

Probability of A and B

If A and B are independent events, then $P(A \text{ and } B) = P(A) \cdot P(B)$

Probability of A or B

If A and B are mutually exclusive events, then $P(A \text{ or } B) = P(A) + P(B)$

Classify each pair of events as *dependent* or *independent*.

- 1) A member of the junior class is selected; one of her pets is selected.
dependent
- 2) A member of the junior class is selected as junior class president; a freshman is selected as freshman class president.
independent
- 3) An odd-numbered problem is assigned for homework; an even-numbered problem is picked for a test.
independent
- 4) The sum of two rolls of a number cube is 6; the product of the same two rolls is 8.
dependent

Use the table shown below to answer the following questions.

Movie Collection		
	Video	DVD
Action	12	26
Comedy	14	8
Drama	4	16
	30	50

5) You randomly pick a video and a DVD. What is the probability that you pick a drama video and a comedy DVD?

$$\frac{4}{30} \cdot \frac{8}{50} = \frac{32}{1500} = \frac{16}{750} = \frac{8}{375} \approx 2.1\%$$

6) What is the probability of randomly picking a comedy video and a drama DVD?

$$\frac{14}{30} \cdot \frac{16}{50} = \frac{224}{1500} = \frac{112}{750} = \frac{56}{375} \approx 14.9\%$$

You randomly select an integer from 1 to 100. State whether the events are mutually exclusive. Explain your reasoning.

↳ cannot happen at the same time

7) The integer is less than 40; the integer is greater than 50. *Yes*

8) The integer is odd; the integer is a multiple of 4. *Yes*

9) The integer is less than 50; the integer is greater than 40.

No

- 10) Exactly 62% of the students in your school are under 17 years old. In addition, 4% of the students are over 18. What is the probability that a student chosen at random is under 17 or over 18?

$$62 + 4 = 66\%$$

A fair number cube is tossed. Find each probability.

- 11) $P(\text{even or } 3)$

$$\frac{3}{6} + \frac{1}{6}$$

$$\frac{4}{6} = \frac{2}{3}$$

- 12) $P(\text{less than } 2 \text{ or even})$

$$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$$

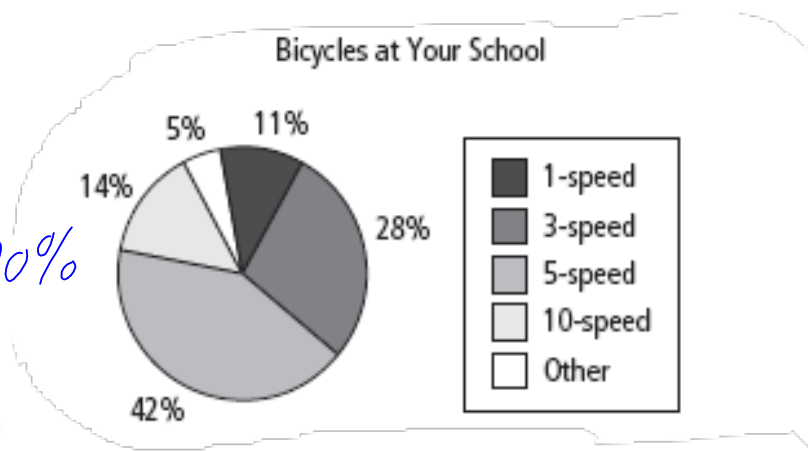
$$\frac{2}{3}$$

- 13) $P(\text{prime or } 4)$

$$\frac{3}{6} + \frac{1}{6} = \frac{4}{6}$$

$$\frac{2}{3}$$

The graph at the right shows the types of bicycles in a bicycle rack. Find each probability.



- 14) A bicycle is a 1-speed. 11%
- 15) A bicycle is a 3-speed or a 5-speed. 70%
- 16) A bicycle is not a 10-speed. 86%
- 17) A bicycle is not a 1-, 3-, or 10-speed. 47%