Show All Solutions

Rosen, Discrete Mathematics and Its Applications, 7th edition
Extra Examples
Section 8.5—Inclusion–Exclusion

Extra Examples — *Page references correspond to locations of Extra Examples icons in the textbook.*

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p.557, icon at Example 5
#1. How many positive integers less than or equal to 100 are divisible by 6 or 9?

See Solution

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p.557, icon at Example 5
#2. How many positive integers less than or equal to 100 are relatively prime to 15?

See Solution

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p.557, icon at Example 5
#3. Find the number of elements in $A_1 \cup A_2 \cup A_3 \cup A_4$ if each set has size 50, each intersection of two sets has size 30, each intersection of three sets has size 10, and the intersection of all four sets has size 2.

See Solution

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p.557, icon at Example 5
#4.
(a) Find the number of permutations of $1, 2, \ldots, 8$ that begin with 52 or end with 387.

(b) Find the number of permutations of $1, 2, \ldots, 8$ that begin with 52 or end with 327.

See Solution

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p.557, icon at Example 5
#5. Find the number of permutations of all 26 letters of the alphabet that contain at least one of the words FIGHT, BALKS, MOWER.

See Solution

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p.557, icon at Example 5

#6. Find the number of permutations of all 26 letters of the alphabet that contain at least one of the words CAR, CARE, SCARE, SCARED.

See Solution

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p.557, icon at Example 5
#7. Suppose $|U| = n$ and A and B are subsets of U such that $|A| > n/2$, and $B > n/2$. Prove that $A \cap B \neq \emptyset$.

See Solution

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p.557, icon at Example 5
#8. Let n be an odd positive integer and let $a_1, a_2, \ldots, a_n$ represent an arbitrary arrangement of the integers $1, 2, 3, \ldots, n$. Prove that the product $(a_1 - 1)(a_2 - 2) \ldots (a_n - n)$ is an even integer.

See Solution
