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Online Homework

Focused Exercises for Math SAT

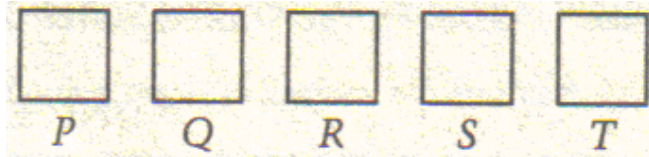
Skill Set 28: Sets and Venn Diagrams

Many of the problems in this exercise set came from The College Board, writers of the SAT exam.

1. Set X has x members and set Y has y members. Set Z consists of all members that are in either set X or set Y with the exception of the k common members ($k > 0$). Which of the following represents the number of members in set Z ?
- (A) $x + y + k$
 - (B) $x + y - k$
 - (C) $x + y + 2k$
 - (D) $x + y - 2k$
 - (E) $2x + 2y - 2k$
2. If E is the set of even integers, P is the set of positive integers, and F is the set of integers less than 5, which of the following integers will be in all three sets?
- (A) 6
 - (B) 4
 - (C) 1
 - (D) 0
 - (E) -2
3. Set $X = \{30, 31, 32, 33\}$
Set $Y = \{32, 33, 34, 35, 36\}$
- Set X and Y are shown above. How many numbers in set X are also in set Y ?
- (A) Two
 - (B) Three
 - (C) Four
 - (D) Seven
 - (E) Nine
4. At Maple Creek High School, some members of the chess club are on the swim team and no members of the swim team are tenth graders. Which of the following must also be true?
- (A) No members of the chess club are tenth graders.
 - (B) Some members of the chess club are tenth graders.
 - (C) Some members of the chess club are not tenth graders.
 - (D) More tenth graders are on the swim team than are in the chess club.
 - (E) More tenth graders are in the chess club than are on the swim team.

5. If S is the set of positive integers that are multiples of 7, and if T is the set of positive integers that are multiples of 13, how many integers are in the intersection of S and T ?
- (A) None
 - (B) One
 - (C) Seven
 - (D) Thirteen
 - (E) More than thirteen

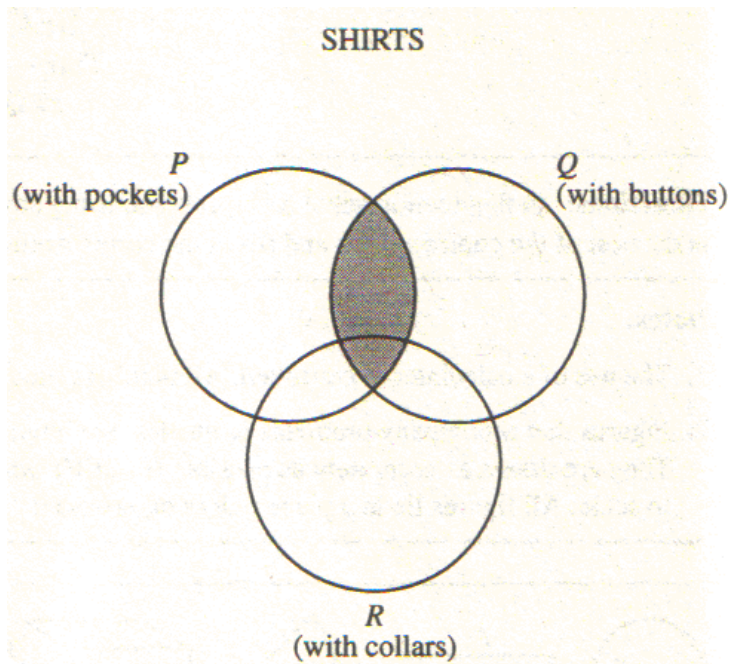
6.



Each of the boxes above must contain one number from the set $\{8, 15, 16, 18, 27\}$. A different number is to be placed in each box so that the following conditions are met.

- (1) Box P contains an odd number.
 - (2) Box Q contains an even number.
 - (3) Boxes R and S each contain a number that is a multiple of 9.
 - (4) The number in box P is less than the number in box Q .
- What number must be in box T ?
- (A) 8
 - (B) 15
 - (C) 16
 - (D) 18
 - (E) 27
7. The dogs in a certain kennel are fed Brand A and Brand B dog food only. Of these dogs, 6 dogs eat Brand A and 15 dogs eat Brand B . If 4 of the dogs that eat Brand B also eat Brand A , how many dogs are in the kennel?
- (A) 17
 - (B) 19
 - (C) 21
 - (D) 25
 - (E) 29

8.



- In the figure above, circular region P represents shirts with pockets, circular region Q represents shirts with buttons, and circular region R represents shirts with collars. What is represented by the shaded region?
- (A) Shirts with pockets, buttons, and collars
(B) Shirts with pockets and buttons, but without collars
(C) Shirts with pockets and buttons, (some possibly with collars)
(D) Shirts with pockets and collars (some possibly with buttons)
(E) Shirts with buttons and collars (some possibly with pockets)
9. At Central High School, the math club has 15 members and the chess club has 12 members. If a total of 13 students belong to only one of the two clubs, how many students belong to both clubs?
- (A) 2
(B) 6
(C) 7
(D) 12
(E) 14