Math Contest: Venn Diagrams

Solve each problem. Show your work and circle your final answer.

① In a class of 30 students, 18 play soccer, 14 play basketball, and 5 play both sports. How many students play neither sport?

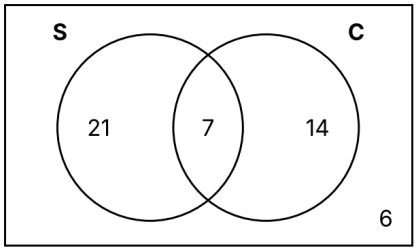
② Each of the 40 students in a class likes pizza, tacos, or both. If 25 students like pizza and 20 students like tacos, how many students like both?

③ In a club of 50 students, 30 take French, 25 take Spanish, and 8 take neither language. How many students take both languages?

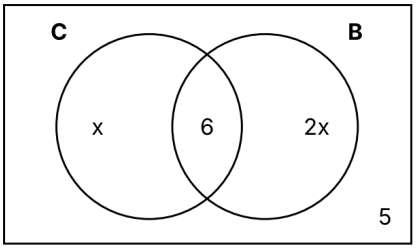
④ Of 60 people surveyed, 36 like tea, 28 like coffee, and 10 like both. How many of the people like exactly one of the two drinks?

⑤ At a school, 60% of the students have a dog, 50% have a cat, and 20% have neither. What percent of the students have both a dog and a cat?

⑥ The Venn diagram shows how many students in a class play soccer (S) and chess (C). How many students play chess?



⑦ The Venn diagram shows the 35 students in a class who are in chess club (C) and band (B). What is the value of x?



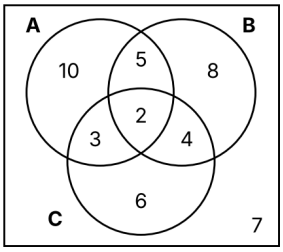
⑧ Each of the 90 people in a group speaks English, Spanish, or both. If 70 people speak English and 50 people speak Spanish, how many people speak only Spanish?

(9) Of 31 students, 17 play basketball, 12 play baseball, and 9 play neither sport. How many students play both sports?

(10) Of 100 students, 45 are in the music club, 38 are in the art club, and 30 are in the drama club. Also, 15 are in both music and art, 12 are in both art and drama, 10 are in both music and drama, and 5 are in all three clubs. How many students are in at least one of the three clubs?

(11) How many integers from 1 through 100 are divisible by neither 3 nor 5?

(12) The Venn diagram shows the numbers of students in the art (A), band (B), and chess (C) clubs. How many students are in exactly two of the clubs?



(13) Of 36 students, 8 play only golf and 4 play neither golf nor tennis. The number of students who play only tennis is twice the number who play both sports. How many students play both sports?

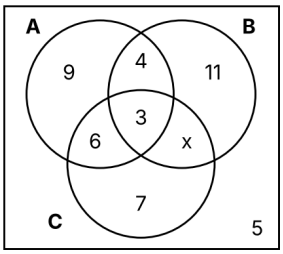
(14) Every member of a 45-member club likes hiking, biking, or both. Exactly 25 members like biking, and the number who like hiking is 3 times the number who like both. How many members like both hiking and biking?

(15) At a party, 80% of the guests like cake, 70% like ice cream, and 60% like pie. What is the smallest possible percent of the guests who like all three desserts?

(16) Of 40 students, 28 have a phone and 22 have a tablet. What is the difference between the largest and the smallest possible numbers of students who have both a phone and a tablet?

17 How many integers from 1 through 60 are multiples of 4 or multiples of 6, but not multiples of both 4 and 6?

18 The Venn diagram shows the results of a survey of 55 students about clubs A, B, and C. What is the value of x?



19 Of the 100 campers at a camp, 55 swim, 45 hike, and 40 canoe. Also, 20 campers swim and hike, 15 hike and canoe, and 18 swim and canoe, while 10 campers do none of the three activities. How many campers do all three activities?

20 A group of tourists visited Paris, Rome, and London. Of them, 38 visited Paris, 33 visited Rome, and 28 visited London. Also, 17 visited both Paris and Rome, 14 visited both Rome and London, 12 visited both Paris and London, and 6 visited all three cities. How many tourists visited exactly one of the three cities?