CHAPTER 12, LESSON 4, EXTRA EXAMPLE

Extra Example 4 Probabilities of Complements

Two six-sided dice are tossed and the sum of the numbers showing is recorded. The table below shows the 36 possible outcomes.

	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

Find the probability of each event.

a. The sum is not 9.

b. The sum is less than or equal to 9.

SOLUTION

a. $P(\text{sum is not } 9) = 1 - P(\text{sum is } 9)$

$$= 1 - \frac{4}{36}$$

$$= \frac{32}{36}$$

$$= \frac{8}{9}$$

$$\approx 0.889$$

▶ The probablility that the sum is not 9 is about 0.889.

b. $P(\text{sum} \leq 9) = 1 - P(\text{sum} > 9)$

$$= 1 - \frac{6}{36}$$

$$= \frac{30}{36}$$

$$= \frac{5}{6}$$

$$\approx 0.833$$

▶ The probability that the sum is less than or equal to 9 is about 0.833.