Name: _____ Date: _____ Period: _____

Energy in an Ecosystem Week # _____

You have been introduced to the idea of energy flow within an ecosystem. In this lesson, you will examine how energy moves through different trophic levels, or from producer, to primary consumer, secondary consumer, and so on. Energy transfer is efficient but is limited by population size. This explains why an ecosystem has many rabbits but only a few mountain lions.

Energy Transfer Demonstration

- Rules:
  1. Each organism needs 4 pieces to survive. Each piece represents energy. If you have less than 4 pieces, then you cannot move on.
  2. Only the sun provides energy to primary producers. Consumers must get their energy from primary producers or other consumers.
  3. When consumers feed, they must receive 2 pieces from 2 different organisms.
- Round 1: *Draw a diagram in the box below and answer the questions based on the demonstration.*

There are:

_____ producers (_____)

_____ primary consumers (_____)

_____ secondary consumers (_____)

_____ tertiary consumers (_____)

1. With ____ producers, ____ primary consumers can survive because _____
   _____
2. With ____ producers, ____ secondary consumers and ____ tertiary consumers can survive because _____
   _____
3. Describe what happens to the population of consumers as the trophic level increases.
   _____
   _____

- Rules: Same rules as above, except this time, when consumers feed, they must receive one piece from each organism.
- Round 2: *Draw a diagram in the box below and answer the questions based on the demonstration.*

There are:

_____ producers (_____)

_____ primary consumers (_____)

_____ secondary consumers (_____)

_____ tertiary consumers (_____)

1. With ____ producers, ____ primary consumers can survive because _____
   _____

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2. With ____ producers, ____ secondary consumers and ____ tertiary consumers can survive because _____

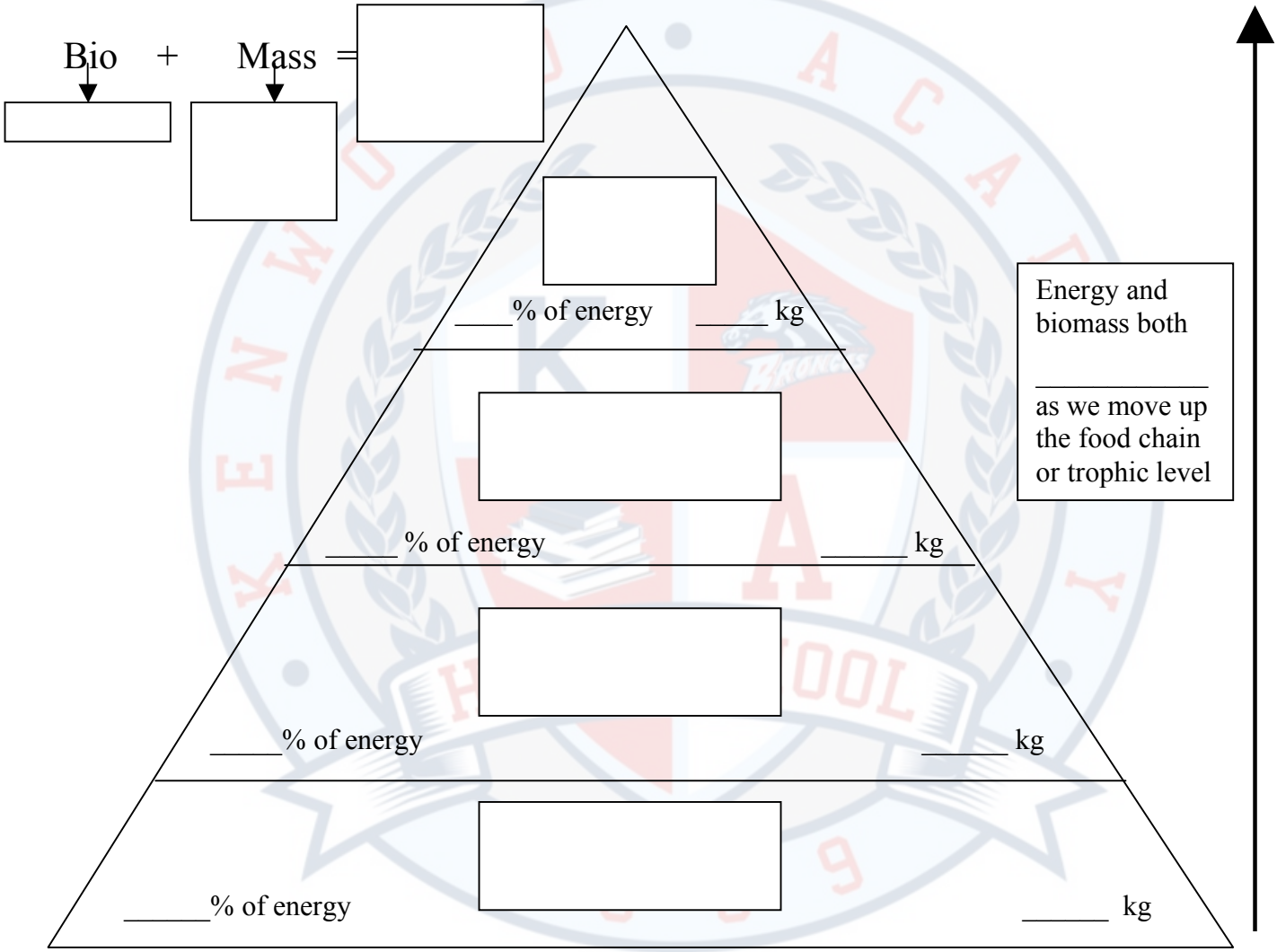
_____

3. Describe what happens to the population of consumers as the trophic level increases.

_____

_____

In the demonstrations we showed what happens to the population when 50% and 25% of the energy transfers. However, in real life, only 10% of energy in one level is passed on to the next. The energy pyramid below shows how energy is transferred.



1. Which type of consumer has the greatest biomass? Why? _____

_____

2. Which type of consumer has the lowest biomass? Why? _____

_____

3. How does the Ecosystem Game School Data (p.6) support the theory about available energy and biomass? _____

_____