

# GENETICS

## LESSON 6: PUNNETT SQUARES

### Learning Outcomes

- I can use a Punnett square to determine the probability of genotypes and/or phenotypes for autosomal traits.
- I can use a Punnett square to determine the genotype of the parents of autosomal alleles if the probability of the offspring outcomes is known.

- \_\_\_\_\_  
\_\_\_\_\_

- Steps

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

5. \_\_\_\_\_

5. \_\_\_\_\_

Examples – Y = yellow seed colour    y = green seed colour

1. What are the possibilities for seed colour when a homozygous dominant plant and homozygous recessive plant are crossed?

2. What are the possibilities for seed colour when 2 heterozygous plants are crossed?

## Interpreting the Data

- \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Examples** – Y = yellow seed colour    y = green seed colour

1. What is the probability of getting a yellow seed when a homozygous dominant plant and homozygous recessive plant are crossed?

|             | <b>Genotype</b> | <b>Fraction</b> | <b>%</b> | <b>% Probability</b> |
|-------------|-----------------|-----------------|----------|----------------------|
| Yellow Seed |                 |                 |          |                      |

2. When 2 heterozygous plants are crossed, what is the probability of getting:
  - a. A homozygous dominant offspring?
  - b. A heterozygous offspring?
  - c. A yellow seed?
  - d. A green seed?

|                      | <b>Genotype</b> | <b>Fraction</b> | <b>%</b> | <b>% Probability</b> |
|----------------------|-----------------|-----------------|----------|----------------------|
| Homozygous Dominant  |                 |                 |          |                      |
| Heterozygous         |                 |                 |          |                      |
| Yellow Seed          |                 |                 |          |                      |
| Homozygous Recessive |                 |                 |          |                      |

3. If the probability of a cross with a heterozygous parent for yellow seeds results in 50% yellow seeds and 50% green seeds, what is the genotype of the other parent plant?

❖ Work backwards – fill in the Punnett square with what you know

❖ Fill in what the other parent must be.

❖ Complete the Punnett square to double check your answer.