Venn Diagrams

241a

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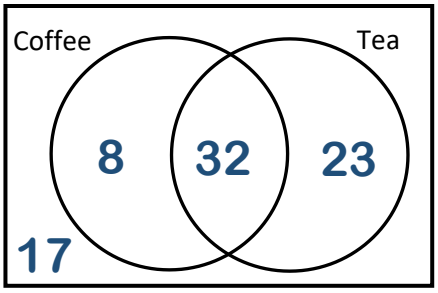
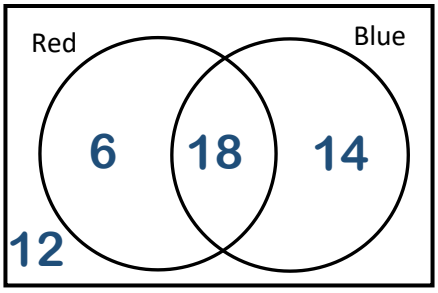
Name:

Complete the Venn diagrams with the values given:

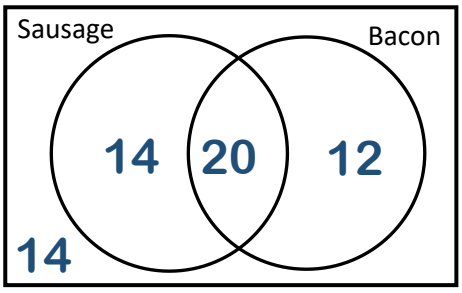
a) **8**0 people were surveyed.
32 people like coffee and tea.
55 people like tea.
40 people like coffee.



b) **50** people were surveyed.
18 people like red and blue.
32 people like blue.
24 people like red.

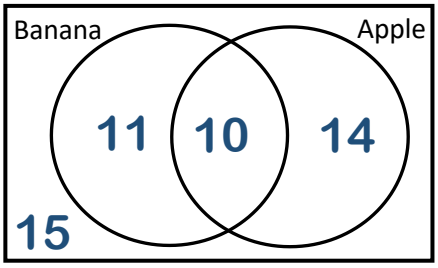


c) **60** people were surveyed.
20 people like bacon and sausage.
32 people like bacon.
14 people like neither.

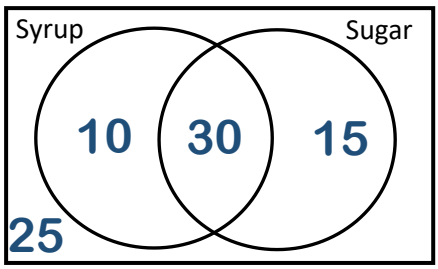


Complete the Venn diagrams with the values given:

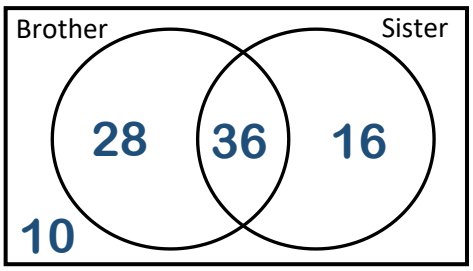
a) **50** people were surveyed.
21 people like banana.
24 people like apple.
15 people like neither.



b) **80** people were surveyed.
45 people like sugar.
40 people like Syrup.
25 people like neither.

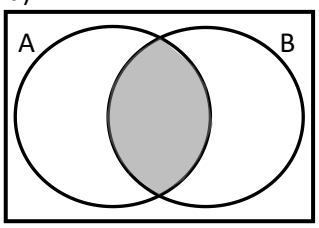


c) **90** people were surveyed.
64 people have a brother.
52 people have a sister.
10 people have neither.

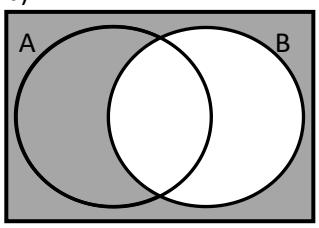


Shade the region on the Venn diagrams which represents:

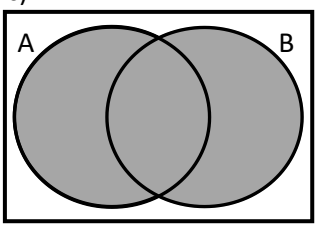
a) A∩B



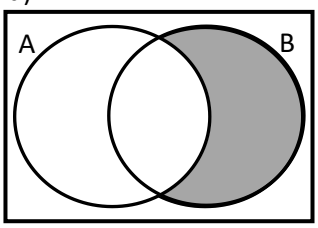
b) B'



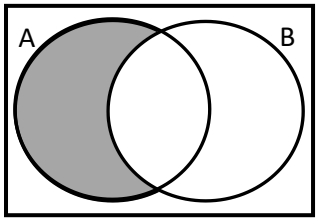
c) A∪B



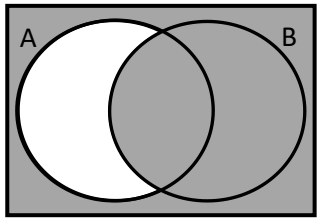
d) A'∩B



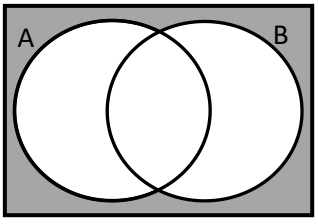
e) A∩B'



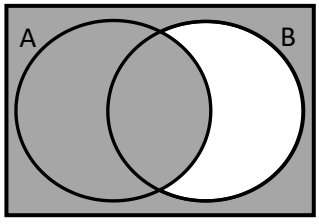
f) A'∪B



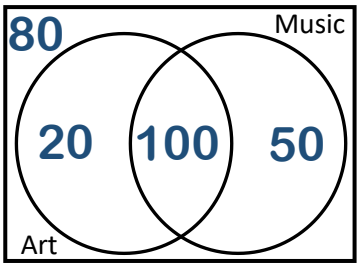
g) (A∪B)'



h) (A'∩B)'



Exam question:
A college run a number of evening classes.
250 people attend the college's evening classes.
120 people attend an Art class.
150 people attend a Music class.
80 people do not attend either the Art or Music class.
Represent this information on the Venn diagram.



Venn Diagram (Set Notation)

241b

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Name:

ξ = {numbers 1 to 10}
A = {1, 3, 5, 7, 9} B = {2, 4, 6, 8, 10} C = {3, 7, 8, 9} D = {1, 2, 4, 6, 8}

1) Given the set of number shown above, list the members of:

a) A∩C	{3, 7, 9}	e) (B∪D)'	{3, 5, 7, 9}	i) C'∩D'	{5, 10}
b) A∩D	{1}	f) A'∪C	{2, 3, 4, 6, 7, 8, 9, 10}	j) D'∩B	{10}
c) B∪D	{2, 3, 4, 6, 7, 8, 9, 10}	g) D∩A'	{2, 4, 6, 8}	k) (C∩B')'	{1, 2, 4, 5, 6, 8, 10}
d) D∩C	{8}	h) B∪C'	{1, 2, 4, 5, 6, 8, 10}	l) (A'∩B)'	{1, 3, 5, 7, 9}

2) One of the numbers is selected at random, find the following probabilities:

a) P(A∩B)	0	d) P(A∪D')	$\frac{6}{10}$	g) P(A'∪D)	$\frac{6}{10}$
b) P(A∪D)	$\frac{9}{10}$	e) P(B∩A')	$\frac{5}{10}$	h) P(C∩A')	$\frac{1}{10}$
c) P(A∩D)	$\frac{1}{10}$	f) P((A∩D)')	$\frac{9}{10}$	i) P((A∩C)')	$\frac{7}{10}$

ξ = {numbers 1 to 10} E = {1, 2, 5, 6, 7} F = {1, 2, 4, 6, 8} G = {4, 7, 10} H = {2, 6, 8, 9, 10}

3) Given the set of number shown above, find:

a) n(E)	5	c) n(E∩F)	3	e) n(G∪H)	7
b) n(F)	5	d) n(F')	5	f) n(F∩H)'	7

ξ = {numbers 1 to 10} J = {1, 2, 3} K = {4, 5, 6, 7} L = {5, 7} M = {6, 9} N = {1, 3, 5, 7} O = {6, 7, 8, 9, 10}

4) True or False?

a) 3 ∈ J	True	c) 1 ∉ L	True	e) 9 ∈ K	False	g) 6 ∈ O	True
b) 2 ∈ K	False	d) 8 ∉ M	True	f) 4 ∉ N	True	h) 4 ∉ M	True
i) L ⊂ J	False	k) J ⊄ O	True	m) L ⊂ O	False	o) M ⊂ O	True
j) M ⊂ K	False	l) N ⊄ O	True	n) J ⊂ N	False	p) K ⊄ N	True

Exam question:

ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}
A = multiples of 2 and B = multiples of 3

One of the numbers is selected at random.
a) Write down P(A∪B). $\frac{10}{15}$

b) Write down the list of numbers which represent A'∩B'. {1, 5, 7, 11, 13}