

Time-of-Flight Sensors:

Answer Key

Name: _____

Date: _____

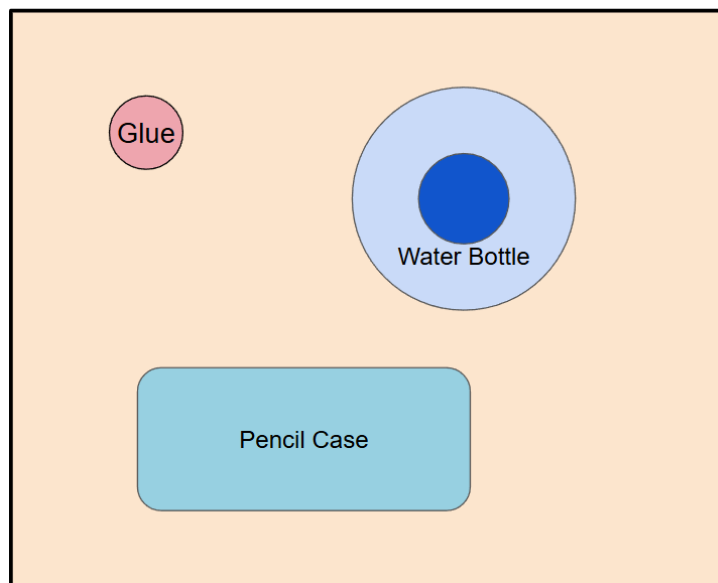
Vocabulary

Time-of-Flight Sensor - A sensor that emits a signal and calculates the distance to an object based on how long it takes for the signal to return.

Activity 1

For this activity, you will split into two teams. One team will design an obstacle course in a box by placing random items inside it. The other team will try to map the inside of the box, using only measurements from Ari's distance sensor.

- ☐ Get an Ari, a box, and 3-4 obstacle items from your teacher.
- ☐ Use Ari to measure the dimensions of your box. Record the dimensions on page 3.
- ☐ Split your group into two teams, Team A and Team B.
- ☐ Team A should place the 3-4 obstacles inside the box without Team B seeing them. Team B should draw the border of the box on the next page.

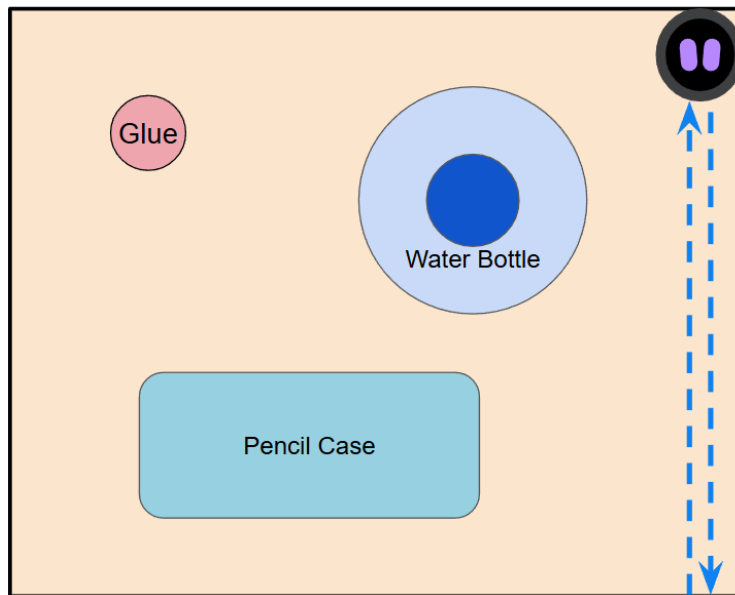


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- ☐ Once the obstacle course is set up, Team B has to use Ari to map out the inside of the box. The only things Team B can do are the following:
 - Tell Team A where to move Ari
 - Tell Team A which direction to turn Ari
 - Tell Team A to read Ari's distance measurement
- ☐ After Team B is finished mapping, they should compare their map with the actual obstacle course.
- ☐ Now it's time to switch roles. Team B will create the obstacle course while Team A maps.

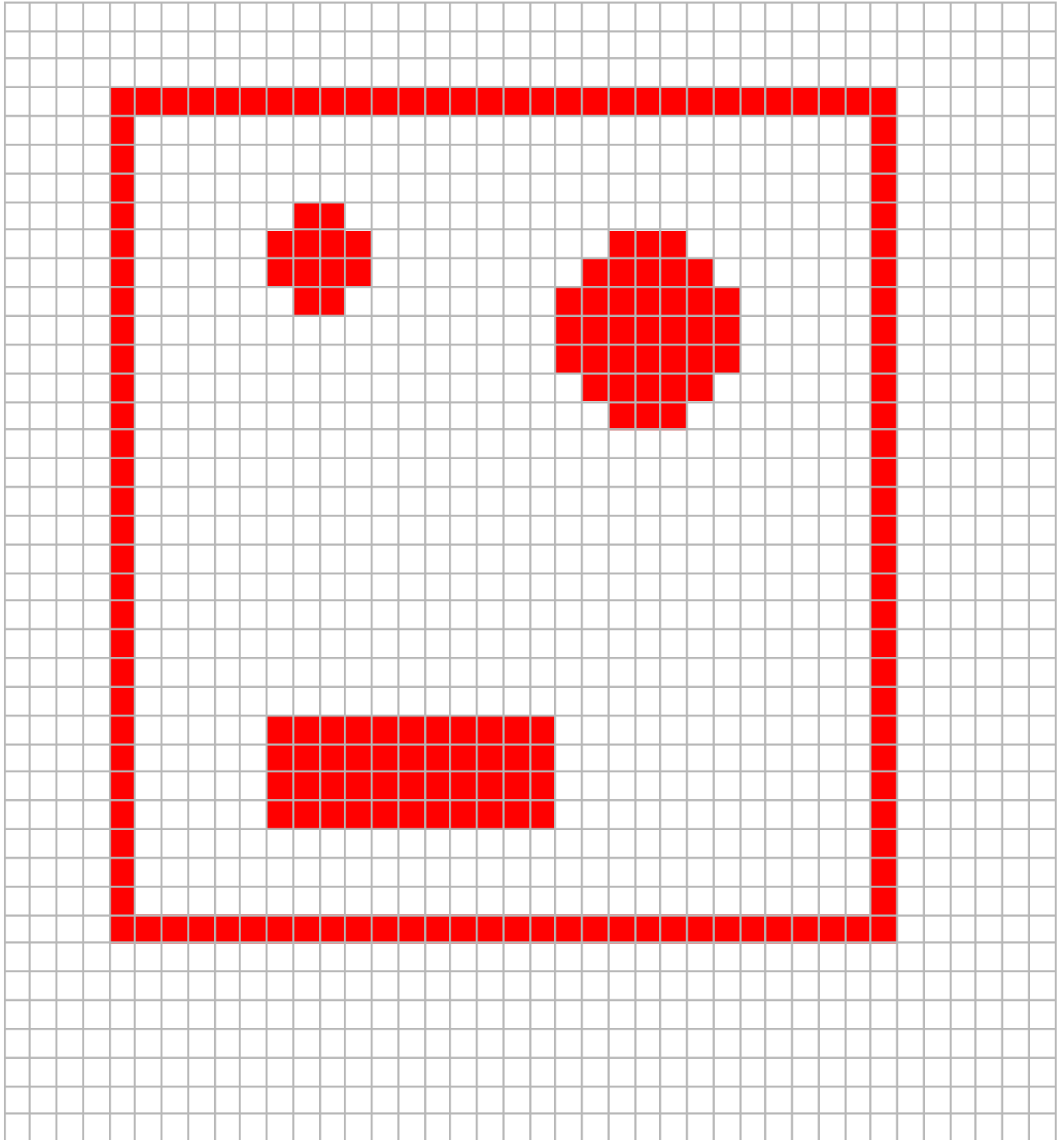
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Scale: 1 box = 1 cm



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Exit Ticket

Please answer the following prompts.

Remember to include your **name** and **date** on this paper!

1. What is a time-of-flight sensor and how does it work?

A time-of-flight sensor is a sensor that is used to measure the distance between it and another object. ToF sensors release a signal, typically a laser or light wave, which bounces off when it hits an object and returns back to the sensor. The sensor is able to calculate how far away the object is based on how long it took for the signal to return.

2. Name one real-world application of time-of-flight sensors and why it is useful.

Time-of-flight sensors are used in many technologies. One of the most interesting uses is in AR applications images of objects can be placed in the real world.