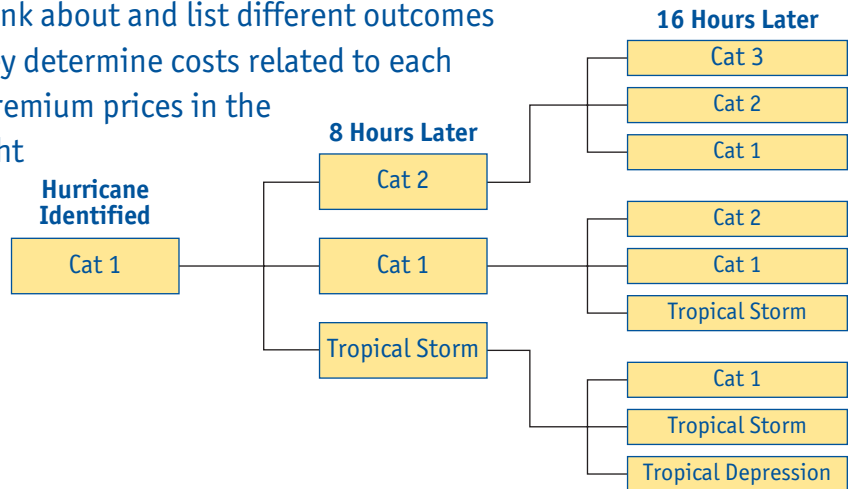# Branching Out with Tree Diagrams

Reproducible

NAME: _____ DATE: _____

Hurricanes are measured based on wind speed and storm surge. The Saffir-Simpson Hurricane Scale ranks categories of hurricanes from Category 1, weakest, to Category 5, strongest. A tropical storm is weaker than a Category 1, but stronger than a tropical depression. It takes more than eight hours for most hurricanes to change in intensity.

Property and casualty actuaries think about and list different outcomes caused by natural events. Then they determine costs related to each outcome. These costs may affect premium prices in the future. The tree diagram to the right shows some of the possible outcomes of a Category 1 hurricane over time. Study the tree diagram carefully and then answer the questions.

Hurricane Identified
Cat 1

8 Hours Later
Cat 2
Cat 1
Tropical Storm

16 Hours Later
Cat 3
Cat 2
Cat 1

Cat 2
Cat 1
Tropical Storm

Cat 1
Tropical Storm
Tropical Depression

Questions:

1. List the possible events that could happen 8 hours after a hurricane has been identified.

_____

2. What is the probability that this hurricane is a Category 1 after 16 hours? Write your answer as a fraction and a percentage. _____

3. What is the probability that this hurricane remains a Category 1 for the entire time? Write your answer as a fraction and a percentage. _____

4. What is the probability that this hurricane is a Category 2 after 16 hours? Write your answer as a fraction and a percentage. _____

5. After 16 hours, is it more likely that the hurricane will be a Category 1 or a Category 3? Explain your answer using fractions and a percentages.

_____

6. If flooding is possible in any of these scenarios, would a storm and a flood be mutually exclusive events? _____