

3. Punnett squares should look like the following:

White-eyed fly × Red-eyed fly

	<i>r</i>	<i>r</i>
<i>R</i>	<i>Rr</i>	<i>Rr</i>
<i>R</i>	<i>Rr</i>	<i>Rr</i>

Bar-eyed fly × Round-eyed fly

	<i>B</i>	<i>B</i>
<i>b</i>	<i>Bb</i>	<i>Bb</i>
<i>b</i>	<i>Bb</i>	<i>Bb</i>

The results predicted by the Punnett squares are the same as those obtained by the geneticist.

4. Punnett squares for F₁ offspring should look like the following:

Red-eyed fly × Red-eyed fly

	<i>R</i>	<i>r</i>
<i>R</i>	<i>RR</i>	<i>Rr</i>
<i>r</i>	<i>Rr</i>	<i>rr</i>

Bar-eyed fly × Bar-eyed fly

	<i>B</i>	<i>b</i>
<i>B</i>	<i>BB</i>	<i>Bb</i>
<i>b</i>	<i>Bb</i>	<i>bb</i>

For the cross between heterozygous red-eyed flies, the geneticist can expect offspring with red eyes and offspring with white eyes. There is a 25 percent chance of an offspring having white eyes: $\frac{1}{4} \times 100 = 25\%$. For the cross between heterozygous bar-eyed flies, the geneticist can expect offspring with bar eyes and offspring with round eyes. There is a 75 percent chance of an offspring having bar eyes: $\frac{3}{4} \times 100 = 75\%$.

Chapter Test

1. b
2. c
3. c
4. b
5. d
6. d
7. a
8. c
9. a
10. b
11. genes
12. mutation
13. *TT*
14. purebred
15. alleles
16. 50 percent
17. genes
18. heredity
19. true
20. true
21. Genotypes: *Hh* and *hh*; phenotypes: short hair and long hair
22. 50 percent will have short hair and 50 percent will have long hair.
23. Genotype: all would be *Hh*; phenotype: all would have short hair.
24. Messenger RNA copies information from DNA in the nucleus, then moves into the cytoplasm where it attaches to a ribosome. Transfer RNA carries specific amino acids to the ribosome, where it matches up with a three-letter code of bases on the messenger RNA. The protein chain grows as each transfer RNA attaches its amino acid in the correct sequence. The protein chain grows until the ribosome reaches a three-letter "stop sign" and releases the completed protein chain.
25. Since a yellow pod is a trait controlled by a recessive allele, it is impossible to have a heterozygous yellow pod. Traits controlled by recessive alleles never appear unless the organism is homozygous for the trait, because recessive alleles are always masked by dominant alleles.