

# Colored Dots 1

## Task Information

**Grade:** 4th Grade

**Content:** Physical Science  
IC - 1.4 - Mixtures - objects, events, properties

**Format:** Manipulative

**Purpose:**

- To determine the student's understanding of mixtures
- To determine the student ability to make inferences based on data collected in an experiment

**Skills:**

**Primary:** observation  
**Secondary:** generalizing, inferring

**Time:** 10 Minutes

**Materials:**

### Teacher

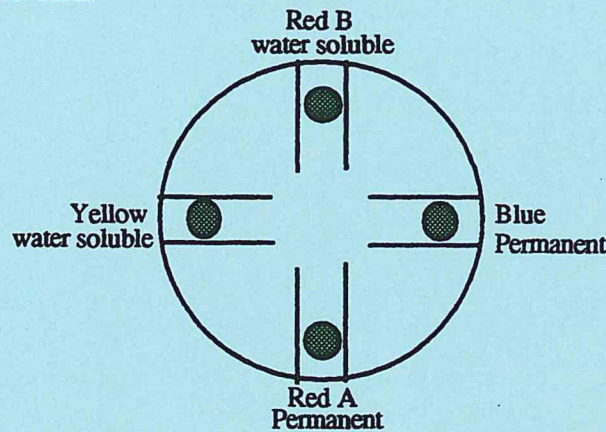
- 1 yellow water soluble marker
- 1 red water soluble marker (dot B)
- 1 blue permanent marker
- 1 red permanent marker (dot A)
- scissors
- 1 thin line black permanent marker
- extra paper towel
- extra prepared filter papers (9 cm)

### Per Student

- 1 - 5 oz. clear plastic cup of water
- 1 - filter paper with colored dots
- paper towel

**Preparation:**

1. Cut the filter paper with four (4) tabs (about 1 cm x 3 cm) as shown in the diagram below. Place a different dot on each of the four tabs about 1 cm from the end.



2. On the clear plastic cup, draw a thin line with a black permanent marker all the way around the cup about 4 cm from the bottom of the cup.
3. The line will serve as a fill line for the water. The tabs from the filter paper should **just** reach the top of the water line.
4. You may have to adjust the tab cuts on the filter paper or the fill line on the clear glass.

**Safety:** N/A

**Extensions and Modifications:**  
Colored Dots 2 and Colored Dots 3

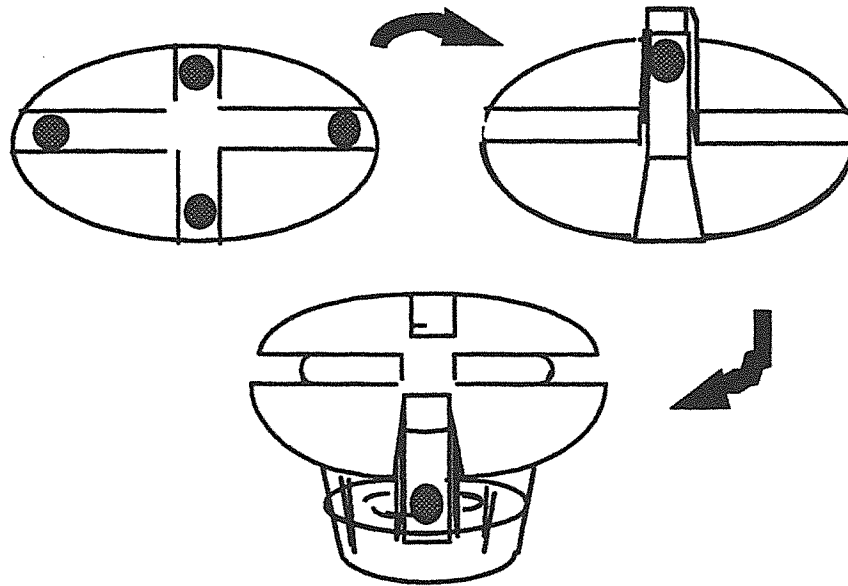
**Credit/Source:**  
Elementary Science Syllabus Level I Supplement - p. 80

## Colored Dots 1

**Task:** At this station you will be observing the effects of water on different colored dots.

**Materials:**

- 1 filter paper with colored tabs
- 1 cup with water
- Paper towels



**Directions:**

- In front of you are a small cup of water and a piece of cut filter paper.
- Bend the tabs with colored dots upward as shown in the diagram.
- Next, turn the paper upside-down and place the four tabs into the small cup. Be sure the colored dots are above the water surface, but be sure that each of the tabs is touching the surface of the water.

**DO NOT LIFT THE CUP!**

- After about 1 minute, when the first color reaches the top of the tab, remove the paper and flatten it out on a paper towel.

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# Colored Dots 1 Answer Sheet

1. Describe what you observed about each of the dots.

**Blue Dot**

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**Yellow Dot**

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**Red Dot A**

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**Red Dot B**

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2. Explain why the red dots acted differently from each other.

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**Colored Dots 1 - Scoring Rubric****Maximum score - 5 points****1. Observations of dots** **4 points total****Standard:** The student describes what happens when water reaches each dot.**Criteria:** Blue dot and Red dot A

- 1 point for each reasonable description.

Acceptable descriptors:

- |                   |                   |                     |
|-------------------|-------------------|---------------------|
| • didn't move     | • stayed the same | • didn't come off   |
| • didn't blur     | • didn't wear out | • didn't spread out |
| • stayed as a dot | • didn't come out | • it got soaked     |
| • nothing         | • it got wet      | • it didn't change  |

**Standard:** The student describes what happens when water reaches each dot.**Criteria:** Yellow dot and Red dot B

- 1 point for each reasonable description of movement or change in color.

Acceptable descriptors for movement:

- |                   |                       |                        |
|-------------------|-----------------------|------------------------|
| • climbed up      | • absorbed to the top | • smeared              |
| • moved           | • spread out          | • moved upward         |
| • smudged         | • ran                 | • got bigger           |
| • touched the top | • raised              | • blurred              |
| • color went up   | • reached the top     | • moved off the circle |

Acceptable descriptors for color change:

- |         |                |                   |
|---------|----------------|-------------------|
| • fades | • gets lighter | • color thins out |
|---------|----------------|-------------------|

\*\*\* No credit is given if the student only states that either Red dot B or Yellow dot changed. \*\*\*

**2. Reason why red dots behaved differently** **1 point total****Standard:** The student explains why the red dots acted differently.**Criteria**

- 1 point for a reasonable comparison of the red dot and the other dots on the paper.

Acceptable descriptors of comparison:

- one dot used permanent ink and the other didn't.
- They were different solutions.
- One dot is water color and the other isn't.
- They were different markers or inks.
- They are made of different stuff.
- One is washable and the other isn't.

UNacceptable answers:

- They were different.
- One moved and one didn't.

\*\*\* No credit is given if the student only restates the observations made in question 1. \*\*\*

**Highest possible score - 5 points**

Student ID \_\_\_\_\_ Scoring Form - Colored Dots 1

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1, Observations of dots

A. Blue dot 0 1

B. Yellow dot 0 1

C. Red dot A 0 1

D. Red dot B 0 1

2. Reason why red dots behaved differently 0 1

Total Score \_\_\_\_\_

Total possible score - 5

Student ID \_\_\_\_\_ Scoring Form - Colored Dots 1

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1, Observations of dots

A. Blue dot 0 1

B. Yellow dot 0 1

C. Red dot A 0 1

D. Red dot B 0 1

2. Reason why red dots behaved differently 0 1

Total Score \_\_\_\_\_

Total possible score - 5

#1

Student ID 4B-CN-9 Scoring Form - Colored Dots 1

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

## 1, Observations of dots

A. Blue dot

0 1

B. Yellow dot

0 1

C. Red dot A - water soluble

0 1

D. Red dot B - permanent

0 1

## 2. Reason why red dots behaved differently

0 1

Total Score

2 pts

Total possible score - 5

#2

Student ID 4B-CN-7 Scoring Form - Colored Dots 1

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

## 1, Observations of dots

A. Blue dot

0 1

B. Yellow dot

0 1

C. Red dot A - water Soluble

0 1

D. Red dot B - permanent

0 1

## 2. Reason why red dots behaved differently

0 1

Total Score

4 pts

Total possible score - 5

Student ID 4B-DE-10 Scoring Form - Colored Dots 1

#3

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1, Observations of dots

A. Blue dot 0 1

B. Yellow dot 0 1

C. Red dot A - permanent 0 1

D. Red dot B - water Soluble 0 1

2. Reason why red dots behaved differently 0 1

Total Score 5 pts

Total possible score - 5

Student ID \_\_\_\_\_ Scoring Form - Colored Dots 1

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1, Observations of dots

A. Blue dot 0 1

B. Yellow dot 0 1

C. Red dot A 0 1

D. Red dot B 0 1

2. Reason why red dots behaved differently 0 1

Total Score \_\_\_\_\_

Total possible score - 5



Colored Dots 1  
Answer Sheet

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#1

1. Describe what you observed about each of the dots.

Blue Dot

*That the blue did not turn into stuff*

*That the blue did not turn into stuff*

Yellow Dot

*That its color went up a lot*

*That its color went up a lot*

Red Dot A

*That it went up a whole bunch*

*That it went up a whole bunch*

Red Dot B

*It went up a little bit*

*It went up a little bit*

2. Write an explanation for why the red dots acted differently from each other.

*Because it had a lot of color and it*

*Because it had a lot of color and it*

Colored Dots 1  
Answer Sheet

April 30, 1996 2

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4B-CN-7

#2

1. Describe what you observed about each of the dots.

Blue Dot

stayed in the circle.

Yellow Dot

it went out of the circle.

Red Dot A

the color went way of the circle.

Red Dot B

the color stayed in the circle.

2. Write an explanation for why the red dots acted differently from each other.

a is different than the b dots.

1. Describe what you observed about each of the dots.

Blue Dot

The blue dot did not go up with the water at all.

Yellow Dot

The yellow dot went all the way up the piece of paper with the water.

Red Dot A

Red dot "A" didn't go with the water at all.

Red Dot B

The red dot move very quikley up th peice of paper with the water.

2. Write an explanation for why the red dots acted differently from each other.

One red dot, red dot "A", could have been permanent marker. Red dot "B" could have been a washable marker.