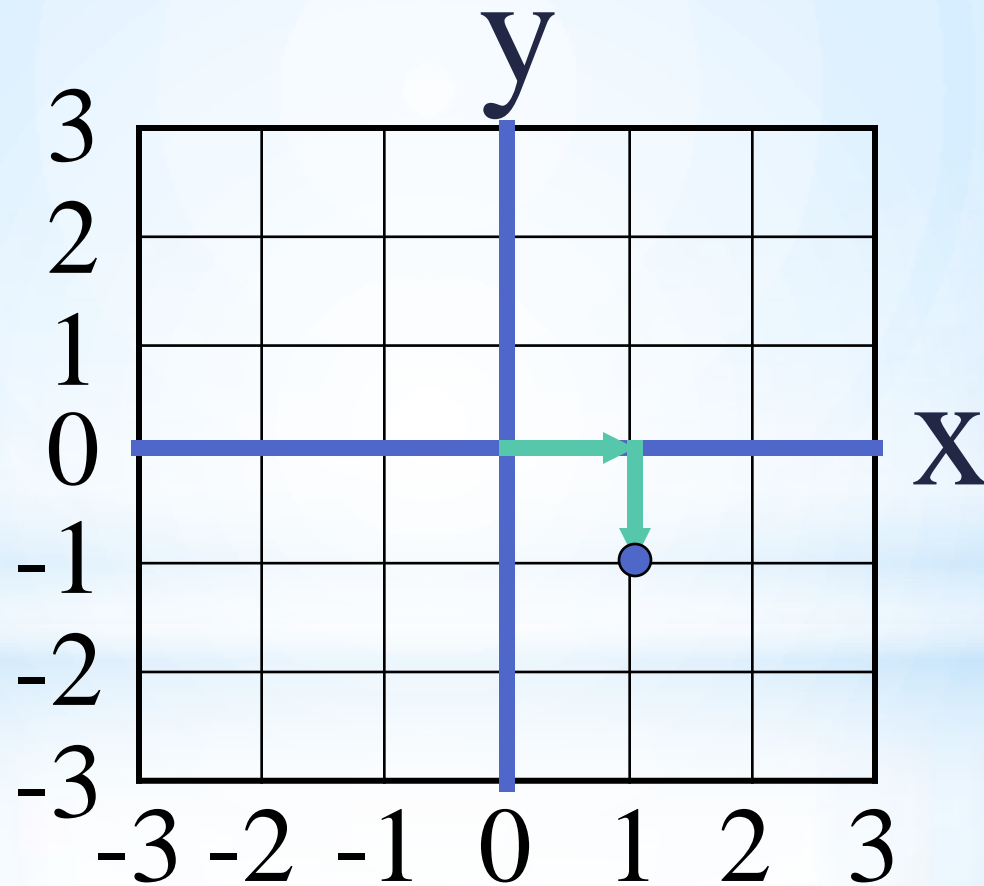
\* Plot This Ordered Pair  
 $(-3, -3)$



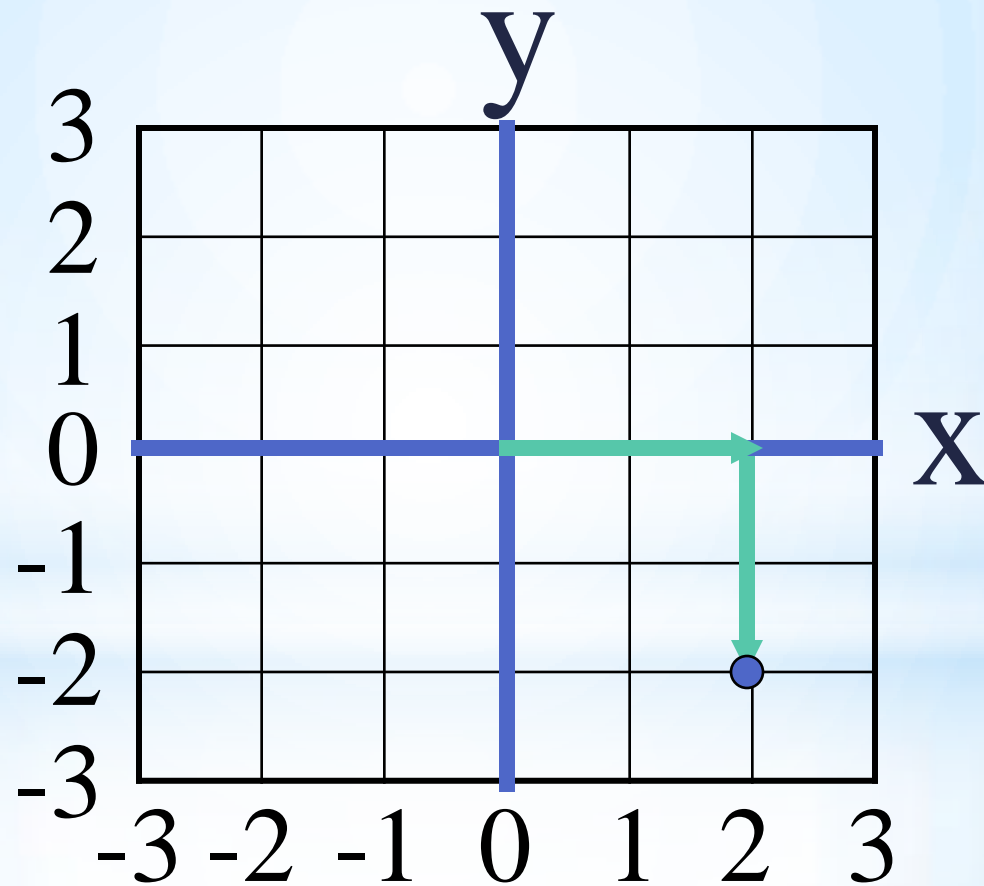
\* Plot This Ordered Pair  
 $(-1, 2)$



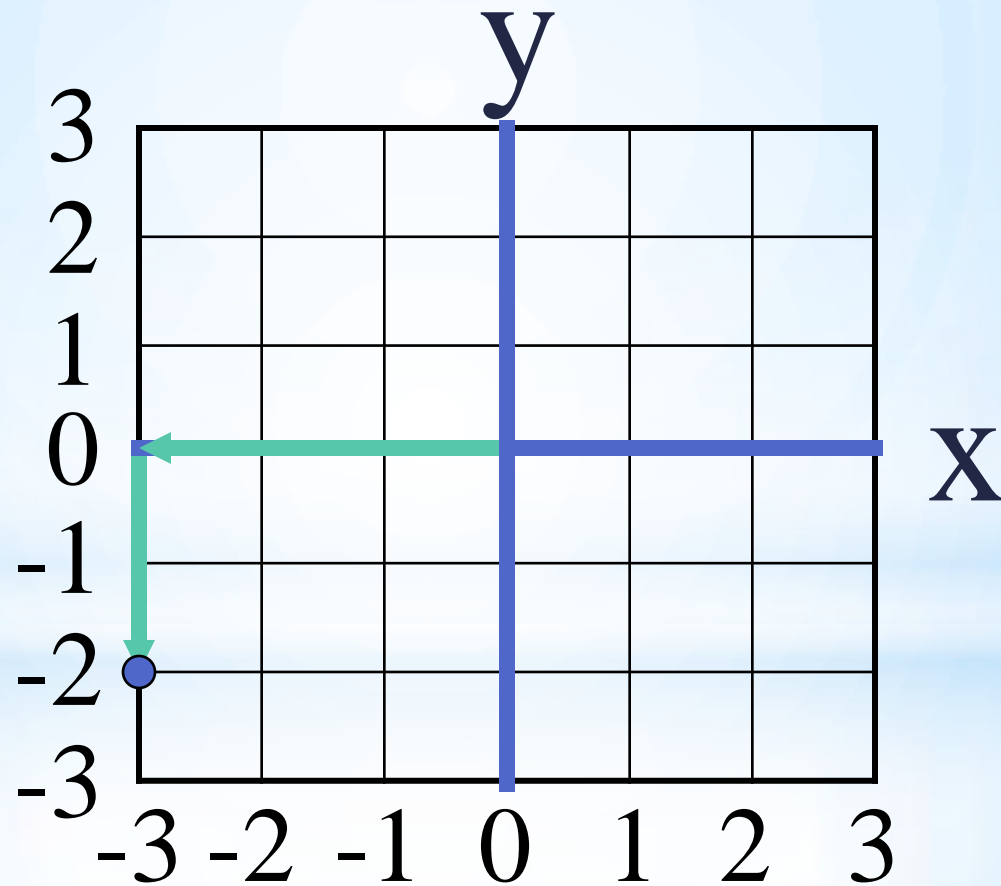
\* Plot This Ordered Pair  
 $(1, -1)$



\* Plot This Ordered Pair  
 $(2, -2)$

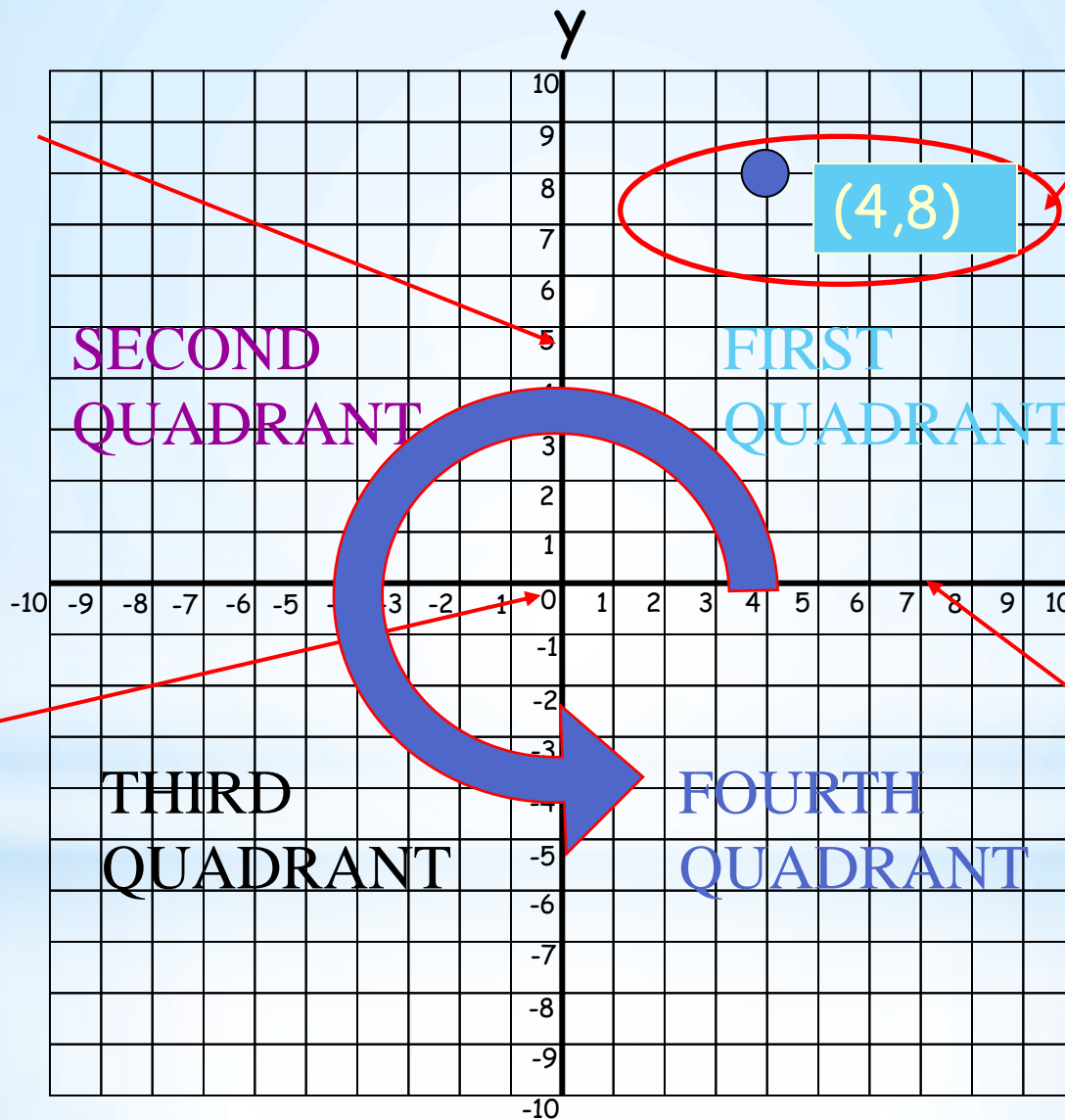


\* Plot This Ordered Pair  
 $(-3, -2)$



# Coordinates Keywords & Rules

Y Axis and  
positioning  
vertical



Use brackets  
(?,?) and  
remember  
X first  
Y next

X  
X Axis and  
positioning  
horizontal

ORIGIN



# YOUR TASK!

Whole class investigation: Pairs plot the following coordinates on grids:

$(-3, -7)$ ,  $(3, 5)$ ,  $(0, -1)$ ,  $(1, 1)$ ,  $(-2, -5)$ ,  $(5, 9)$ ,  $(-1, -3)$ ,  $(2, 3)$ .

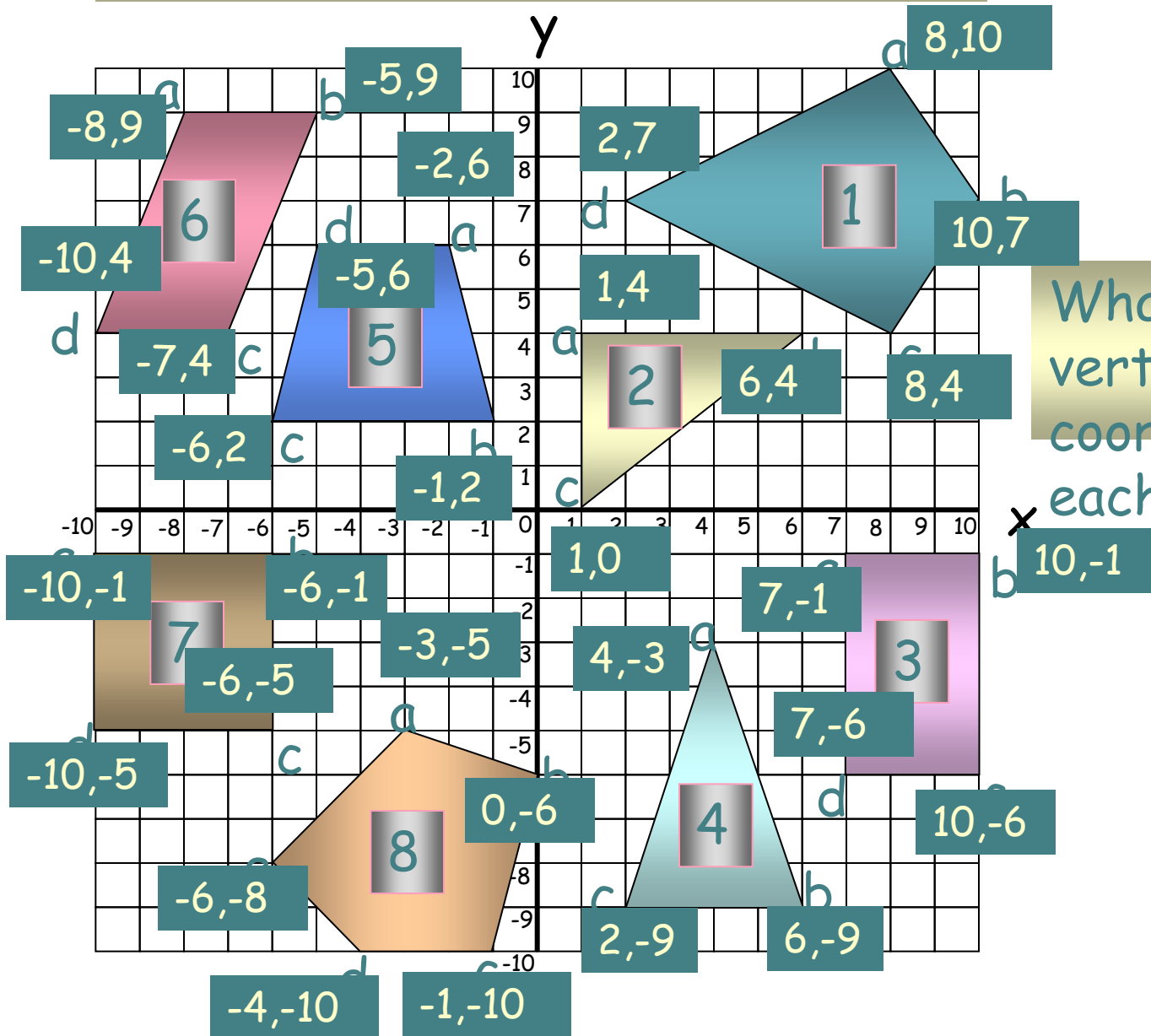
Join all the points, what do you notice?

Choose three of the points and add 3 to each of the x coordinates.

Chose these three new points to each other using a different coloured pencil. Try subtracting three and drawing the new points from x coordinates. What happens if you subtract three from the y and x coordinates?

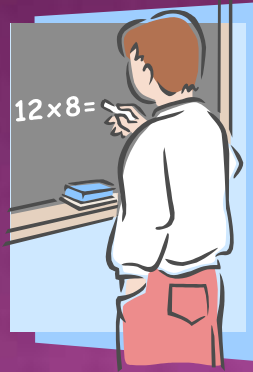
# Coordinates in 4 Quadrants.

Mr D. Pay



What are the vertex coordinates of each shape?

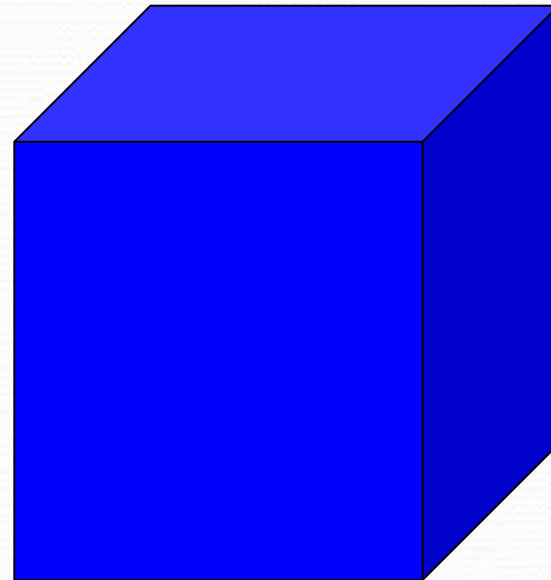
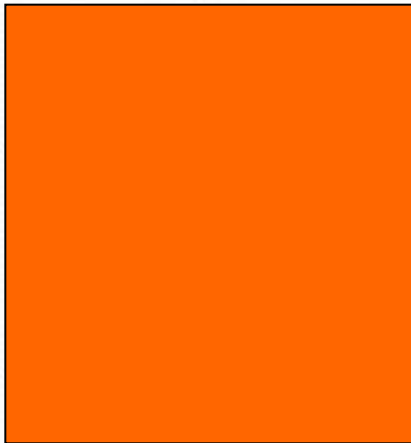
# Learning Objective



Recognise parallel and perpendicular faces and edges on 3.D shapes

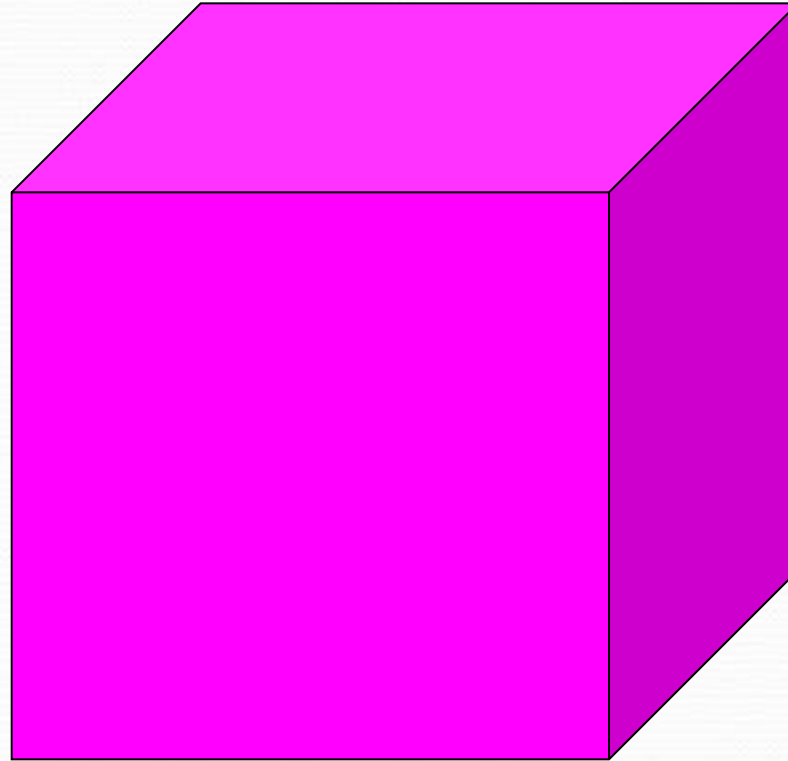
Rehearse the terms polyhedron, tetrahedron and begin to use dodecahedron.

What is the difference between a 2D shape and 3D shape?



Which 3D shapes can you name?

# CUBE



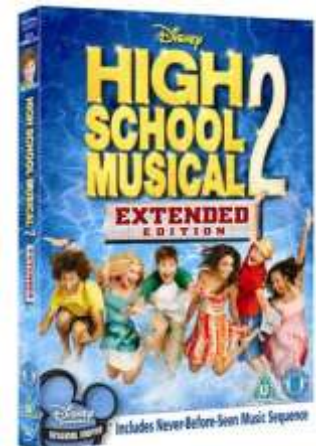
**Can you think of any objects which are the shape of a cube?**



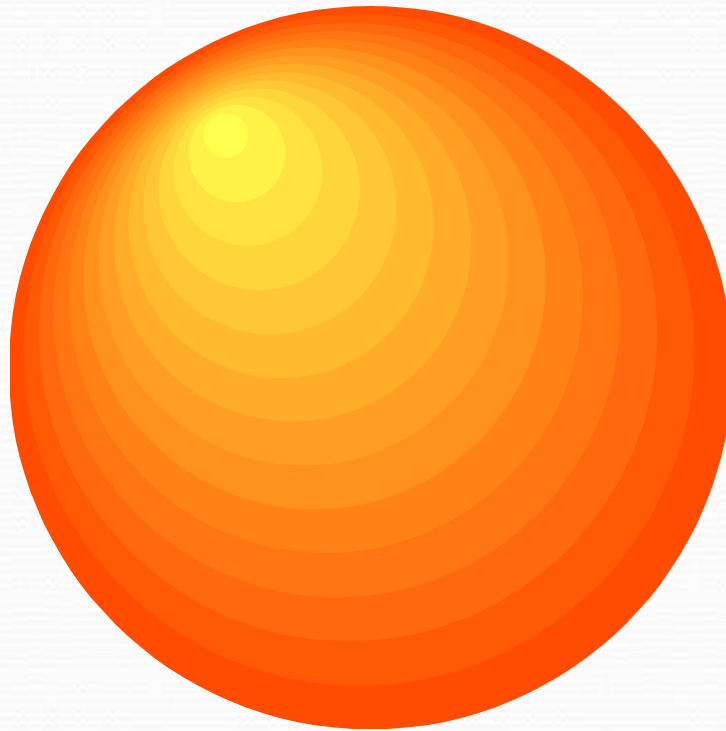
# CUBOID



**Can you think of any objects which are the shape of a cuboid?**



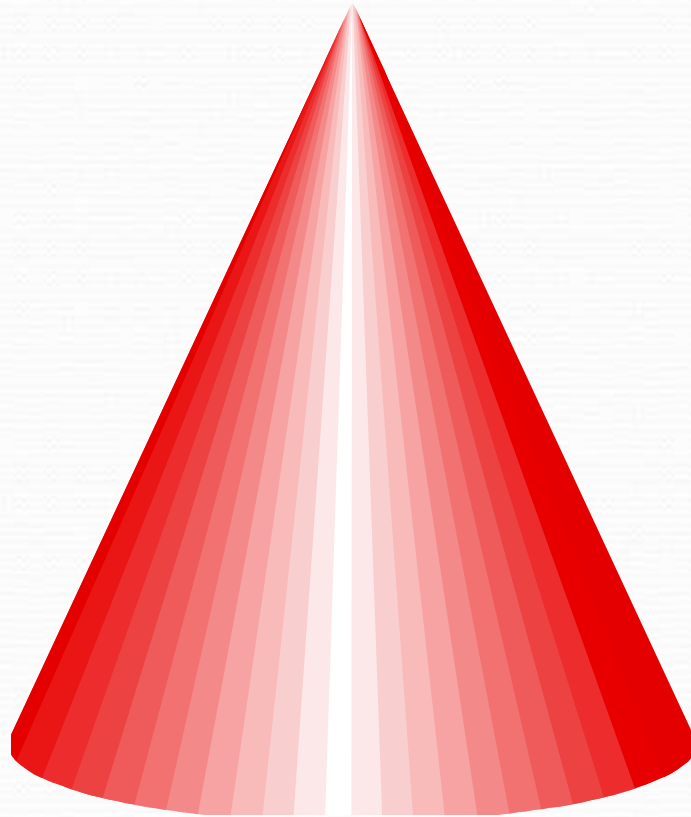
# SPHERE



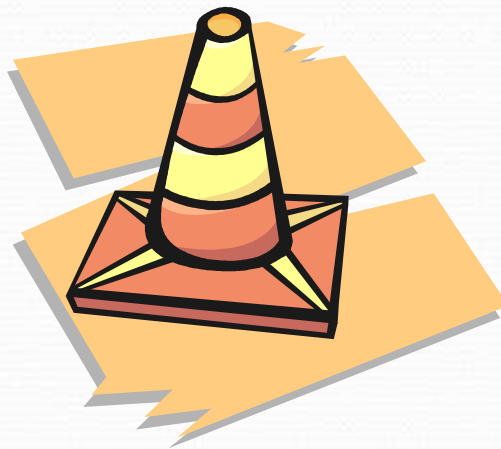
**Can you think of any objects which are shape of a sphere?**



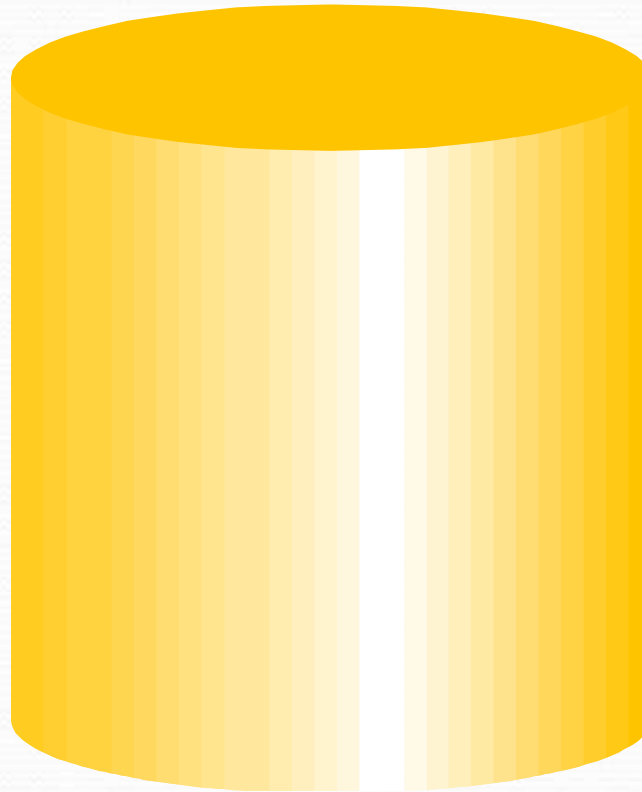
# CONE



**Can you think of any objects which are the shape of a cone?**



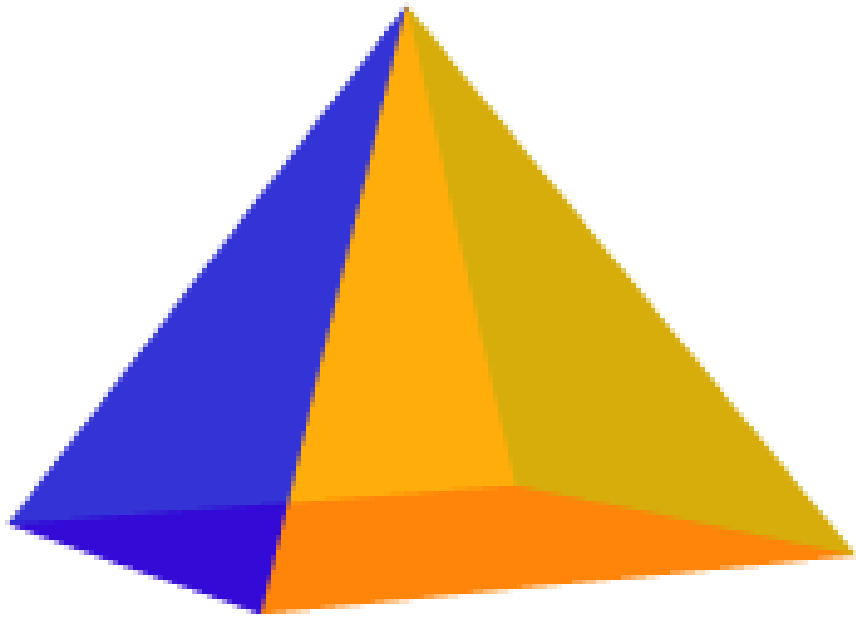
# CYLINDER



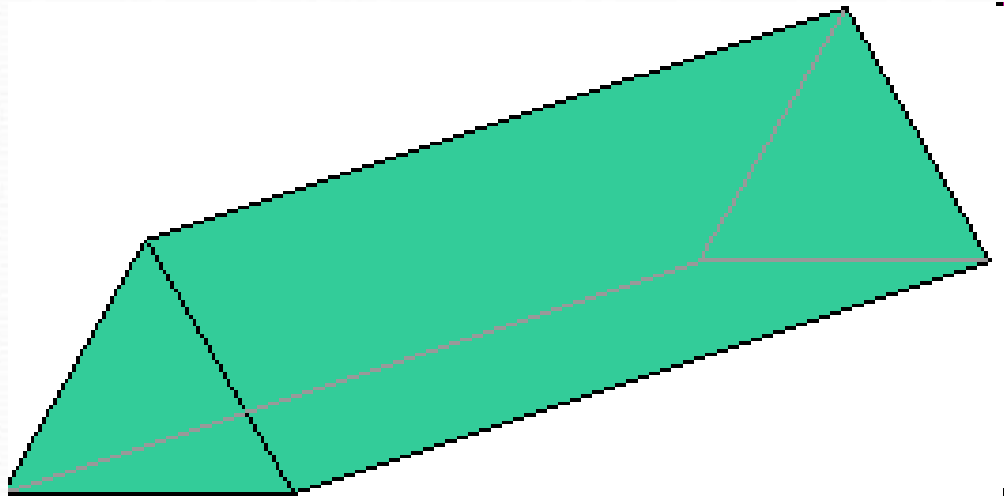
**Can you think of any objects which are the shape of a cylinder?**



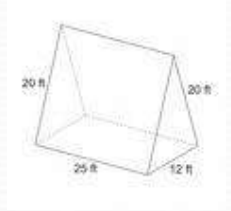
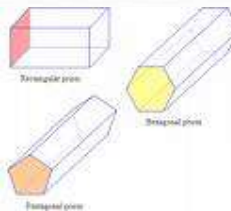
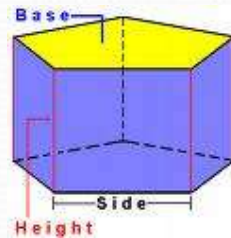
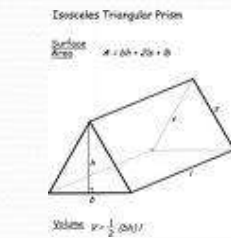
# SQUARE BASED PYRAMID



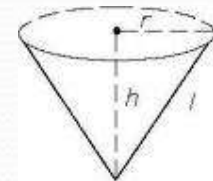
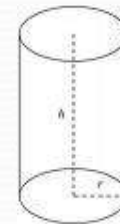
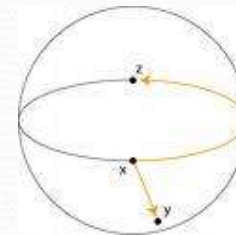
# TRIANGULAR PRISM



# What is a Polyhedron?

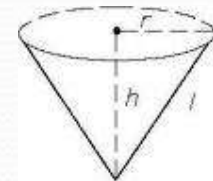
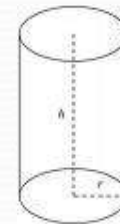
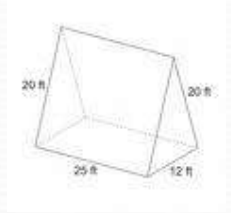
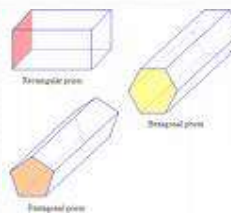
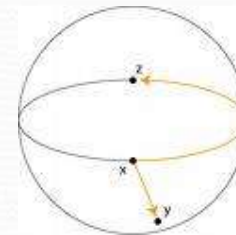
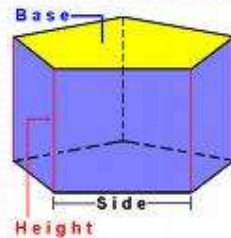
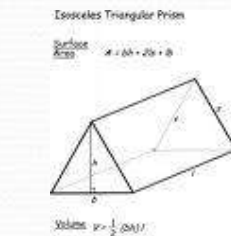


Polyhedrons



Non-Polyhedrons

# Do you notice a difference?



Polyhedrons

Non-Polyhedrons

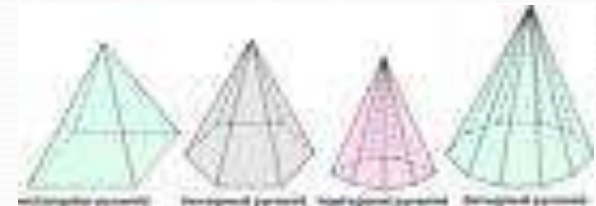
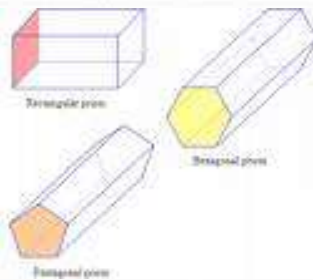
# Polyhedrons

- A solid that is bounded by polygons with straight meeting faces.
- There are two main types of solids:

Prisms

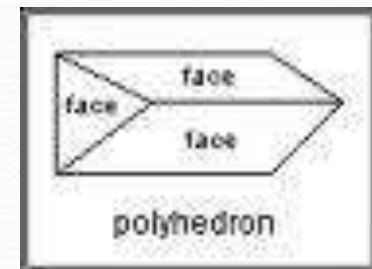
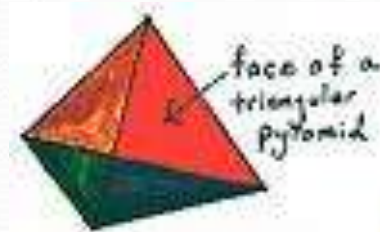
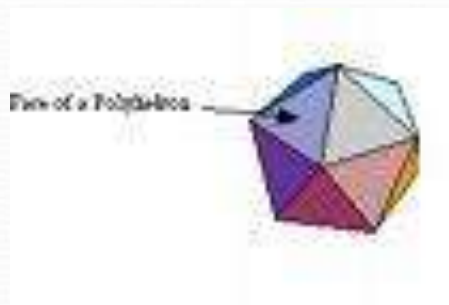
and

Pyramids



# Face

- The polygons that make up the sides of a polyhedron



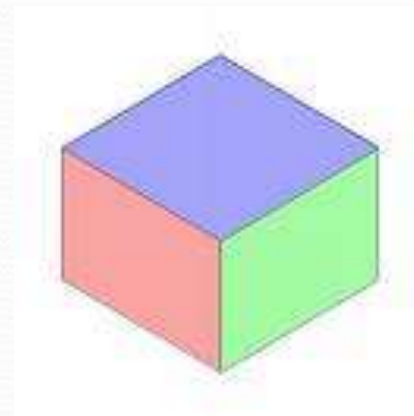
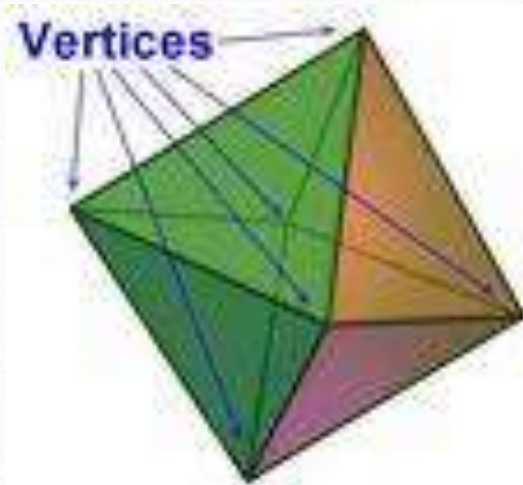
# Edge

- A line segment formed by the intersection of 2 faces



# Vertex

- A point where 3 or more edges meet

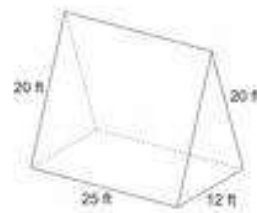


# Name the Polyhedron and find the number of Faces, Vertices, and Edges

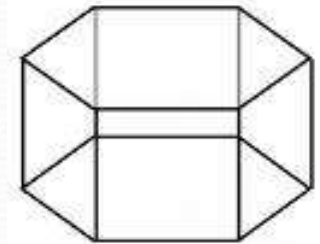
a.



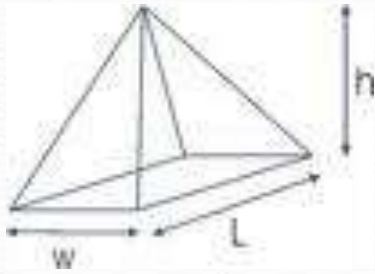
b.



c.

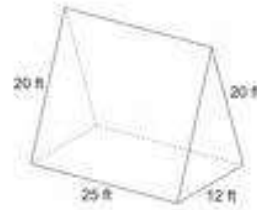


a.



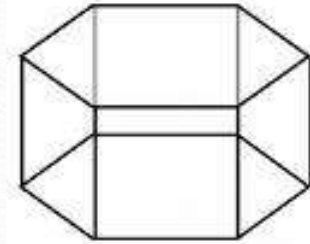
$$F = 5$$
$$V = 5$$
$$E = 8$$

b.



$$F = 5$$
$$V = 6$$
$$E = 9$$

c.



$$F = 8$$
$$V = 12$$
$$E = 18$$

a.

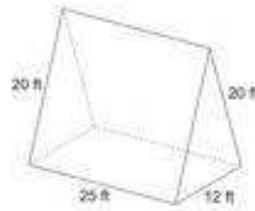


$$F = 5$$

$$V = 5$$

$$E = 8$$

b.

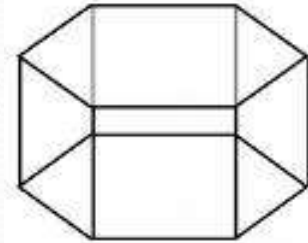


$$F = 5$$

$$V = 6$$

$$E = 9$$

c.



$$F = 8$$

$$V = 12$$

$$E = 18$$

Does anybody see a pattern?

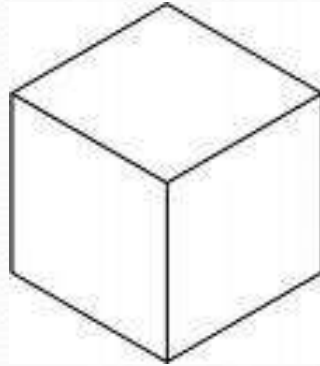
# Euler's Theorem

$$F + V = E + 2$$

# Euler's Theorem

$$F + V = E + 2$$

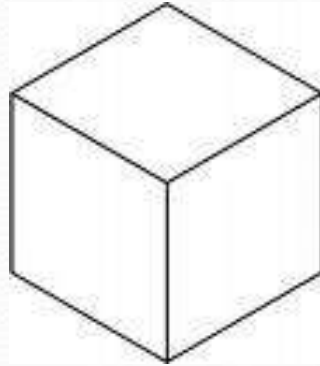
Example:



# Euler's Theorem

$$F + V = E + 2$$

Example:

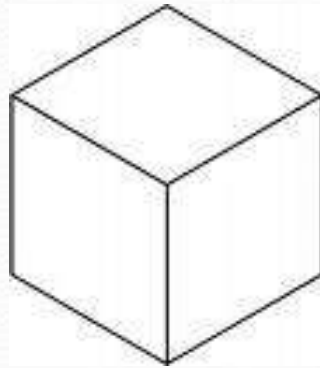


$$F = 6, V = 8, E = 12$$

# Euler's Theorem

$$F + V = E + 2$$

Example:



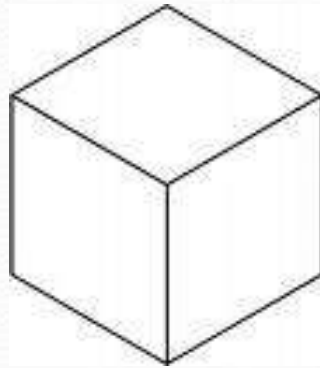
$$F = 6, V = 8, E = 12$$

$$6 + 8 = 12 + 2$$

# Euler's Theorem

$$F + V = E + 2$$

Example:



$$F = 6, V = 8, E = 12$$

$$6 + 8 = 12 + 2$$

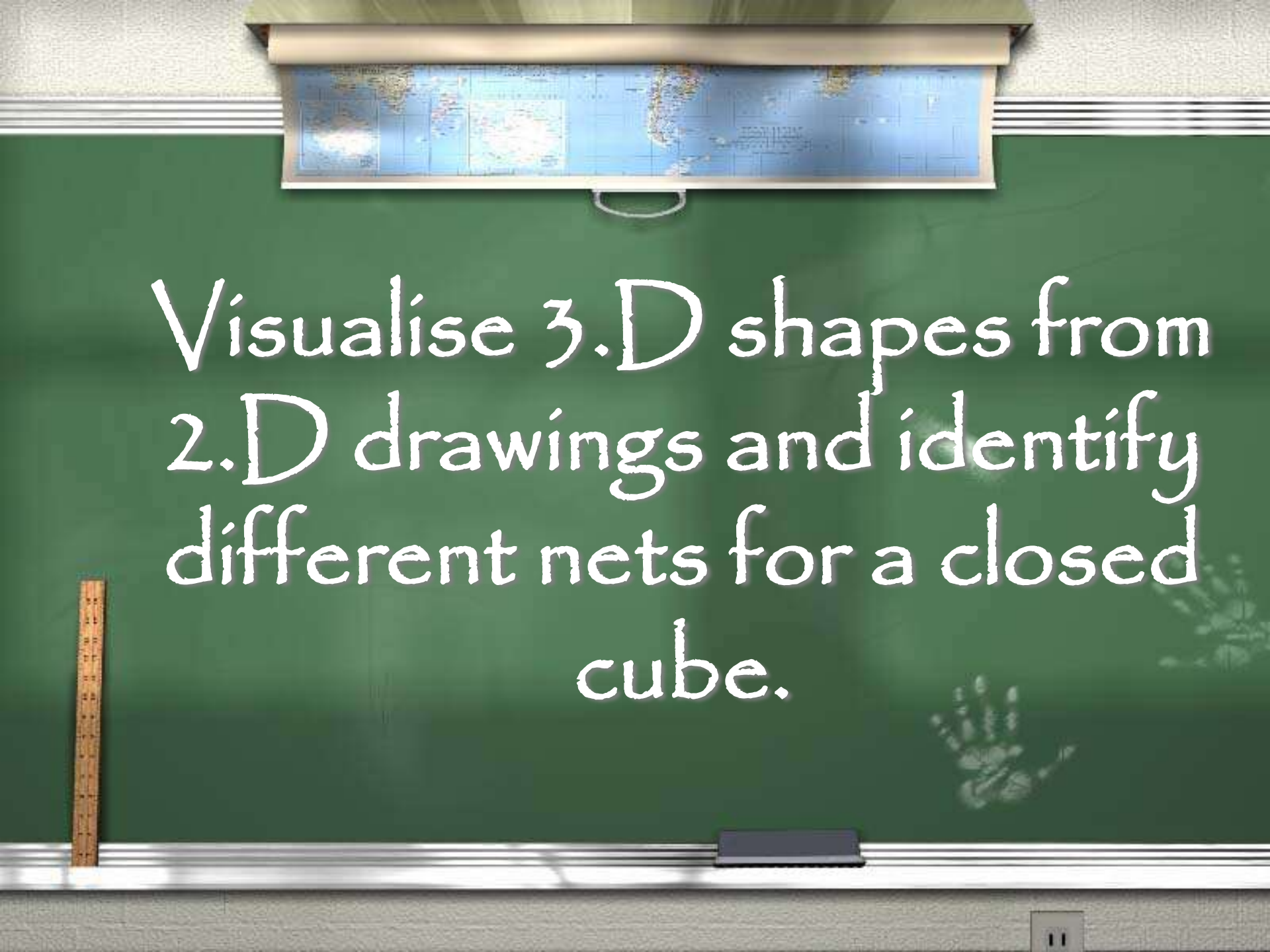
$$14 = 14$$

# Example: Use Euler's Theorem to find the value of $n$

Faces: 5

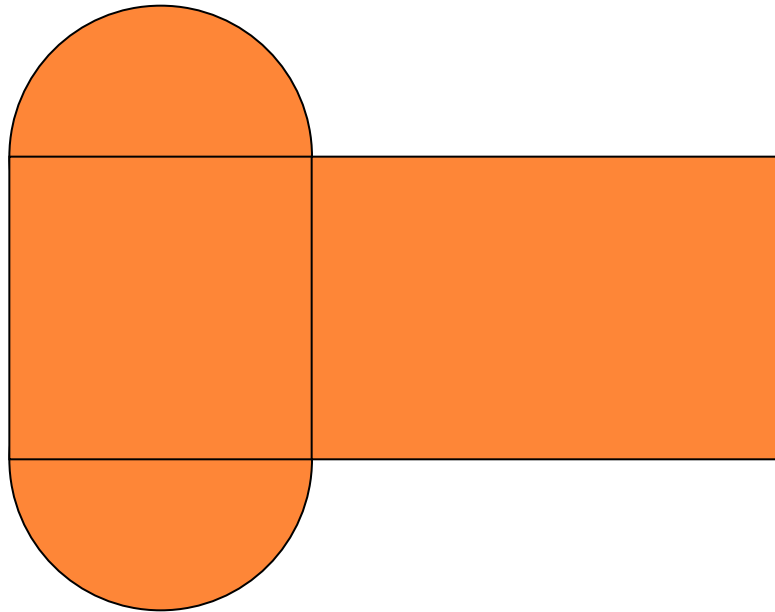
Vertices:  $n$

Edges: 8

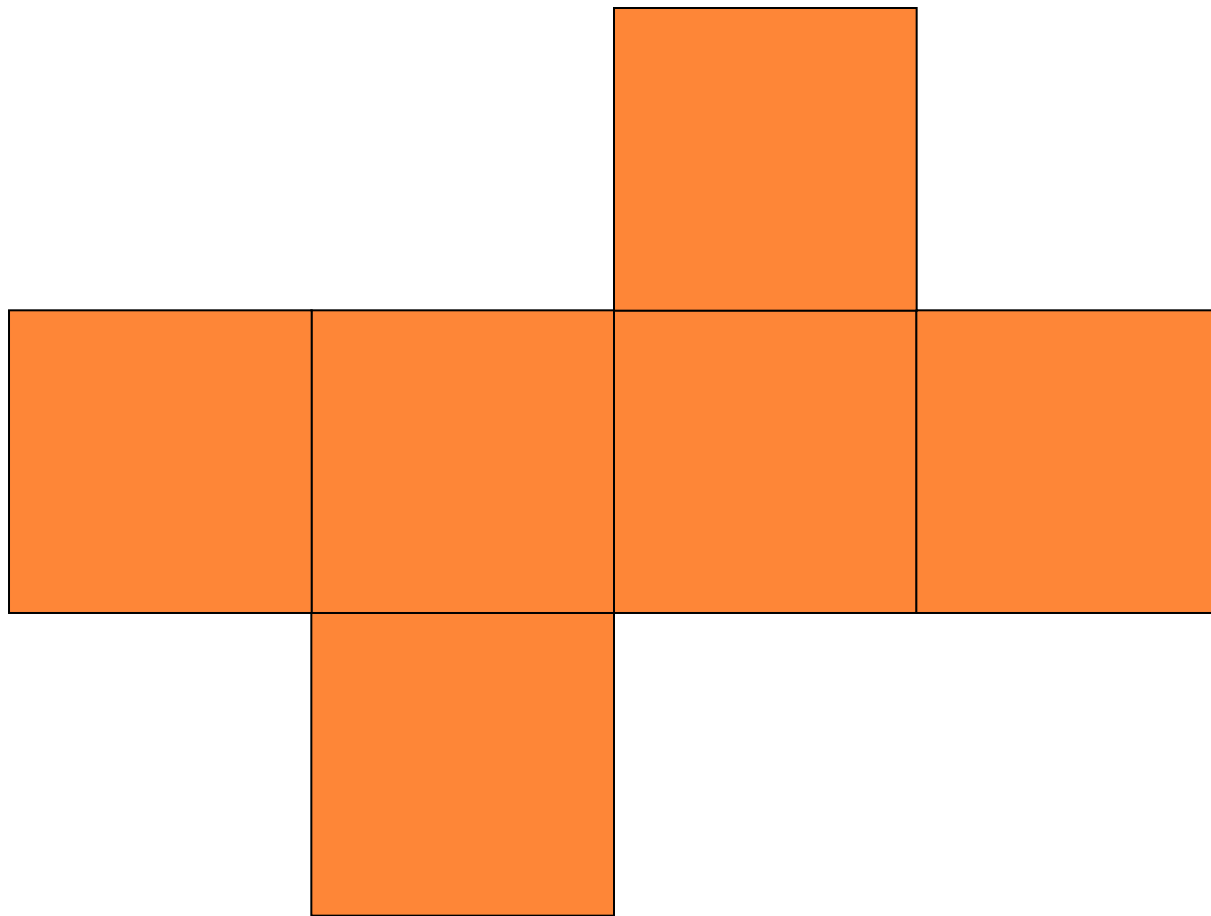


Visualise 3.D shapes from  
2.D drawings and identify  
different nets for a closed  
cube.

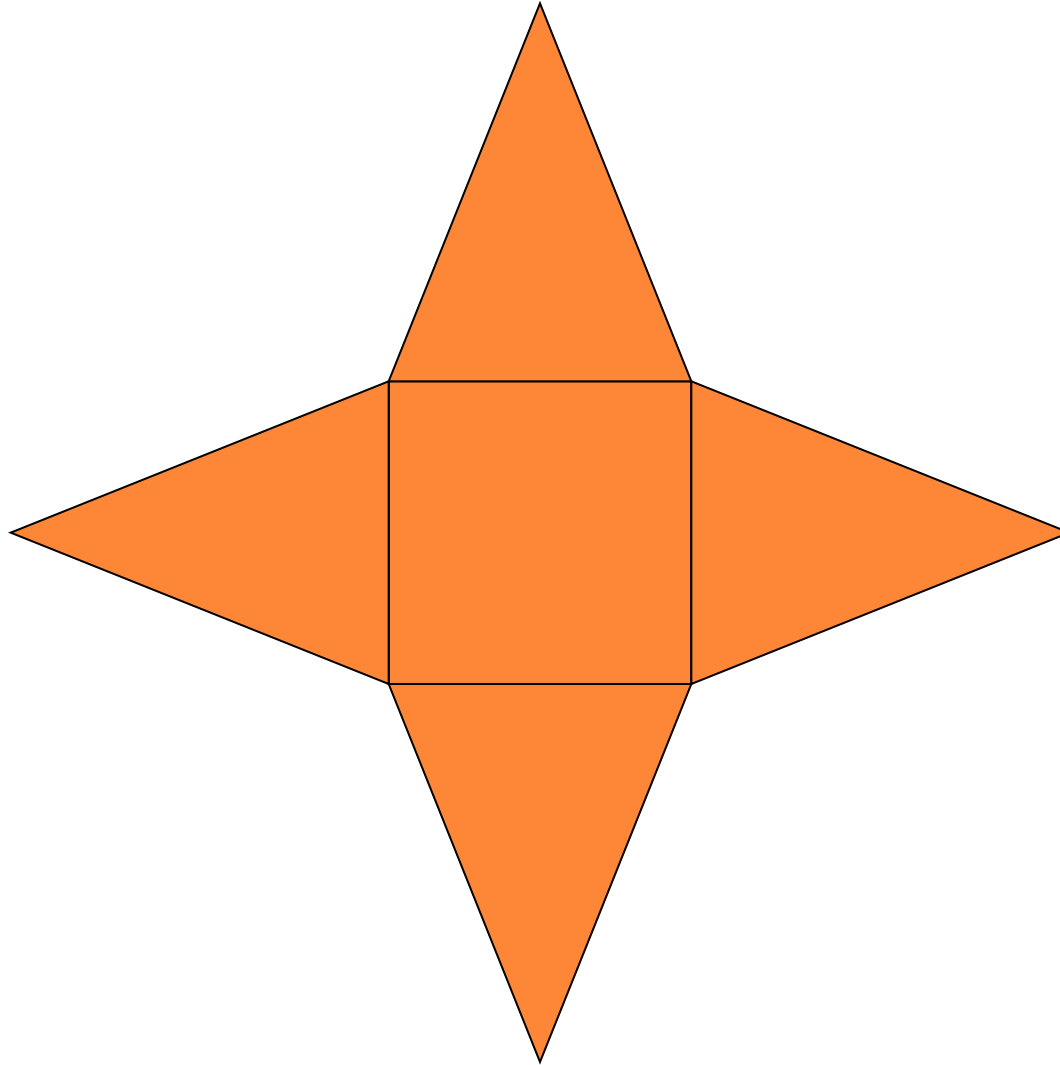
NET 1



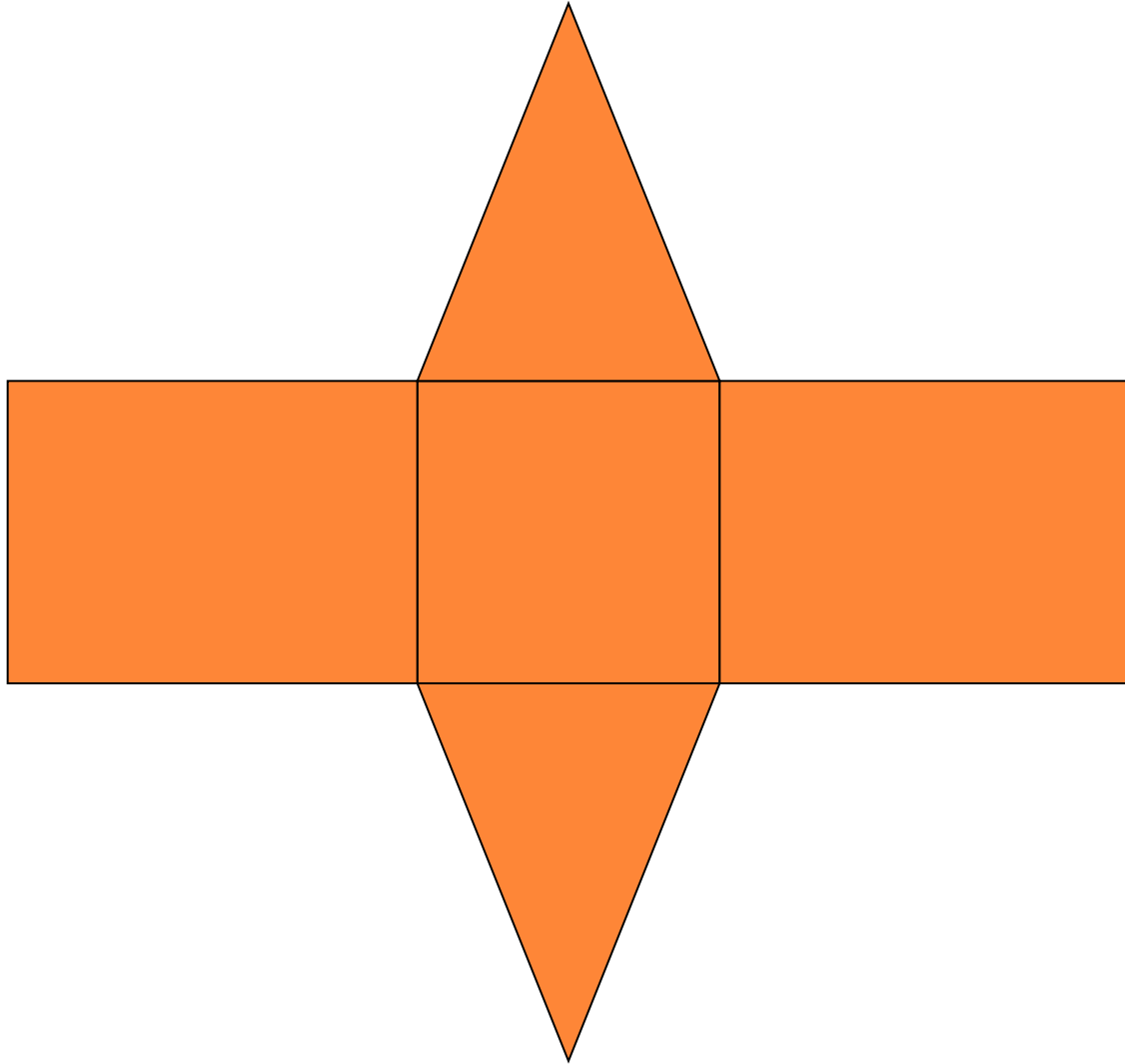
NET 2



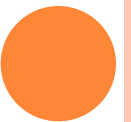
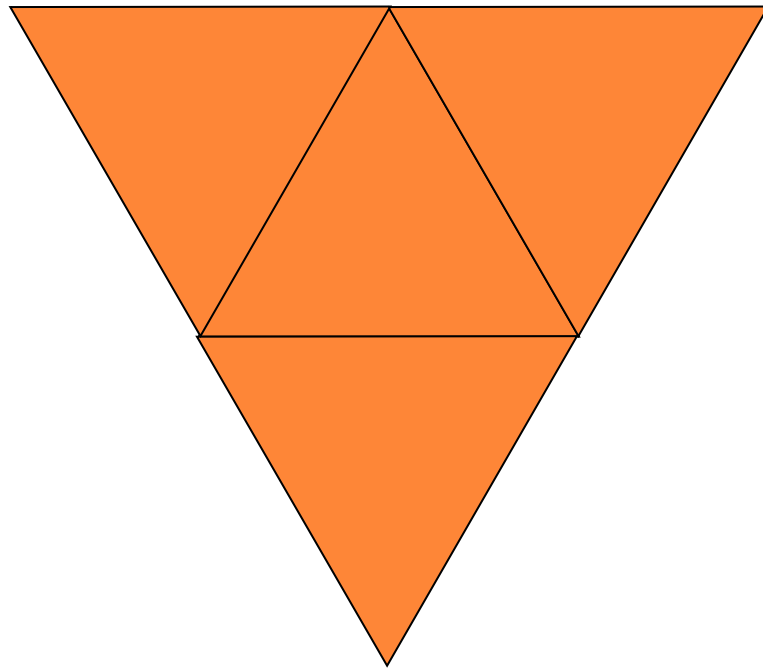
NET 3



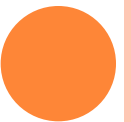
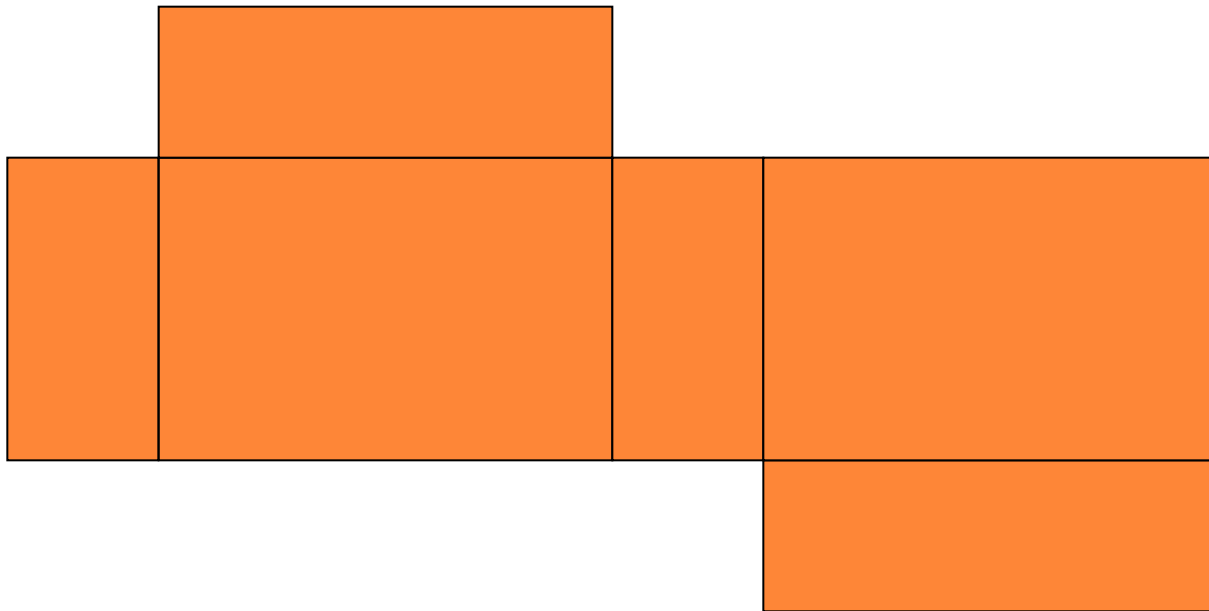
NET 4



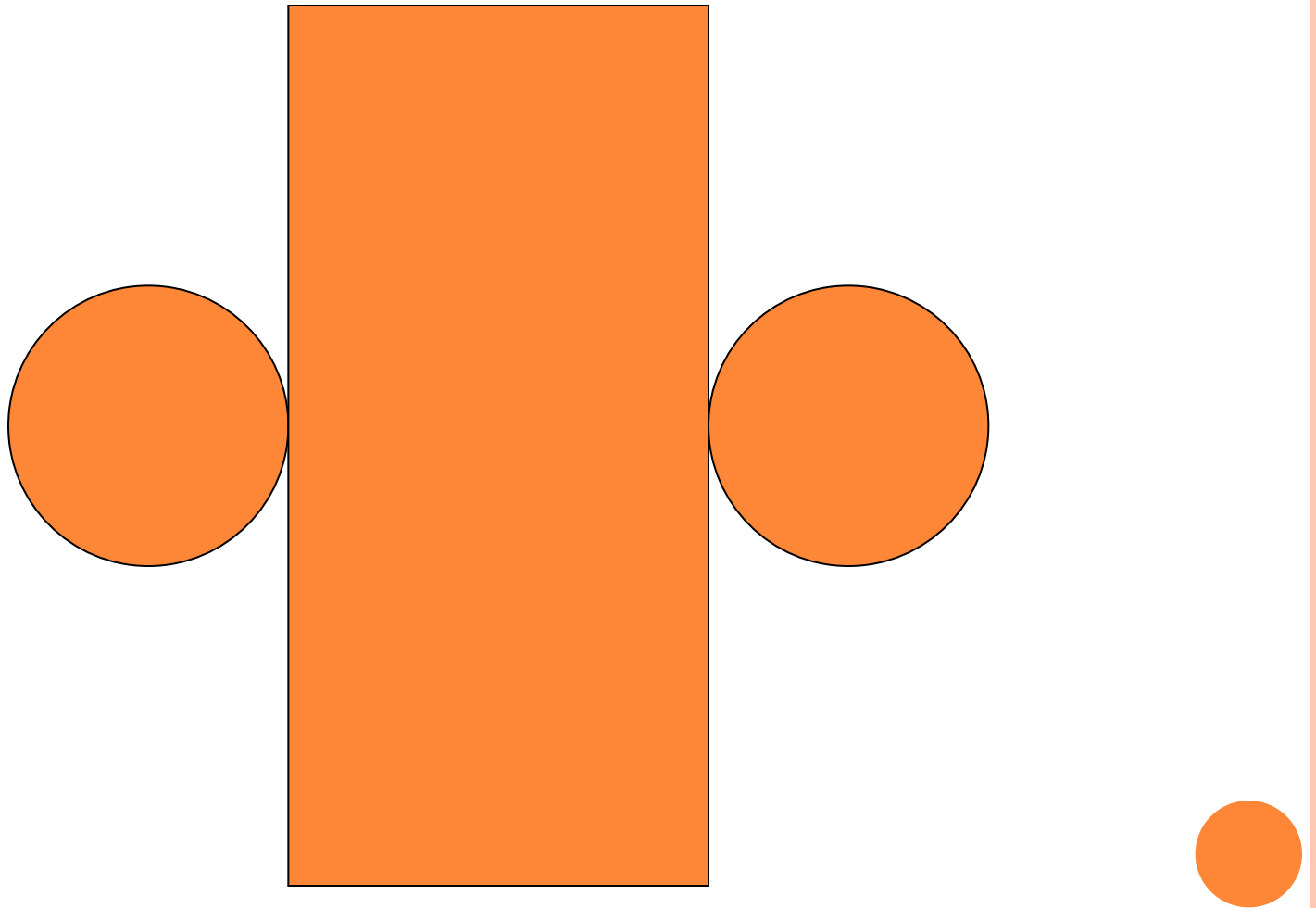
NET 5



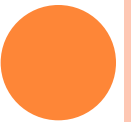
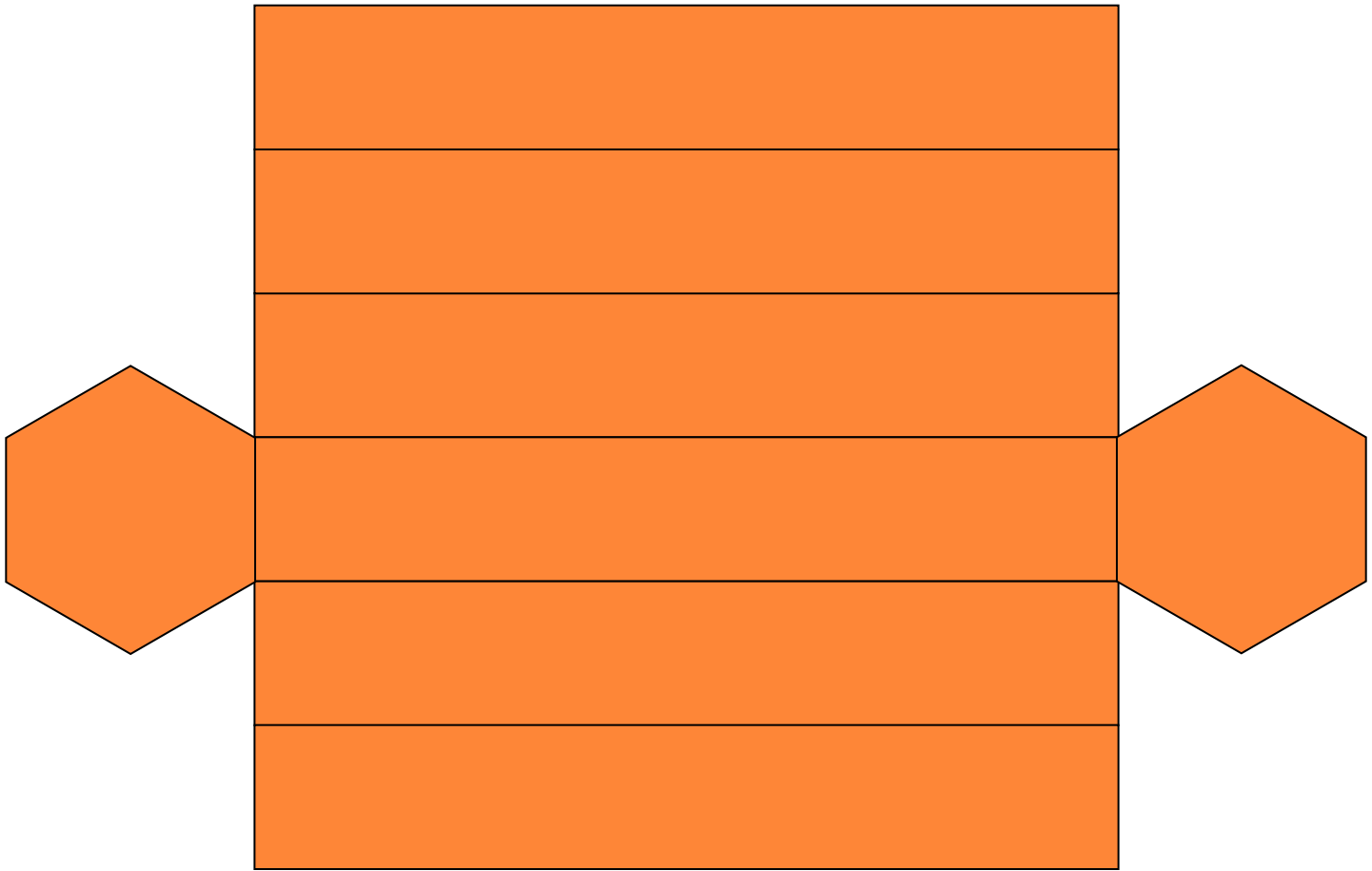
NET 6



NET 7



NET 8





# YOUR TASK!

Draw the net of an open cube using five squares.  
What other arrangements of five squares will also make a net  
which we can fold to make an open cube?

Explore different arrangements.



Cut them out to check they do indeed fold to create an  
open cube.

# Nets of cubes

Solutions – There are 11 in total

