Parts of an Orange

**Directions:** Color the parts of the orange.

**FUN FACT:** Citrus fruit are modified berries.
Parts of a Citrus Leaf

FUN FACT: Leaves are the primary site for food manufacturing in plants through the process called photosynthesis. Color the leaf green.
Parts of a Citrus Tree

Directions: Label the parts of the tree and color.

Roots  Leaves  Fruit  Trunk  Flower (Blossom)

FUN FACT: Valencia orange is one of the few varieties that can carry two crops of fruit at one time.
Citrus Varieties
Below is a list of major Florida citrus varieties and their typical harvest period.

<table>
<thead>
<tr>
<th>Oranges</th>
<th>Grapefruit</th>
<th>Lemons and Limes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navel (October–January)</td>
<td>Duncan (December–May)</td>
<td>Meyer Lemon (November–March)</td>
</tr>
<tr>
<td>Hamlin (October–January)</td>
<td>Thompson (December–May)</td>
<td>Bearss Lemon (July–December)</td>
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<tr>
<td>Parson Brown (October–January)</td>
<td>Flame (November–May)</td>
<td>Tahiti Lime (June–September)</td>
</tr>
<tr>
<td>Valencia (March–June)</td>
<td>Ruby Red (November–May)</td>
<td>Key Lime (All year)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tangerines and Tangelos</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murcott Tangerine (January–March)</td>
<td>Calamondin (November–April)</td>
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<tr>
<td>Sunburst Tangerine (November–December)</td>
<td>Nagami Kumquat</td>
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<tr>
<td>Minneola Tangelo (December–February)</td>
<td>(November–April)</td>
</tr>
<tr>
<td>Satsuma (September–November)</td>
<td>Tavares Limequat (November–March)</td>
</tr>
<tr>
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<td>Nakon Pummelo (December–February)</td>
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</table>

**DID YOU KNOW?**

- **In Florida citrus, the term seedless means zero to six seeds.** Although the Navel orange is considered seedless, you may find a few seeds.

- **The Minneola Tangelo’s nickname is the Honeybell because it is very sweet and in the shape of a bell.**

- **The majority of Florida’s oranges are squeezed into juice.**

- **Grapefruit from Florida is shipped to Japan by boat.**

- **You can eat an entire Kumquat, even the peel.**

- **Satsuma is one of the earliest tangerine varieties and grows best in north Florida.**

**Directions:** Count the number of seeds in the orange.

Number of seeds: _____________

What is your favorite citrus fruit? __________________
Citrus Diseases

Citrus trees can get sick just like people. There are three causes of diseases: fungi, bacteria, and viruses.

**Bacterial Diseases**
- Citrus Canker
- Citrus Greening

**Fungal Diseases**
- Greasy Spot
- Citrus Scab
- Alternaria Brown Spot
- Melanose
- Citrus Black Spot
- Phytophthora Root Rot
- Brown Rot

**Viral Diseases**
- Tristeza
- Exocortis

**Directions:** Below is a list of common citrus diseases. Using the lists above, identify their cause of disease. Write “B” for bacterial, “F” for fungal, and “V” for viral.

_________ Exocortis
_________ Brown Rot
_________ Citrus Black Spot
_________ Citrus Canker
_________ Citrus Greening
_________ Citrus Scab

_________ Alternaria Brown Spot
_________ Greasy Spot
_________ Melanose
_________ Phytophthora Root Rot
_________ Tristeza

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Citrus Canker

Citrus canker is a very contagious disease for citrus trees. It does not harm people. It makes oranges, grapefruit, lemons, and tangerines look very bad. Although it is not pretty on the outside, you can still eat the fruit.

Citrus canker lesions (spots) are usually tan when first formed. As the lesions get older, they form a yellow circle around the tan lesion. This is called a yellow halo or yellow ring. You can see the same symptoms on both leaves and fruit. The yellow halo is commonly seen when identifying canker.

The lesions feel rough and are raised. They are not smooth like the leaf. As the lesions get older, they turn dark brown to black. You can sometimes see a sticky substance oozing out of the lesion. This is where the bacteria lives and, when the wind blows, it spreads the bacteria.

Color By Number

1. Brown
2. Yellow
Color the remainder of the leaf green.
Citrus black spot is a fungal disease that causes various types of spots on the fruit. The most common type is hard spot. It is round and sunken. If you look inside the circle, you can see little dots. The little dots are the fungal structures.

**Directions:**
Connect the dots and color the picture.
Fungal Diseases

Fungal diseases reproduce well in moist and humid conditions. Florida has the perfect conditions for fungal diseases. The most common fungal diseases are greasy spot, scab, melanose, and alternaria. Citrus fruit infected by fungal diseases may look bad, but it does not harm the inside of the fruit. You can still eat the fruit!

**Greasy Spot**
Looks like dust on fruit surface

**Citrus Scab**
Looks like warts

**Melanose**
Feels like sandpaper

**Alternaria Brown Spot**
Looks like craters

**Directions:** Fill in the crossword puzzle with the common citrus fungal diseases found in Florida.

<table>
<thead>
<tr>
<th>Greasy Spot</th>
<th>Scab</th>
<th>Melanose</th>
<th>Alternaria</th>
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Citrus Greening

Citrus greening is a bacterial disease. Its official name is Huanglongbing (HLB). The leaf symptoms have a blotchy mottle pattern. It causes fruit to be lopsided and small; the rind does not color properly. The fruit may taste bitter and sour. It affects oranges, grapefruit, tangerines, tangelos, lemons, and limes—all citrus varieties!

Directions: Circle the words in the puzzle below.

BACTERIA
GRAPEFRUIT
HUANGLONGBING
ORANGES
SMALL

CITRUS
GREENING
LOPSIDED
PHLOEM
TANGERINES

FRUIT
HLB
MISSHAPEN
PSYLLID

S S G R B T L F B E G Z M T D
H U A N G L O N G B I N G A E
B C I I S R S P X J M F S N D
D D I X R E A W A I T F R G I
X L J T G E R P S M E I U E S
P L T N R I T S E V M H X R P
H R A I R U H C G F K E K I O
L R Q R F A S G A S R H M N L
O X U R P G E M N B U U M E Y
E F U E G N I N E E R G I S W
M I N P S Y L L I D B E I T Q
T L L A M S V R V M P L Y T U
R U A X Z H T M I K E V H O D
W M W N X B G E T I G A A M A
D Q V O D G N F K W P N A R M
Asian Citrus Psyllid

The Asian citrus psyllid is the insect responsible for spreading the bacteria that causes citrus greening. It is a small insect, about 3-4 millimeters in length (smaller than a grain of rice).

The female psyllid lays the eggs on the new flush (new leaves) of citrus trees. It takes about 14 days for the eggs to hatch. The psyllid nymphs then go through 5 stages before becoming an adult.

Psyllid egg and the 5 nymph stages

Directions: Connect the dots to complete the psyllid’s wings.
Leafminer is a very small moth, but the larvae stage can cause severe damage on citrus leaves. The larvae tunnels underneath the leaf’s skin (cuticle), eating the nutrients. It then grows while leaving a trail before finally emerging as an adult.

**Directions:** From start (larvae) to finish (adult moth), help the larvae grow into an adult.
Weeds

Citrus pests and diseases play a major role in citrus care but weeds compete for water, nutrients, sunlight, and space for growth; therefore, weeds are an important part of plant care too. Weeds act as substitute hosts of insect pests and diseases. Weeds are super abundant seed producers; some weeds such as Spanishneedles can produce as many as 5,000 seeds per plant per year! Weeds reproduce through seeds or through sprouting from rhizomes, stolons, and bulbs found under the soil. Weeds can be a grass, a broadleaf, or a sedge.

Directions: Using the key above, complete the statement by matching the numbers and filling in the corresponding letter.

Parts of Weeds

Grass weed

Broadleaf weed
Honey Grapefruit Delight

**Ingredients**

2 Florida grapefruit  
2 tablespoons honey  
3 tablespoons sliced toasted almonds

**Yogurt Sauce:**

1 cup nonfat plain yogurt  
2 tablespoons honey  
¼ teaspoon grated grapefruit peel  
¼ teaspoon almond extract

**Steps**

1. Peel and slice grapefruit into ½” thick rounds.  
2. In a large bowl, combine grapefruit and honey; toss lightly to coat.  
3. Cover and chill until ready to serve.  
4. In a small bowl, mix sauce ingredients; stir well.  
5. Divide grapefruit slices among 4 individual dishes.  
6. Top with yogurt sauce; sprinkle with almonds.

Serves 4.

Florida Sunshine Shake

**Ingredients**

1 cup orange juice  
½ cup grapefruit juice  
1 ripe banana  
½ cup lowfat vanilla yogurt  
½ teaspoon vanilla

**Steps**

Combine all ingredients in a blender until smooth. Pour into glasses and serve immediately.

Makes two 8-ounce servings.

Orange Tango

**Ingredients**

¾ cup frozen orange juice concentrate, thawed  
2 large mangos peeled and chopped or two 8 ounce bags chunked frozen mango  
2 cups lemon sherbet  
1½ cups milk or almond milk  
1 teaspoon vanilla

**Steps**

1. In a blender, combine thawed concentrate and mango chunks.  
2. Cover and blend until mixture is smooth.  
3. Add sherbet, milk, and vanilla.  
4. Cover and blend until smooth.

Pour into glasses and serve immediately.

Makes five 8-ounce servings.

Orange Juice Cake

**Ingredients**

1 package (2 layer size) yellow cake mix  
1 4-ounce package lemon instant pudding mix  
4 eggs  
¾ cup corn oil  
¾ cup orange juice

**Steps**

1. Combine the cake mix, pudding mix, eggs, corn oil, and orange juice in a mixing bowl.  
2. Beat at low speed for 2 minutes, scraping the bowl constantly.  
3. Spoon the batter into a greased and floured tube pan or 9 x 13-inch cake pan.  
5. Cool completely before frosting or enjoy without.

Makes 10 servings.
Number of seeds: 12

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</tbody>
</table>

Answer Key

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Simulated canker lesions (circles) on leaf Katherine M. Snyder, UF/IFAS CREC

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Citrus black spot Megan M. Dewdney, UF/IFAS CREC
Tree outline (leaves, fruit, and trunk) Katherine M. Snyder, UF/IFAS CREC
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Alternaria Jamie D. Burrow, UF/IFAS CREC

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Blotchy mottle pattern UF/IFAS CREC
HLB infected grapefruit Jamie D. Burrow, UF/IFAS CREC

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Adult Asian citrus psyllid Michael E. Rogers, UF/IFAS CREC
Adult female and nymphal instars of Asian citrus psyllid Drawing by Division of Plant Industry. http://entnemdept.ufl.edu/creatures/citrus/acpsyllid.htm
Connect the dot activity Drawing by Division of Plant Industry. http://entnemdept.ufl.edu/creatures/citrus/acpsyllid.htm. Modified by Katherine M. Snyder, UF/IFAS CREC

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Adult leafminer moth Photograph by Jeffery W. Lotz, Florida Department of Agriculture and Consumer Services, Division of Plant Industry. http://entnemdept.ufl.edu/creatures/citrus/citrus_leafminer.htm
Leafminer damage UF/IFAS CREC
Leafminer damage magnified UF/IFAS CREC
Magnified larva (maze starting point) UF/IFAS CREC
Adult leafminer moth (maze finishing point) Photo by Jack Kelly Clark http://ciss.ucr.edu/citrus_leafminer.html
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Orange Juice Cake Simply Florida: A taste of Flavors from the Sunshine State, Florida Extension Association of Family and Consumer Sciences, University of Florida, Gainesville, 2007, pg. 121

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