



Personal Math Trainer

Online Assessment and Intervention

my.hrw.com



Math On the Spot

my.hrw.com

YOUR TURN

Find each probability. Write your answer in simplest form.

4. Picking a purple marble from a jar with 10 green and 10 purple marbles. _____
5. Rolling a number greater than 4 on a standard number cube. _____

Using the Complement of an Event

The **complement** of an event is the set of all outcomes in the sample space that are *not* included in the event. For example, in the event of rolling a 3 on a number cube, the complement is rolling any number other than 3, which means the complement is rolling a 1, 2, 4, 5, or 6.

An Event and Its Complement

The sum of the probabilities of an event and its complement equals 1.

$$P(\text{event}) + P(\text{complement}) = 1$$

You can apply probabilities to situations involving random selection, such as drawing a card out of a shuffled deck or pulling a marble out of a closed bag.

EXAMPLE 3



TEKS 7.6.E

There are 2 red jacks in a standard deck of 52 cards. What is the probability of not getting a red jack if you select one card at random?

$$P(\text{event}) + P(\text{complement}) = 1$$

$$P(\text{red jack}) + P(\text{not a red jack}) = 1$$

$$\frac{2}{52} + P(\text{not a red jack}) = 1$$

$$\frac{2}{52} + P(\text{not a red jack}) = \frac{52}{52}$$

$$\frac{2}{52} \quad \frac{2}{52}$$

$$P(\text{not a red jack}) = \frac{50}{52}$$

$$P(\text{not a red jack}) = \frac{25}{26}$$

The probability of getting a red jack is $\frac{2}{52}$.

Substitute $\frac{2}{52}$ for $P(\text{red jack})$.

Write 1 as a fraction with denominator 52.

Subtract $\frac{2}{52}$ from both sides.

Simplify.

Simplify.

The probability that you will not draw a red jack is $\frac{25}{26}$. It is likely that you will not select a red jack.