

VENN DIAGRAMS - PRACTICE QUESTIONS

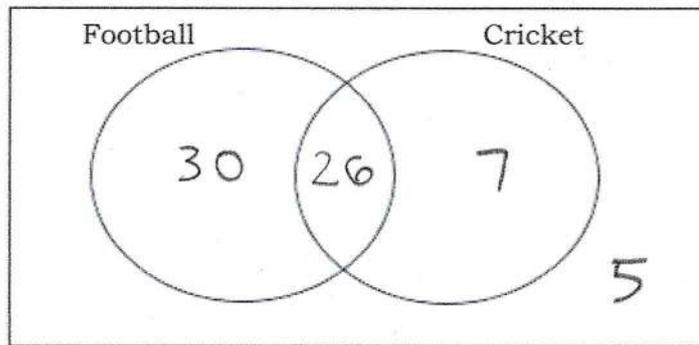


metatutor

1.

A group of 68 people were asked whether they like football and cricket.
26 said they liked both.
30 said they liked football but not cricket.
7 said they liked cricket but not football.

(a) Complete the Venn diagram below.



$$30 + 26 + 7 = 63$$

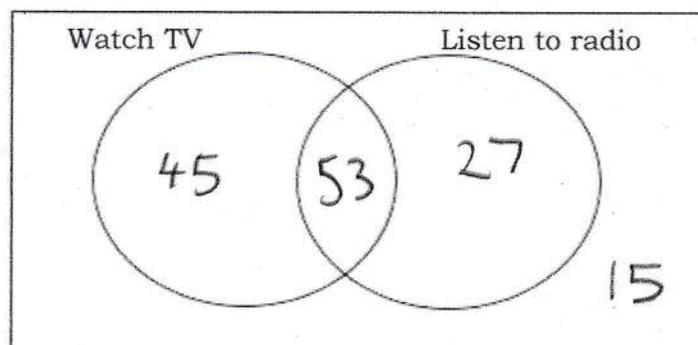
(b) How many of the 68 people liked neither sport?

5

2.

A group of 140 people were asked if they watch TV and listen to radio.
15 people said they do neither.
80 people said they listen to radio.
53 people said they listen to radio and watch TV.

(a) Complete the Venn diagram below.



$$80 - 53 = 27$$

$$53 + 27 + 15 = 95$$

$$140 - 95 = 45$$

(b) How many of the 140 people watch TV?

$$45 + 53 = \underline{98}$$

3.

There are 60 farms.

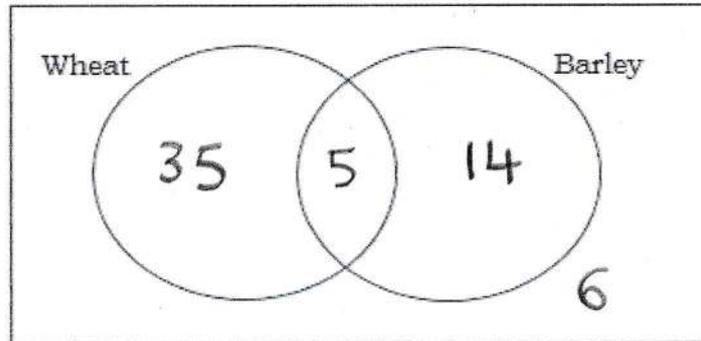
The farms can grow wheat and barley.

$\frac{2}{3}$ of the farms grow wheat.

5 of the farms grow both wheat and barley.

6 of the farms grow neither wheat nor barley.

(a) Complete the Venn diagram below.



$$\frac{2}{3} \text{ of } 60 = 40$$

$$35 + 5 + 6 = 46$$

$$60 - 46 = 14$$

(b) How many farms grow barley but not wheat?

14

4.

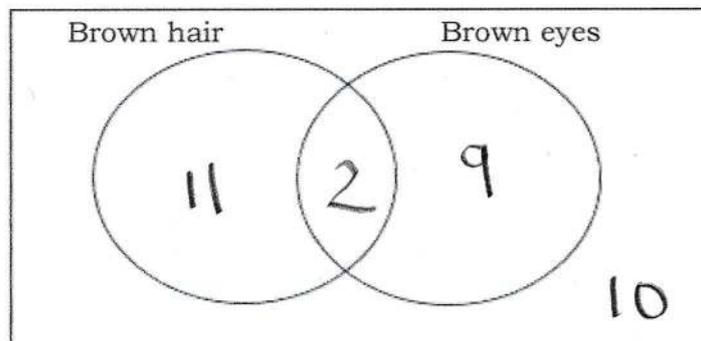
There are 32 students in a class.

9 students have brown eyes but not brown hair.

11 students have brown hair but not brown eyes.

10 students have neither brown hair nor brown eyes.

(a) Complete the Venn diagram below.



$$11 + 9 + 10 = 30$$

$$32 - 30 = 2$$

(b) How many students have brown hair and brown eyes?

2

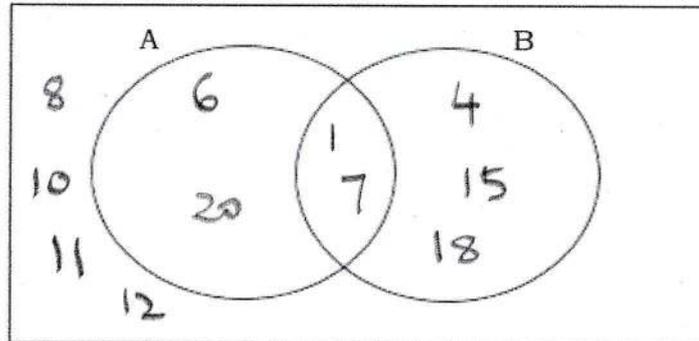
5.

$$\xi = \{1, 4, 6, 7, 8, 10, 11, 12, 15, 18, 20\}$$

$$A = \{1, 6, 7, 20\}$$

$$B = \{1, 4, 7, 15, 18\}$$

(a) Complete the Venn diagram below.



(b) Find $P(A)$.

$$4/11$$

(c) Find $P(B)$.

$$5/11$$

(d) List all the members of $A \cap B$.

$$1, 7$$

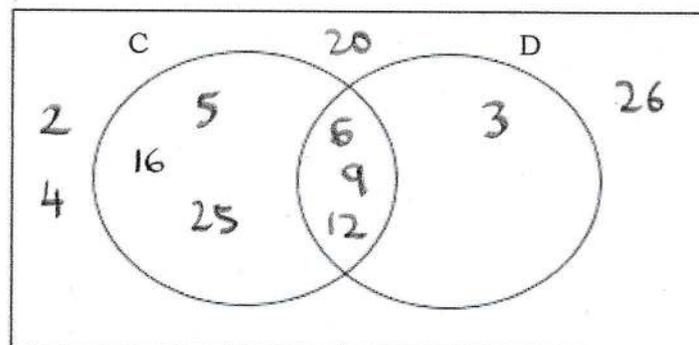
6.

$$\xi = \{2, 3, 4, 5, 6, 9, 12, 16, 20, 25, 26\}$$

$$C = \{5, 6, 9, 12, 16, 25\}$$

$$D = \{3, 6, 9, 12\}$$

(a) Complete the Venn diagram below.



(b) List all the members of $C \cap D$.

$$6, 9, 12$$

(c) List all the members of $C \cup D$.

$$5, 16, 25, 6, 9, 12, 3$$

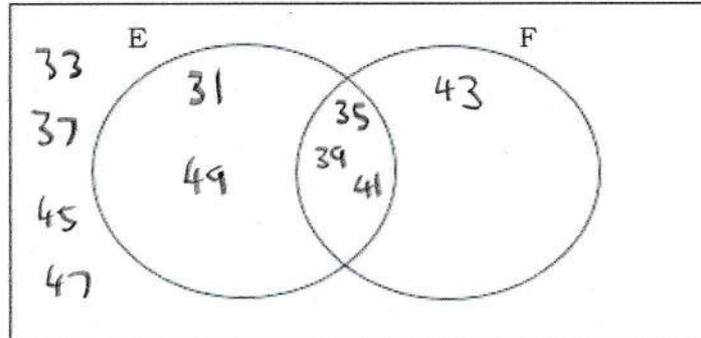
7.

ξ = all odd numbers between 30 and 50

$E = \{31, 35, 39, 41, 49\}$

$F = \{35, 39, 41, 43\}$

(a) Complete the Venn diagram below.



(b) List all the members of E' .

33, 37, 45, 47, 43

(c) List all the members of F' .

33, 37, 45, 47, 31, 49

(d) List all the members of $E \cap F$.

35, 39, 41.

8.

ξ = all integers between 1 and 20 inclusive

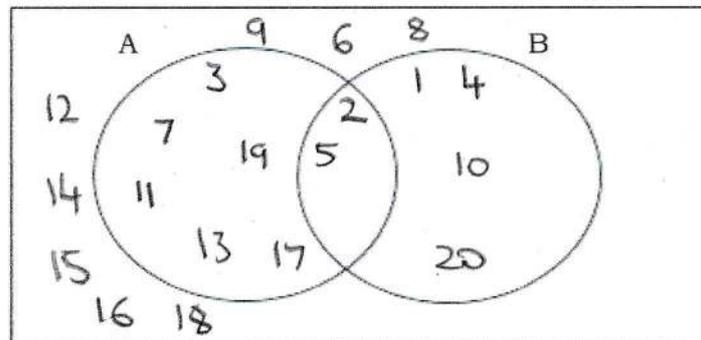
A = all prime numbers between 1 and 20

B = all factors of 20

$A = \{2, 3, 5, 7, 11, 13, 17, 19\}$

$B = \{1, 2, 4, 5, 10, 20\}$

(a) Complete the Venn diagram below.



(b) Find $P(A \cap B)$.

$$\frac{2}{20} = \frac{1}{10}$$

(c) Find $P(A \cup B)$.

$$\frac{12}{20} = \frac{3}{5}$$

(d) Find $P(A)$.

$$\frac{12}{20} = \frac{3}{5}$$

9.

80 people were polled and asked whether they liked three flavours of crisp – ready salted, cheese & onion and salt & vinegar.

7 people liked all three.

10 liked ready salted only.

14 liked cheese & onion only.

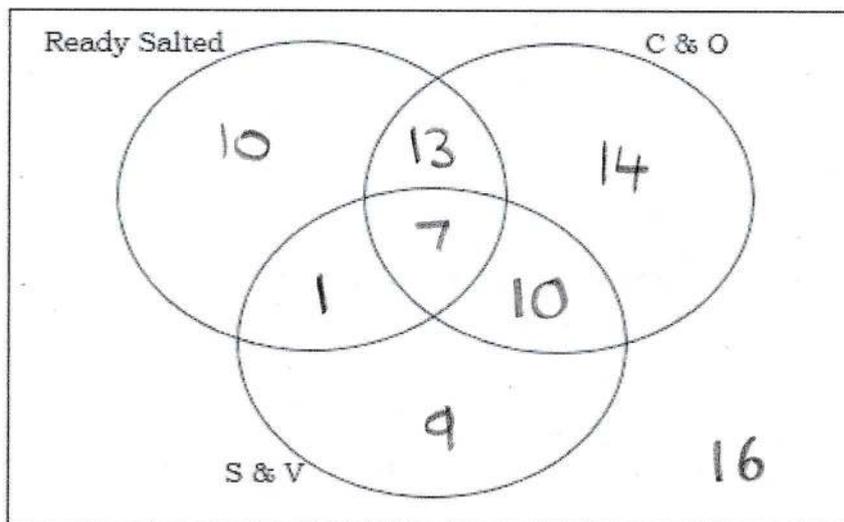
9 liked salt & vinegar only.

20 liked ready salted and cheese & onion.

31 liked ready salted.

27 liked salt & vinegar.

(a) Complete the Venn diagram below.



(b) How many people liked none of them?

16

(c) How many people liked cheese & onion?

$$13 + 14 + 7 + 10 = \underline{44}$$

10.

A group of 125 people were asked if they own a car and a bicycle.

35 said they own a bicycle.

66 said they own a car.

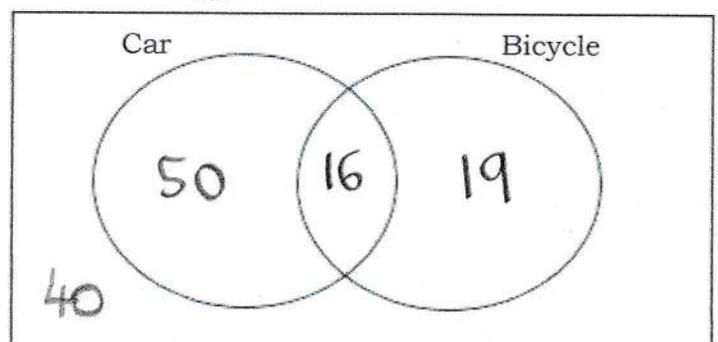
40 said they own neither.

How many people own both a car and a bicycle?

16

$$40 + 66 = 106$$

$$125 - 106 = 19$$



11.

There are 120 students in Year 9.

They can study French and Spanish.

$\frac{1}{3}$ of the students do not study French.

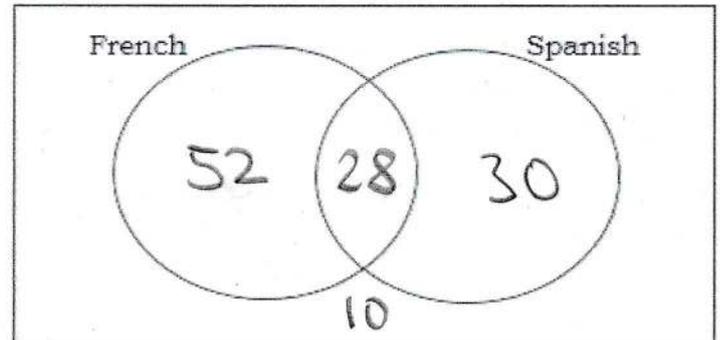
35% of the students that study French also study Spanish.

10 students study neither French nor Spanish.

(a) Complete the Venn diagram.

$$\frac{2}{3} \text{ of } 120 = 80 = \text{French}$$

$$35\% \text{ of } 80 = 28 = \text{both}$$



(b) What percentage of the students study Spanish only?

$$\frac{30}{120} \times 100 = \underline{25\%}$$

12.

ξ = all integers between 11 and 30 inclusive

A = all multiples of 4 between 11 and 30 inclusive

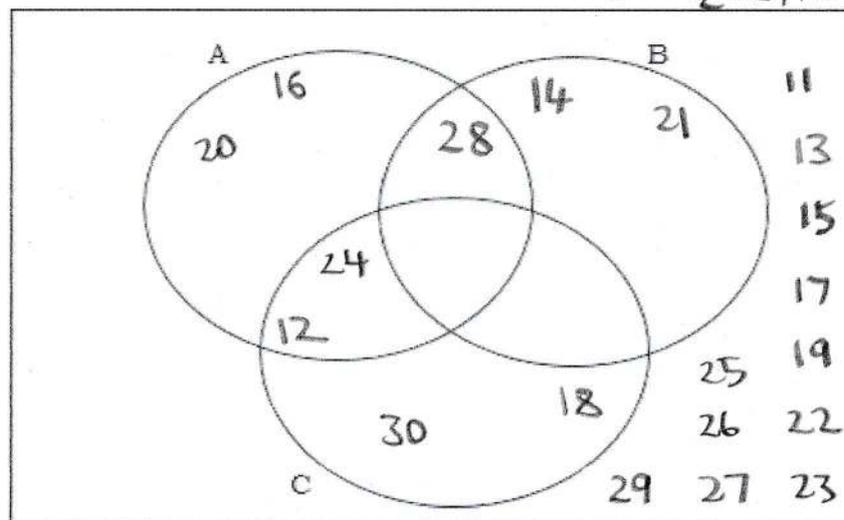
B = all multiples of 7 between 11 and 30 inclusive

C = all multiples of 6 between 11 and 30 inclusive

$$A = \{12, 16, 20, 24, 28\}$$

$$B = \{14, 21, 28\}$$

$$C = \{12, 18, 24, 30\}$$



(a) Find $P(A)$.

$$\frac{5}{20} = \frac{1}{4}$$

(b) Find $P(B \cap C)$.

0

13.

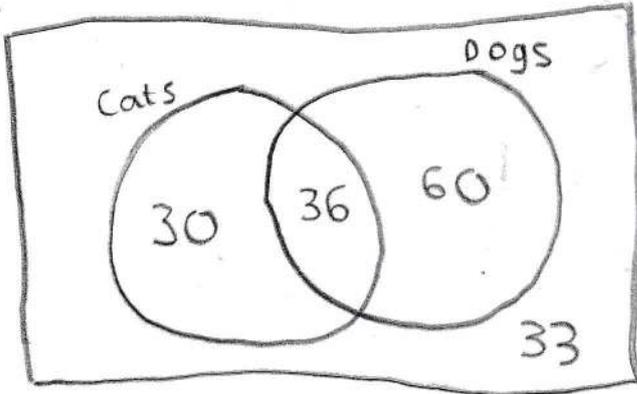
160 people were asked if they have cats or dogs.

96 people said they have a dog.

$\frac{3}{8}$ of the people who have a dog also have a cat.

33 people said they have neither a cat nor a dog.

(a) In the space below, draw a Venn diagram.



$$\frac{3}{8} \text{ of } 96 = 36$$

(b) How many of the people have only one of the two pets?

$$30 + 60 = \underline{90}$$

14.

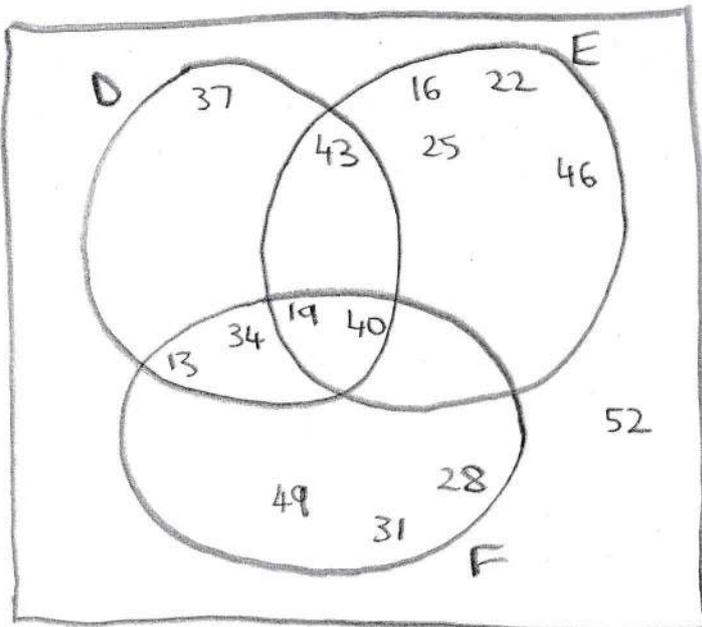
$\xi = \{13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52\}$

$D = \{13, 19, 34, 37, 40, 43\}$

$E = \{16, 19, 22, 25, 40, 43, 46\}$

$F = \{13, 19, 28, 31, 34, 40, 49\}$

(a) In the space below, draw a Venn diagram.



(b) Find $P(E \cup F)$.

$$\frac{12}{14} = \left(\frac{6}{7}\right)$$

15.

ξ = all factors of 60

G = all factors of 20

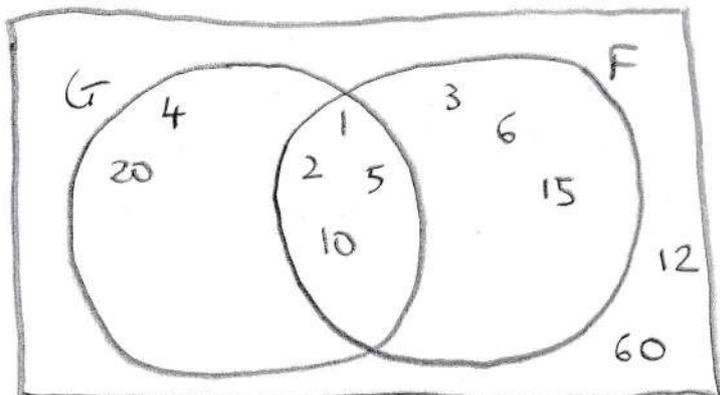
F = all factors of 30

$$\xi = \{1, 60, 2, 30, 3, 20, 4, 15, 5, 12, 6, 10\}$$

$$G = \{1, 20, 2, 10, 4, 5\}$$

$$F = \{1, 30, 2, 15, 3, 10, 5, 6\}$$

In the space below, draw a Venn diagram.



16.

There are 610 people at a concert.

399 of the people are women.

98 of the people are wearing glasses.

142 of the people have blonde hair.

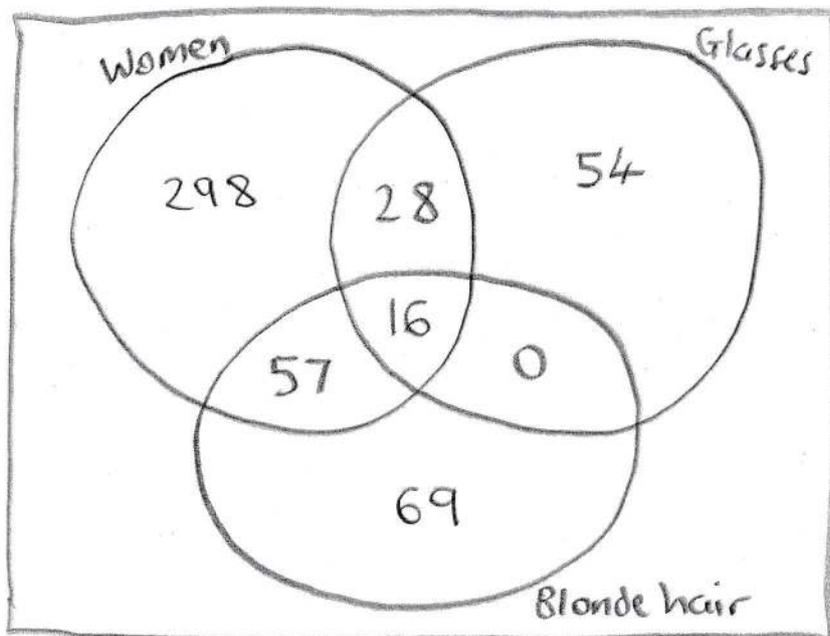
There are 16 women with blonde hair wearing glasses.

There are 44 women wearing glasses.

There are 73 women with blonde hair.

All of the people with blonde hair and glasses are women.

(a) In the space below, draw a Venn diagram.



(b) How many men with blonde hair are at the concert?

69