

Lesson 12-8

Example 1 Find Odds

- a. Find the odds of a sum of at least 10 if a pair of number cubes are rolled.

There are $6 \cdot 6$ or 36 sums possible for rolling a pair of number cubes.

There are 6 sums that are at least 10. They are (4, 6), (5, 5), (5, 6), (6, 4), (6, 5), (6, 6). There are $36 - 6$ or 30 sums that are not at least 10.

Odds of rolling a sum of at least 10

$$\begin{aligned} &= \frac{\text{number of ways to roll a sum of at least 10}}{\text{number of ways to roll any other sum}} \\ &= 6 : 30 \quad \text{or } 1:5 \end{aligned}$$

The odds of rolling a sum of at least 10 are 1:5.

- b. A bowl contains 6 red chips, 3 blue chips, and 4 yellow chips. What are the odds against drawing a yellow chip from the bowl?

There are $13 - 4$ or 9 chips that are not yellow.

Odds against drawing a yellow chip

$$\begin{aligned} &= \frac{\text{number of ways to draw a chip that is not yellow}}{\text{number of ways to draw a yellow chip}} \\ &= 9 : 4 \quad \text{or } 9:4 \end{aligned}$$

The odds *against* drawing a yellow chip are 9 : 4.

Example 2 Use Odds

Multiple-Choice Test Item

Sam made 5 out of the 14 free throw shots he took with his basketball. Based on these results, what are the odds he will make the next free throw shot he takes?

- A. 5 to 14 B. 5 to 9 C. 9 to 14 D. 9 to 5

Read the Test Item

To find the odds, compare the number of successes to the number of failures.

Solve the Test Item

Sam took 14 free throw shots.

He made 5 of them.

He did not make $14 - 5$ or 9 of the shots.

$$\text{Successes : failures} = 5 \text{ to } 9$$

The answer is B.