Answer key

Let's Review

Complete the table listing outcomes when finding the sum of two dice.

+	1	2	3	4	5	6
1	**2**	**3**	**4**	**5**	**6**	**7**
2	**3**	**4**	**5**	**6**	**7**	**8**
3	**4**	**5**	**6**	**7**	**8**	**9**
4	**5**	**6**	**7**	**8**	**9**	**10**
5	**6**	**7**	**8**	**9**	**10**	**11**
6	**7**	**8**	**9**	**10**	**11**	**12**

Write the probabilities as fractions, decimals, and percents.

1. P (7)

   $\mathbf{\frac{1}{36}}$ **.027777…** **2.7777…%**

2. P (odd)

   $\mathbf{\frac{1}{2}}$ **.5** **50%**

3. P (more than 6)

   $\mathbf{\frac{21}{36} = \frac{7}{12}}$ **.583333…** **58.3333…%**

4. P (more than 6 **or** even)

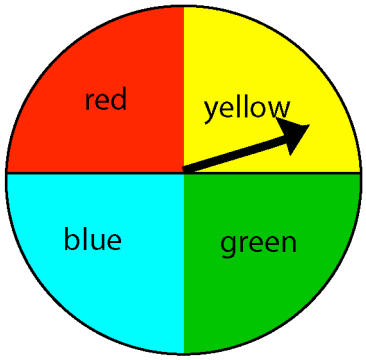
   $\mathbf{\frac{30}{36} = \frac{5}{6}}$ **.83333…** **83.3333…%**

5. P (more than 6 **and** even)

   $\mathbf{\frac{9}{36} = \frac{1}{4}}$ **.25** **25%**

Answer key

Make and complete a table listing outcomes when finding **the product of two spins**.
(red = 1, yellow = 2, green = 4, blue = 5)



x	1	2	4	5
1	1	2	4	5
2	2	4	8	10
4	4	8	16	20
5	5	10	20	25

Write the probabilities as fractions, decimals, and percents.

6. P (1)

   $\frac{1}{16}$ **.0625** **6.25%**

7. P (odd)

   $\frac{4}{16} = \frac{1}{4}$ **.25** **25%**

8. P (more than 10)

   $\frac{4}{16} = \frac{1}{4}$ **.25** **25%**

9. P (more than 2 **or** odd)

   $\frac{14}{16} = \frac{7}{8}$ **.875** **87.5%**

10. P (more than 3 **and** even)

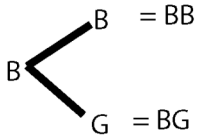
    $\frac{10}{16} = \frac{5}{8}$ **.625** **62.5%**

Answer key

Biology rules!

Complete a tree diagram and a sample space chart for problems 1 and 2.

1. What is the probability that a family will have two boys if they have two children?



B = BB 1/4

G = BG

B = GB

G = GG

1 child 2 children

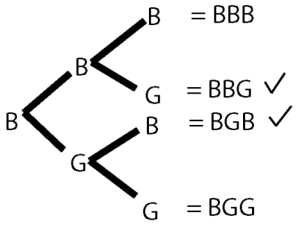
BB 1/4

BG

GB

GG

2. What is the probability that a family will have two boys and a girl (in no particular order) if they have three children?



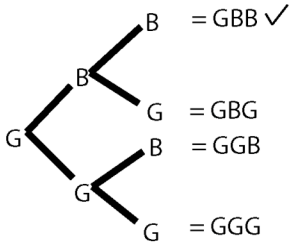
B = BBB

G = BBG ✓

B = BGB ✓

G = BGG

3/8



B = GBB ✓

G = GBG

B = GGB

G = GGG

3. What is the probability that a family with three children will have a boy first, then a girl, and finally a boy? Clue: Use the chart from problem 2 to answer this.

P (B,G,B)

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

Answer key

4. How many possible outcomes are there for a family of four children?

   2 choices, 4 children

   $2^4 = 16$ outcomes

5. What is the probability that the first child in any family will be a girl?

   P (girl) = $\frac{1}{2}$ or 50%

Answer key

I could be a biologist!

Key terms:
phenotype: physical appearance (example: eye color)
genotype: genetic makeup (examples: BB, Bb, bb)

homozygous: same (example: BB or bb)
heterozygous: different (example: Bb)

dominant: uppercase letter (B)
recessive: lowercase letter (b)

To determine the phenotype (physical appearance) of someone, you can cross traits of potential parents to find the *theoretical probability* of a certain trait being passed on to the offspring. Using a Punnett square is an easy way to do this by using the genotypes (genetic makeup) of the parents.

Complete the Punnett square to determine the probability of each event:

Cross: (cat) homozygous dominant – black-haired
homozygous recessive – white-haired
black (BB) White (bb)

	B	B
b	**Bb**	**Bb**
b	**Bb**	**Bb**

1. P (BB) **0**
2. P (bb) **0**
3. P (Bb) **100%**

Cross: (human) heterozygous dominant – curly-haired
homozygous recessive – not curly-haired
Curly (Cc) Not curly (cc)

	C	c
c	**Cc**	**cc**
c	**Cc**	**cc**

4. P (curly) $\frac{1}{2}$, **.5, 50%**
5. P (not curly) $\frac{1}{2}$, **.5, 50%**

Answer key

Create Punnett squares for the following problems:

What if you looked at a second-generation offspring (homozygous recessive = cc) and crossed it with a person with the same genotype (cc)? What would be the theoretical probability for the following:

6. P (Cc) **0%**

7. P (CC) **0%**

8. P (cc) **100%**

	c	**c**
c	**cc**	**cc**
c	**cc**	**cc**

9. A widow's peak hairline is dominant; a straight hairline is recessive. If the mother is heterozygous for the widow's peak and the father is homozygous recessive, what is the probability that their offspring will have a widow's peak? Show your work.

Mom – heterozygous (Ww)
Dad – homozygous (ww)

	W	**w**
w	**Ww**	**ww**
w	**Ww**	**ww**

Answer: $\frac{2}{4} = \frac{1}{2} = 50\%$