

# SHOULD WE SWIM? AN EXAMINATION ON THE SAFETY OF OUR WATERWAYS



About this product:

The following are guided notes for the sample videos correlating from the Hook and Lesson 1 of “Should we Swim? An Examinations on the Safety of our Waterways.”

Who should use this: science teacher, computer teacher, arts teacher

These videos and notes can be used in any order or with any videos unused at teacher discretion and dependent upon the lesson.

What it contains:

Each page is a 1/2 sheet that can easily fit into an interactive notebook, or cut in half. It should be used as guided notes for each of the corresponding videos on this webpage:

<https://www.citadel.edu/stem-center/steam-lesson-1/>

The Key is provided on the last page for EACH of the guided notes with the corresponding titles.

## How Drones Work

- UAV- Unmanned \_\_\_\_\_ Vehicles

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- Regulations for drones are from the FAA or Federal \_\_\_\_\_ Administration

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- To get certified as a drone pilot, one must take the \_\_\_\_\_ test or The Recreational UAS Safety Test.

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- What is the highest height from which a person can fly their drone from where they've launched?
- Items that Drones can collect:
  - a. video
  - b. High Resolution still images
  - c. Light-dar
  - d. \_\_\_\_\_ -seeking or "flier"

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- Citadel uses of drones
  - a. monitor large crowds
  - b. \_\_\_\_\_ for large events
  - c. track a suspect
  - d. active shooter spotting

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## Types of Drones

\_\_\_\_\_ Drones- drones that anyone can fly

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Law enforcement drones- geared towards needs of first \_\_\_\_\_ and law enforcers

- \_\_\_\_\_ got lost, but they found them with a flier or heat-seeking camera

- Night \_\_\_\_\_ Camera- low-light situations
  - Mydar- \_\_\_\_\_-based system used for mapping
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Military use of drones

- \_\_\_\_\_- tiny drone to fit into a soldiers pocket for surveillance
- Large plane-like drone- miles away piloting of an aircraft.

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# Drones in Forensics

## Crime Scene photography- Drones Usage

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1. Safety
2. Get to \_\_\_\_\_ areas
3. Document without \_\_\_\_\_ area
4. Search and \_\_\_\_\_
  - a. quick action
  - b. wide area
  - c. dropping \_\_\_\_\_ devices

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## Forensic Photography

- a. no damaging \_\_\_\_\_
- b. untouched- no new DNA
- c. clear a \_\_\_\_\_ - create a safer environment

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## Camera is Like an Eye

History: Camera \_\_\_\_\_ wanted to flatten a scene to 2D

Cameras have a shutter which is like an \_\_\_\_\_

A shutter can move slow or fast which will determine how \_\_\_\_\_ the image portrays

Fast shutter- clear image

Slow Shutter- blurred or unmoving image

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Lens helps to focus an image like contact lenses or \_\_\_\_\_

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Aperture is a pupil: an opening to let \_\_\_\_\_ in.

Aperture results in \_\_\_\_\_ of field which correlates to which item is in focus.

Sensitive Sensor is the \_\_\_\_\_ of the eye- receive or hold onto the visual data

ISO measures light exposure-

mistakes:

blown out is when \_\_\_\_\_ is lost due too improper ISO measurement

noise is when the ISO sensor is too \_\_\_\_\_.

Exposure Triangle is made up of : Shutter Speed, ISO and Aperture

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## Visual Elements in Photography

### Choices to Emphasize Perspectives

Tell a \_\_\_\_\_ through the image

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Line- building block of art

The rule of thirds- composition

Leading Line- eyes \_\_\_\_\_ a line

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Shapes- a bounded \_\_\_\_\_ defined in your photography

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Form- take a shape and make it three dimensional

Use light, \_\_\_\_\_ of object

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Space- the feeling of \_\_\_\_\_ within the photograph

foreground, middle ground, background

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Color- use of variety or lack of variety

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Value and Light- how light or \_\_\_\_\_ something is

How can light become captured in your photographs?

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Texture- The raking light to highlight

\_\_\_\_\_ pieces of the 2D image

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Use this vocabulary when critiquing an image.

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## Microplastics in the Environment (A)

What are micro plastics? Tiny pieces of plastic, less than \_\_\_\_\_ mm in size

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### Types of Microplastics

- a. pre-production \_\_\_\_\_ (formerly)  
used in facial scrubs
- b. Breakage from larger plastics
- c. Laundry- fabrics are plastics: polyesters, nylon, \_\_\_\_\_

### Plastic Human Litter

---

How long does it take? A long time (normally)

Process of breaking down: Sunlight hits plastic materials, which allows the plastic to become \_\_\_\_\_ and breakage occurs

In the open ocean, it takes roughly \_\_\_\_\_ years, but in coastal waters, lakes and rivers with lots of sunlight, \_\_\_\_\_ temperatures, and lots of oxygen it might take \_\_\_\_\_ years

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## Microplastics in the Environment (B)

Can micro plastics harm humans? Not \_\_\_\_\_

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What about microplastics harming animals and ecosystem's food chains?

Yes, microplastics have \_\_\_\_\_ the food chain ecosystems.

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Americans are eating roughly \_\_\_\_\_ thousand micro plastics

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### Potentially Harming Humans

The smallest of the small can pass through the gut into the \_\_\_\_\_ stream and **NOW** have access to liver, kidneys heart and \_\_\_\_\_

Plastics in the bloodstream may cause swelling and allow pre-existing conditions to become much worse.

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Microplastics can carry harmful \_\_\_\_\_ on its surfaces.

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What is a solution that an individual do? Pick up litter while walking, when in a business say \_\_\_\_\_ to plastic utensils.

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### **How Drones Work key**

1. Aerial
2. Aviation
3. TRUST
4. 400
5. heat
6. parking

### **Types of Drones key**

1. Domestic
2. responders
3. hiker
4. vision
5. laser
6. Dragonfly

### **Drones in Forensics key**

1. Advantages
2. inaccessible
3. rescue
4. floatation
5. evidence
6. building

### **Camera is like an eye KEY**

1. Obscura
2. eyelid
3. sharp
4. glasses
5. light
6. depth
7. retina
8. detail
9. sensitive

### **Visual Elements in Photography key**

1. story
2. follow
3. space
4. movement
5. distance
6. dark
7. tactile

### **Microplastics in the Environment 1 Key**

#### **A**

1. 5
2. pellets
3. spandex
4. fragile
5. 450
6. warmer
7. 2- 3

#### **B**

8. Likely
9. entered
10. 40- 50
11. blood
12. brain
13. bacteria
14. NO