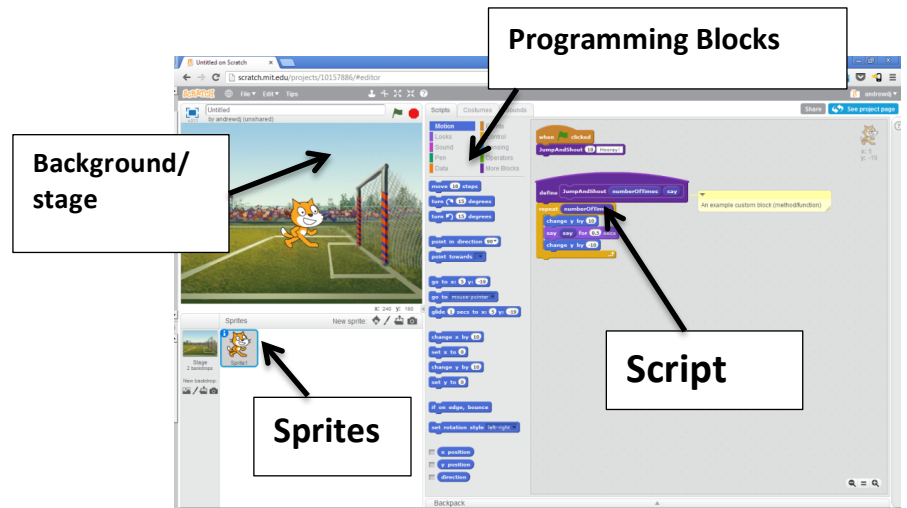


# Scratch & Cartesian Coordinates

Program your own interactive stories, games, animations, music and art — and share your creations with others in the online community.



## YOUR CHALLENGES:

**Challenge 1)** Use the provided scripts to program your sprite to move: up, down, right, left using the arrow keys.

*Question 1: What happens to the x & y values when it moves?*

*Question 2: Complete the coordinates worksheet.*

**Challenge 2)** Can you program the sprite to move along the x & y axes using a littleBits rotation knob?

**Extra Credit Challenge)** Plot the changes to a value (ie: motion, light sensor) over time using. Hint where  $x = \text{time}$  &  $y = \text{the sensor value}$ .

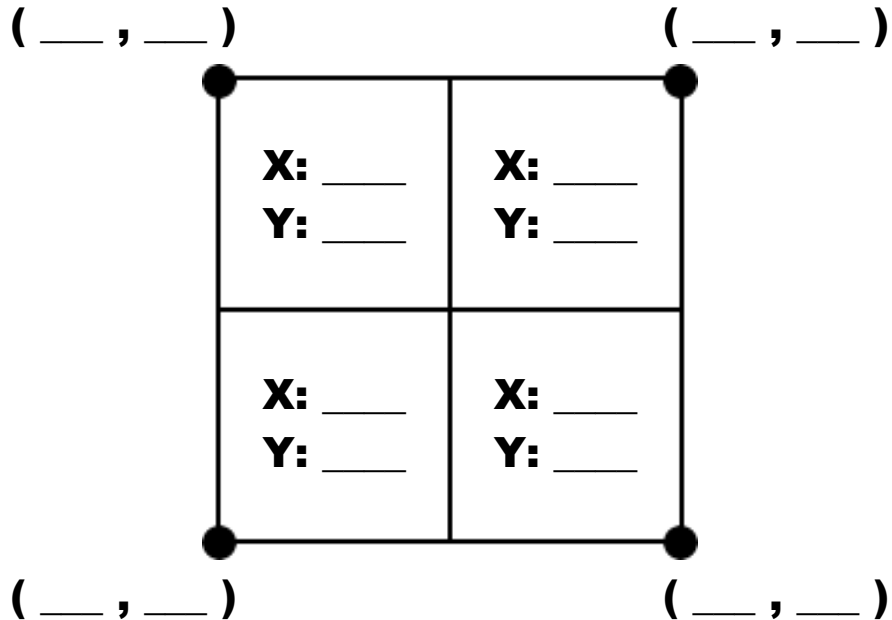
CCSS.MATH.CONTENT.5.G.A.2

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.

## Scratch and Cartesian Coordinates

1. Label the sign of X and Y inside each of the four quadrants.
2. Label the four corner points based on the size of the Scratch stage.

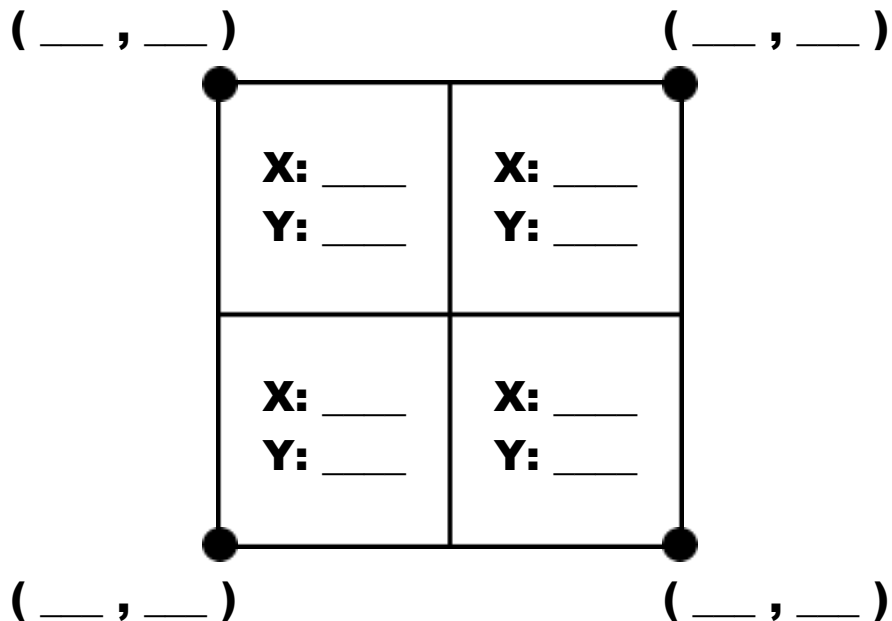
**Hint:** Move your mouse around the stage and observe the values in the bottom right corner.



## Scratch and Cartesian Coordinates

1. Label the sign of X and Y inside each of the four quadrants.
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# Scratch Jr.

Scratch Jr. uses **color-coded "blocks"** that can be dragged down into the **programming area**

to instruct a character to do something (move, talk, jump, etc). These

command blocks can be snapped together to create more complex instructions



**Note:** you need to begin with one of the yellow blocks (like the green flag). Click on the green flag at the top to make your program go!

## YOUR CHALLENGE:

Create a math word story problem of your choice. Note: you can add characters, scenes, record your voice or make the characters "speak" to each other with text.

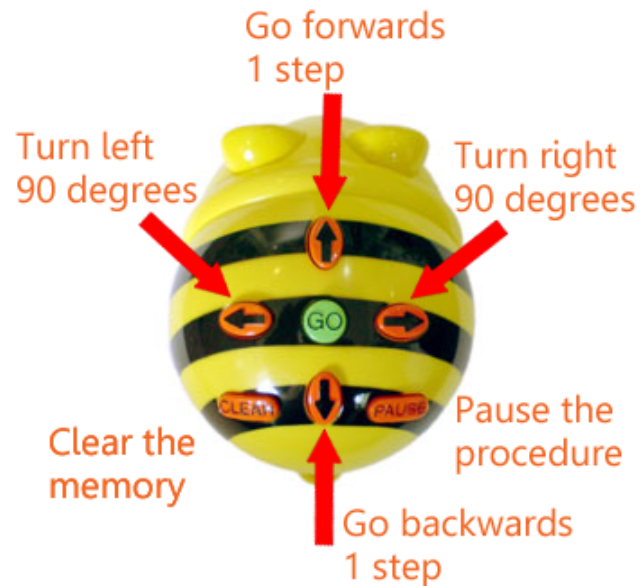
CCSS.MATH.CONTENT.1.OA.A.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.<sup>1</sup>

# BeeBots

The Bee Bot robot is programmed by pressing the desired buttons and then pressing **go**.

Notes: **Be sure to press CLEAR between each program!** You can press more than one button (multiple instructions) before pressing go.



## YOUR CHALLENGES:

### Challenge 1) Adding & subtracting by 10s

Choose an equation. Start your Bee on the first number of the equation. Program the BeeBot to check your answer. (hint: if your subtracting, your Bee should go backwards.)

**Challenge 2)** Pick a card, any card. Program the BeeBot to move to that corresponding base 10 on the board.

#### CCSS.MATH.CONTENT.2.NBT.B.5

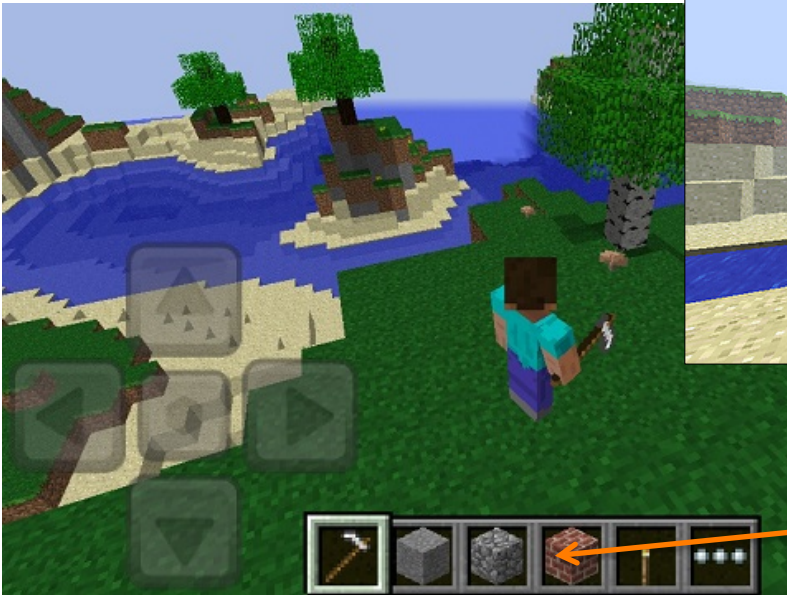
- Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

#### CCSS.MATH.CONTENT.2.NBT.B.8

- Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

# Minecraft & Calculating Volume

Minecraft is a game about breaking and placing blocks. At first, people built structures to protect against nocturnal monsters, but as the game grew players worked together to create wonderful, imaginative things.



## Mine Craft Tips!

- To toggle between tools, use the mouse scroll wheel.
- To bring up the master inventory, press "E".

## YOUR CHALLENGE:

**Step 1:** Design a simple square building.

- Right click to place a block
- Left click and hold to destroy a block

**Step 2:** Calculate the volume of your building using the appropriate formula.

$$V = l \times w \times h$$

$$A = 6 \times (l \times w)$$

CCSS.MATH.CONTENT.5.MD.C.4

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

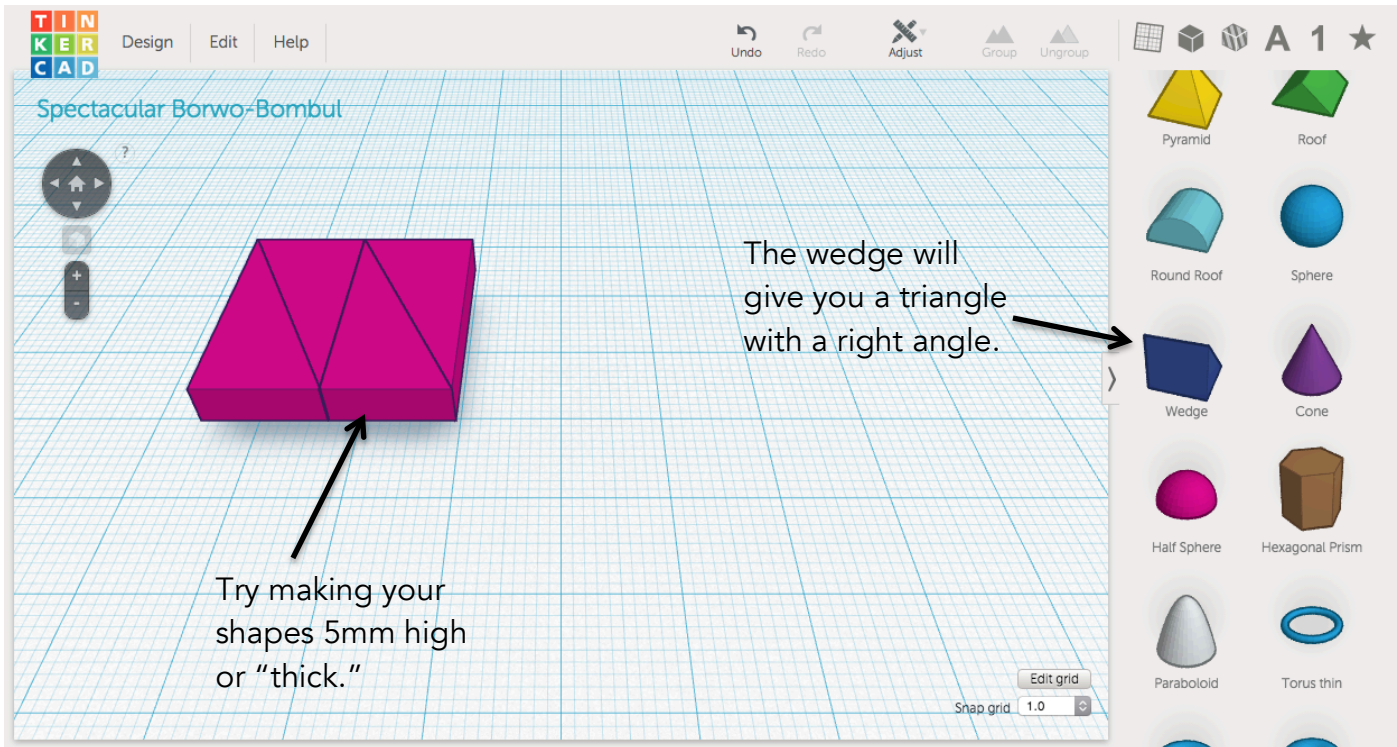
CCSS.MATH.CONTENT.5.MD.C.5

Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.



# Tinkercad: Parts of a Whole

Tinkercad is a free online app used to create and print 3D models.



## YOUR CHALLENGES:

**Challenge 1)** Draw the four parts of a whole examples on the paper worksheet.

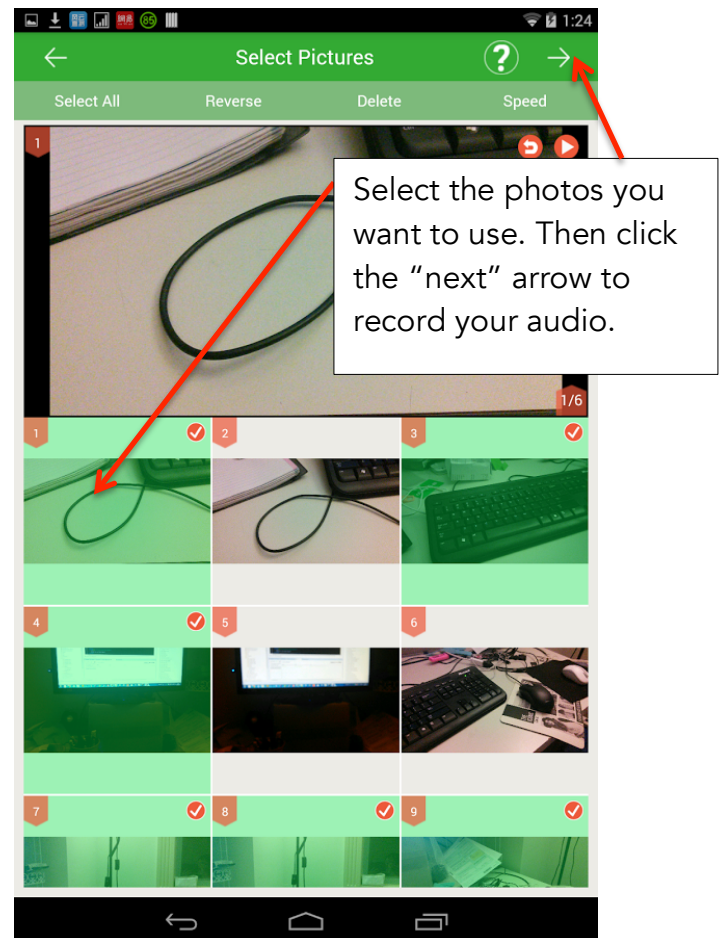
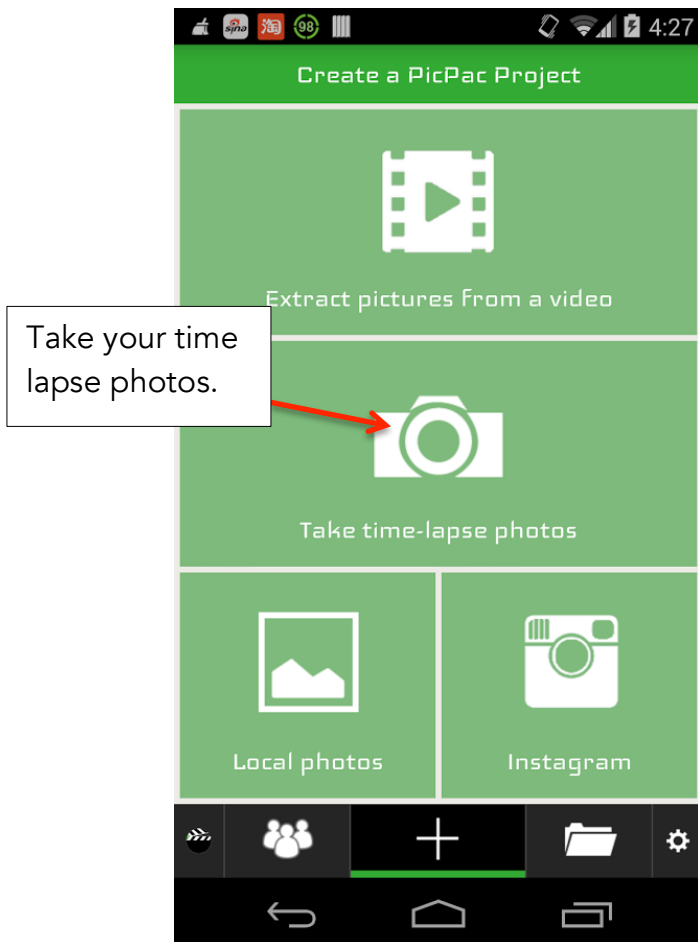
**Challenge 2)** In Tinkercad: re-create your four designs using the built-in shapes.

### CCSS.MATH.CONTENT.3.G.A.2

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as  $\frac{1}{4}$  of the area of the shape.*

# Stop Motion Parts of a Whole

Cut out a circle or rectangle from the foam sheets. Use art supplies to give your shape some character. Using the Android app, PicPac, make your shape come to life by showing how two, three, or four equal shares come apart or move together. Record audio explaining the different shape fractions.



## CCSS.MATH.CONTENT.1.G.A.3

Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

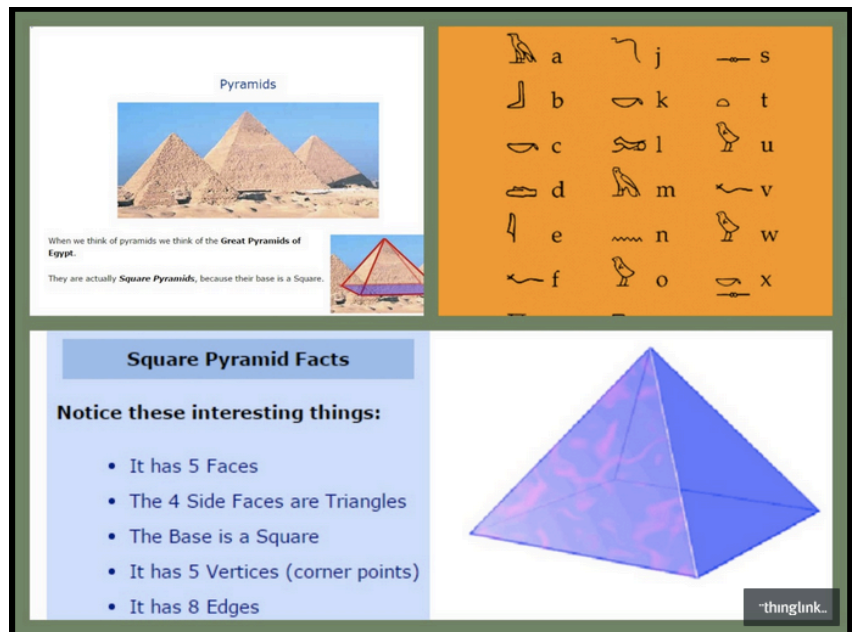
# 3-D Pyramids

This is a journey back in time to see how pyramids are made; write you name using hieroglyphs, build scale models of the Giza Plateau, Khafre, and Menkaure in Egypt, and explore the multiple faces of a pyramid or 3-D triangle using a geoboard.



## YOUR CHALLENGES:

- Δ Did you see the video about building the pyramids?
- Δ Did you explore building your own scale model of an Egyptian pyramid?
- Δ What does your name look like in Hieroglyphics? Take a picture and share!
- Δ Can you build a 3-dimensional pyramid with a geoboard? How many edges and vertices make up a square pyramid anyway??



CCSS.MATH.CONTENT.3.G.A.1

Understand the shapes in different categories may share attributes, and that the shared attributes can define a larger category.