Unit 3

Answers: Genetics

Quick checks

1 c **one allele of each gene**
four kinds

2 b
phosphodiester bond

3 b **anticodon**

4 c **64**
61

5 a **Y**

1 a. c **9 : 3 : 3 : 1**

1 b. b **9**

1 c. c **Cytosine**

1 d. b **Transfer RNA**

1 e. b X^c
X^cX **a carrier**

1 f. b **holandric**

2 a.

2 b.

2 c.

2 d.

3 i.

DNA	RNA

3 ii.

Purines	Pyrimidines

3 iii.

X-linked genes	Y-linked genes

4 a. **Law of independent assortment:**

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-

Gametes	RY	Ry	rY	ry
RY				
Ry				
rY				
ry				

Phenotypic ratio:

Genotypic ratio:

4 b.

	RY	Ry	rY	ry
ry				

4 c. 1.

2.

3.

4.

5.

6.

4 d. **nucleotide**

1. **N-glycosidic bond:**

2. **Ester bond / phosphodiester bond:**

3. **Hydrogen bonds:**

4 e. 1. **mRNA**

2. **tRNA**

3. **rRNA**

4 f. 1. **Storing information:**

2. **Replication:**

3. **Controlling characters:**

4. **Variation:**

5. **Heredity:**

4 g. **Sex-linked inheritance**

1. **X-linked genes:**

2. **Y-linked (holandric) genes:**

3. **XY-linked (incompletely sex-linked) genes:**

4 h.

Gametes	X^h	X
X	X^hX	
Y	X^hY	

Criss-cross inheritance

5 a. $\frac{3}{16} \times 800 = \mathbf{150\ plants}$

$\frac{1}{16} \times 800 = \mathbf{50\ plants}$

$\frac{4}{16} \times 800 = \mathbf{200\ plants}$

5 b.

- **Shape:** **RR**
- **Color:** **Yy**

RRYy

5 c.

$$= \frac{6800}{0.34} = 20{,}000$$

2,000 **20,000 base pairs** **2,000 turns**

5 d. $2x + 3(500 - x) = 1300 \quad \Rightarrow \quad 1500 - x = 1300 \quad \Rightarrow \quad x = 200$

200 A–T pairs and 300 G–C pairs.

5 e. **753 nucleotides**

753 base pairs

5 f. X^cY X^c

X^cX X^cY

Gametes	X^c	X
X^c	X^cX^c	X^cX
Y	X^cY	

Half the sons half the daughters

5 g. X^c

- **25 in 10,000**
- **950 in 10,000**