

Build a Calf Worksheet

Group members:

Polled or Horned?

Use the following Punnett square to determine if the calves will have horns or will be polled (no horns). Remember that polled (P) is the dominant trait to horned (p).

Polled (P) or Horned (h)?		Bull's Alleles	
		P	p
Cow's Alleles	p		
	p		

1. What is the bull's genotype? _____ Is the bull horned or polled?

2. Are the cow's alleles homozygous or heterozygous? _____
3. What ratio or percentage of the calves could be polled? _____ Horned? _____

Black or Red?

Use the following Punnett square to determine if the calves will have a black or red coat. Black is dominant (B) to red (b). Hypothesize the results before completing the square.

Black (B) or Red(b)?		Bull's Alleles		Do you think most of the calves will be black or red? Why?
		B	b	
Cow's Alleles	B			
	b			

1. What color is the bull? _____ What color is the cow? _____
2. What ratio or percentage of the calves could be red? _____

Now, let's cross the same bull (Bb) with a red cow (bb).

		Bull's Alleles		What is the phenotype for each genotype possibility?
		B	b	
Cow's Alleles	b			1. _____
	b			2. _____
				3. _____
				4. _____

Build a Calf

You have a mix of the following cattle breeds on your farm: Black Angus (solid black), Hereford (red coat with a white face and belly), and Charolais (cream colored, which is the result of a red coat – bb – with homozygous dilution DD). What are the possible coat colors that may result when you cross different breeds of cows and bulls?

Use the dice to determine each of the alleles in your calf's genotype. Since a calf has two parents, you will **roll twice** for each trait. Use the table to the right to assign an allele for each number rolled. Once you have your genotype, determine the phenotype. Remember that CAPITAL letters are the dominant alleles. Use crayons to create a visual representation of your calf.

Trait	Bull Allele	Cow Allele	Phenotype
	Genotype		
Horned or Polled?			
Coat Color			
White Face & Belly			

Horned or Polled

Odd # – p (horned)

Even # – P (polled)

Coat color

1/2/3 – B (black)

4/5/6 – b (red)

White Face & Belly

1 – F (white face & belly)

2,3,4 – f (no white)

5 – F (white face & belly)

6 – f (no white)

Circle the HOMOZYGOUS genotypes above.

