

Name: _____ Date: _____ Class: _____

Day 1 Magic Sidewalk Worksheet **Answer Key**

Time of Day 10:30am Temperature 70°F Humidity 60% Dew Point 62°F

Weather Clear skies with scattered cumulonimbus clouds

1. List the types of materials used to create a concrete sidewalk.

Material 1 aggregate (limestone)	Material 2 sand	Material 3 cement	Material 4 water
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2. What material from the list above would you remove to create a magic sidewalk? cement

3. Magic Sidewalk Mix **Trial 1**

Material 1 limestone	Material 2 sand	Material 3 water
Amount (volume/ratio) of Material 1 2 parts	Amount (volume/ratio) of Material 2 2 parts	Amount (volume/ratio) of Material 3 1 part

Observe Does Magic Sidewalk Trial 1 stick together? no
Does Magic Sidewalk Mix Trial 1 look magical? no

4. Magic Sidewalk Mix **Trial 2**. What material would you remove? limestone

Material 1 sand	Material 2 cement	Material 3 water
Amount (volume/ratio) of Material 1 1 part	Amount (volume/ratio) of Material 2 1 part	Amount (volume/ratio) of Material 3 1 part

Observe Does Magic Sidewalk Trial 2 stick together? yes
Does Magic Sidewalk Mix Trial 2 look magical? no

5. Magic Sidewalk Mix **Trial 3**. What material would you remove? sand

Material 1 limestone	Material 2 cement	Material 3 water
Amount (volume/ratio) of Material 1 2 parts	Amount (volume/ratio) of Material 2 1 part	Amount (volume/ratio) of Material 3 1 part

Observe Does Magic Sidewalk Trial 3 stick together? yes
Does Magic Sidewalk Mix Trial 3 look magical? yes

Name: _____ Date: _____ Class: _____

Day 2 Magic Sidewalk Worksheet **Answer Key**

Time of Day **10:30am** Temperature **72°F** Humidity **68%** Dew Point **65°F**

Weather **Overcast with 40% chance of rain**

Magic Sidewalk Infiltration Testing

1. Infiltration Rate

Use the same amount of water for each trial and keep track of the time it takes for the water to disappear.

	Volume of water (ml)	Time to drain (sec)	Infiltration rate (ml/sec)
Trial 1	1000 ml	8.5 seconds	117 ml/second
Trial 2	1000 ml	13.5 seconds	74 ml/second
Trial 3	1000 ml	10 seconds	100 ml/second

2. Observations:

Describe what happens to the water when you pour it onto the surface of your “magic” sidewalk. The poured water “magically” moves through the pervious pavement into the underlying media layer. The water is quickly removed from the biodegradable planter ponding area and infiltrated into the media layer that was created in the previous activity. Here, the water percolates through the media layer into the underdrain zone prior to draining out of the planter.

3. What magic sidewalk mix would you recommend for reducing the amount of stormwater runoff?

Expect students to recommend a magic sidewalk mix combination that has a high infiltration rate while remaining structurally sound to traffic loading. The recommendation is dependent on the ratio selected and class discussions about different pervious pavement attributes and mix combinations.