

# Worksheet: Dihybrid Crosses

## UNIT 3 : GENETICS

**STEP 1:** Determine what kind of problem you are trying to solve.

**STEP 2:** Determine letters you will use to specify traits.

**STEP 3:** Determine parent's genotypes.

**STEP 4:** Make your Punnett square and make gametes

**STEP 5:** Complete cross and determine possible offspring.

**STEP 6:** Determine genotypic and phenotypic ratios.

### Two-Factor Crosses (Di-hybrid)

Ex) A tall green pea plant (TTGG) is crossed with a short white pea plant (ttgg).

TT or Tt = tall

tt = short

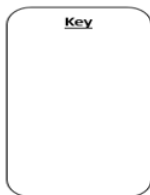
GG or Gg = green

gg = white

	TG	TG	TG	TG
tg	TtGg	TtGg	TtGg	TtGg
tg	TtGg	TtGg	TtGg	TtGg
tg	TtGg	TtGg	TtGg	TtGg
tg	TtGg	TtGg	TtGg	TtGg

16 Tall/Green : 0 Tall/White : 0 Short/Green : 0 Short/ White

Red seahorses are dominant over blue seahorses and a long dorsal fin is dominant to a short dorsal fin. Cross a hybrid (heterozygous) red, long finned (also heterozygous) seahorse with a blue heterozygous long finned seahorse. What is the phenotypic and genotypic ratio of the offspring?




\_\_\_ Red, Long: \_\_\_ Red, Short: \_\_\_ Blue, Long: \_\_\_ Blue, Short

B – five toes      R – green skin  
b – four toes      r – blue skin

Try answering the following without making a Punnett Square?

If BBRr and Bbrr are crossed, how many toes will all their offspring have? \_\_\_\_\_ How can you tell?

If Bbrr and Bbrr are crossed will all the offspring have blue skin? \_\_\_\_\_ How can you tell?

In dihybrids, if both parents have all heterozygous traits (BbRr X BbRr), what will the phenotypic ratio of the offspring ALWAYS be?