

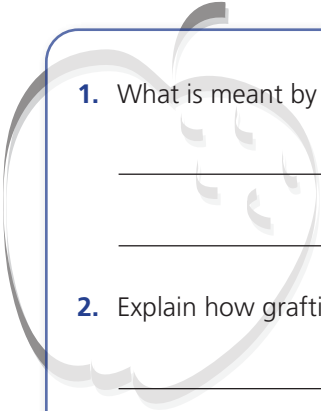
# STUDENT WORKSHEET

## MAKING A NEW APPLE CULTIVAR

### PART A: *APPLE - HOW DOES IT GROW?*

[www.youtube.com/watch?v=UWLmEh1HIBw](http://www.youtube.com/watch?v=UWLmEh1HIBw)

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_



1. What is meant by the statement "Each apple seed is genetically unique?" \_\_\_\_\_

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2. Explain how grafting is used to propagate new apple trees. \_\_\_\_\_

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3. Explain the importance of pollinators in the production of the apple crop. \_\_\_\_\_

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4. Describe some methods that apple growers use to control pests? \_\_\_\_\_

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5. If apples are only harvested in the late summer and fall, how are they available to consumers all year round? \_\_\_\_\_

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6. How does the United States compare to other countries in the amount of apples produced? \_\_\_\_\_

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### PART B: COMPARING APPLE CULTIVAR TRAITS

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Refer to the following websites for this activity: [www.orangeippin.com](http://www.orangeippin.com) and [www.cosmiccrisp.com/the-facts](http://www.cosmiccrisp.com/the-facts)

	Enterprise Apple	Honeycrisp™ Apple	Cosmic Crisp® Apple
Fruit Color			
Flesh Color			
Fruit Crispness			
Fruit Size			
Fruit Browning			
Fruit Shape			
Fruit Taste			
Skin Thickness			
Use			
Disease Resistance			
Scab	_____	_____	_____
Mildew	_____	_____	_____
Fireblight	_____	_____	_____
Cedar Apple Rust	_____	_____	_____
Bitter Pit	_____	_____	_____

Make a Venn diagram to explain the similarities and differences between the Enterprise and Honeycrisp™ apples.

Using the data you have collected, is there a way to determine if any of the apples' traits are dominant or recessive?

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When comparing the Cosmic Crisp® apple to the Enterprise and Honeycrisp™ apples, what do you notice about the taste of the apples? How could the inheritance of taste be explained? Are there any other traits that seem to be similarly inherited? What would you need to do to determine whether or not your ideas for inheritance are correct?

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## MAKING A NEW APPLE CULTIVAR

### PART C: DEVELOPING THE COSMIC CRISP® APPLE

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Complete this worksheet as you watch the following two videos:

*Why are there so many types of apples?*

[www.youtube.com/watch?v=mQePz62zkqA](http://www.youtube.com/watch?v=mQePz62zkqA) and

*Farmweek – New Apple* – [www.youtube.com/watch?v=jZsu-EGa\\_M](http://www.youtube.com/watch?v=jZsu-EGa_M)

1. The Cosmic Crisp® apple was developed through selective breeding. Explain selective breeding and list the steps that apple breeders might use in this process. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. In researching the Cosmic Crisp®, you probably did not find information about the apple's skin thickness. What might you predict the apple's skin thickness to be? What information did you use to make this prediction? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. How long was the WA 38 (Cosmic Crisp®) cultivar in development at Washington State University? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. How do apple breeders ensure that the new apple cultivar is the same as the original seedling? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. How was the public introduction of the Cosmic Crisp® apple different than the way in which new apple cultivars are usually introduced? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. How do apple breeders maintain long-lasting rights over an apple cultivar? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. The breeders of the Cosmic Crisp® apple believe that they have produced an apple that is better than most of the other apples available today in our grocery stores. Explain why you either agree or disagree with this statement. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. Looking to the future, what would the traits be of your "perfect" new apple cultivar? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

