NAME: _____

Aligned to the following standards:
FFA.PL-A; FFA.PL-E; FFA.PL-F; FFA.PG-J; FFA.CS-M; FFA.CS-N; CCSS.ELA.SL.9-10.1; CCSS.ELA.SL.9-10.2; CCSS.ELA.RST.9-10.4; CCSS.ELA.9-10.7; CCSS.ELA.RST.9-10.9; MP1; MP2; MP5; MP6; CRP.02; CRP.04; CRP.06; CRP.08

Dairy Farm

Part 1

DIRECTIONS:

Read and answer the questions below while you watch the video "Jared Poldervaart – SAE – Dairy Herd," available at https://vimeo.com/279310671.

How many cows are on the farm where Jared works?

a. 450
b. 650
c. 850
d. 1050

What were the beginning steps Jared took to develop his SAE?

1.
2.
3.

Which of the following was one of Jared's biggest challenges?

a. Transportation to and from the farm
b. Understanding herd genomics
c. Time management between work and school

What has Jared learned through his SAE?

What did Jared do in his agriculture class to help him with his SAE?

What skills has Jared learned through this SAE?

1.
2.
3.

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Part 2

DIRECTIONS:

Productive dairy herds rely heavily on the farmer having a solid understanding of the herd genomics and genetics. Genomics and genetics become important because they help to ensure herd health and productivity. Learn about the impact of genetics through the activities below.

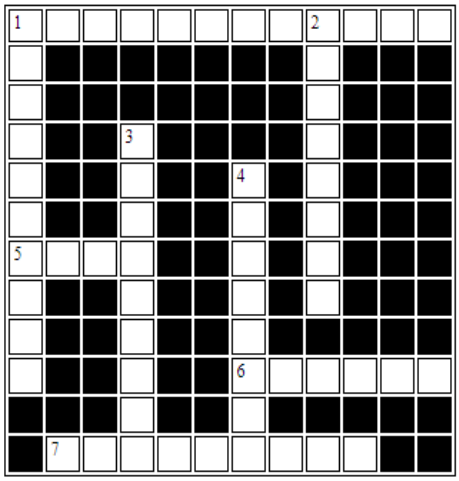
Genomics: Looking at all the genes of an organism and how they work together in relation to the growth and development of an organism

≠

Genetics: Looking at the individual genes of an organism

Let's take a look at genetics! Genetics are analyzed in animal systems, such as a dairy herd, to ensure high-producing, healthy animals. Using google, complete the crossword below to learn important vocabulary for the next activity.

Genetics



Across

1. Having different alleles for a gene pair. Ex. Aa
5. Traits are passed in these units.
6. The different forms of genes are called an _____.
7. This refers to the traits that are actually shown. Ex. brown eyes

Down

1. Having the same allele pair. Ex. AA or aa
2. This is the kind of genes an individual carries. Ex. AA, Aa, aa
3. In heterozygous alleles it is possible that one trait maybe 'hidden'. The 'hidden' trait is called _____.
4. In heterozygous alleles it is possible that one trait may 'mask' another trait. This trait is called _____.

Using AgExplorer.ffa.org, identify three career focus areas (other than animal science) in which genetics would play a large role.

1. _____
2. _____
3. _____

What role do genetics play in our everyday lives?

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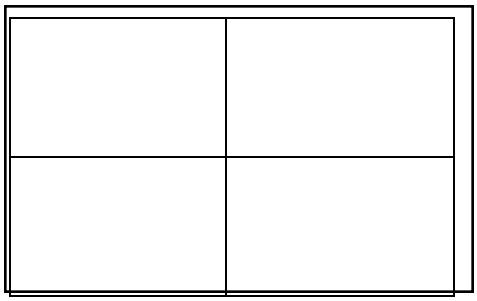
Part 3

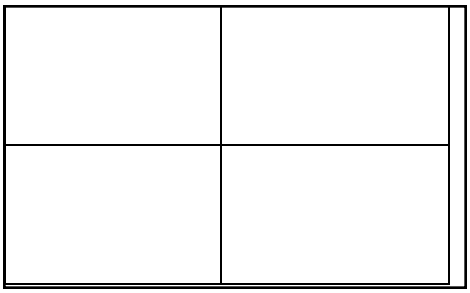
DIRECTIONS:

In genetics there is a tool called a Punnett Square that can help determine the probable genotypic outcome of offspring. The genotype can then be used to determine the phenotype. Watch the video available at https://youtu.be/d4izVAkhMPQ, or use websites/videos similar to it, and then complete the Punnett square practice below.

1. A homozygous purple (RR) flower is being crossed with a heterozygous purple flower (Rr). What color will the potential offspring be? _____
   Show all work for full credit.



2. A heterozygous black bull (Gg) has been crossed with a heterozygous black heifer (Gg). What percentage of the offspring will be black? _____
   What percentage of the offspring will be white? _____
   Show all work for full credit.



3. A homozygous black lab (TT) is crossed with a homozygous yellow lab (tt). What percentage of the offspring will be chocolate? _____
   What percentage of the offspring will be yellow? _____
   Show all work for full credit.