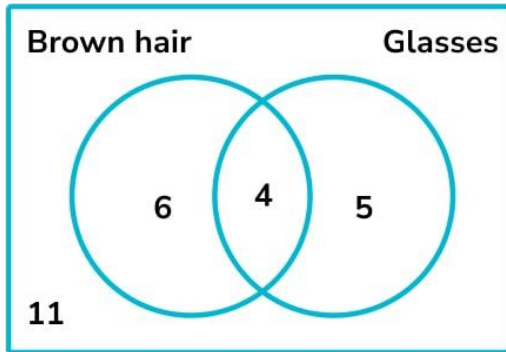# Venn Diagrams - Worksheet
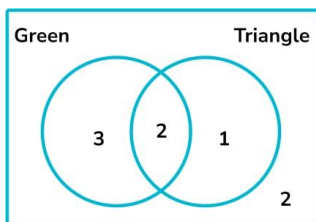
1. This Venn diagram shows information about the number of people who have brown hair and the number of people who wear glasses.

How many people have brown hair and glasses?
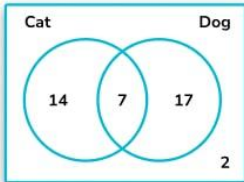
a) 10

b) 11

c) 4

d) 15

2. Which set of objects is represented by the Venn diagram below?
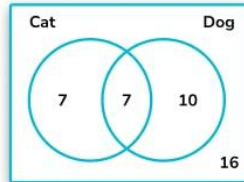

a)

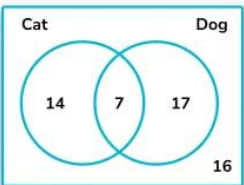**b)**

c)

d)

Venn Diagrams - Worksheet

3. Max asks 40 people whether they own a cat or a dog. 17 people own a dog, 14 people own a cat and 7 people own a cat and a dog. Choose the correct representation of this information on a Venn diagram.
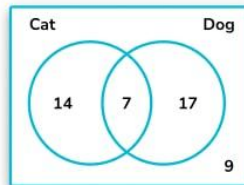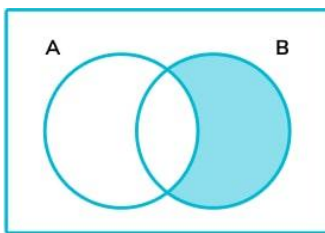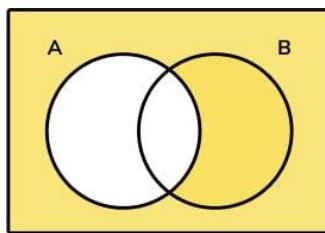
a)

b)

c)

d)

4. The following Venn diagrams each show two sets, set A and set B. On which Venn diagram has A' been shaded?

a)

b)

c)

d)

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2
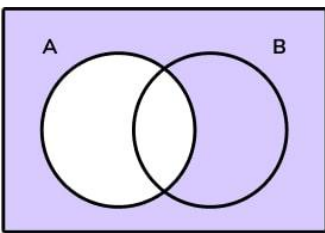
Venn Diagrams - Worksheet

5. Place these values onto the following Venn diagram and use your diagram to find the number of elements in the set $S \cup O$.

ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
S = square numbers
O = odd numbers

a) 6

b) 2

c) 4

d) 3

Venn Diagrams - Worksheet

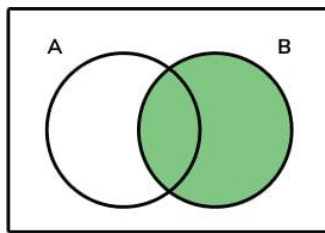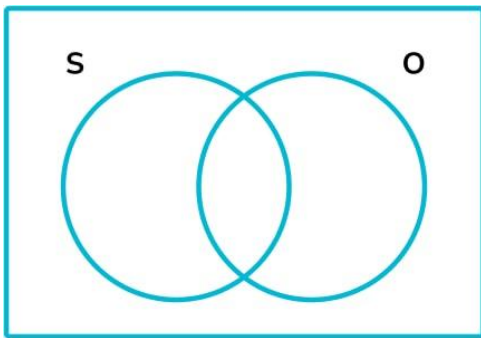**6.** The Venn diagram below shows a set of numbers that have been sorted into prime numbers and even numbers.

A number is chosen at random. Find the probability that the number is prime and not even.

a) $\frac{3}{4}$

b) $\frac{5}{10}$

c) $\frac{3}{10}$

d) $\frac{3}{8}$

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4
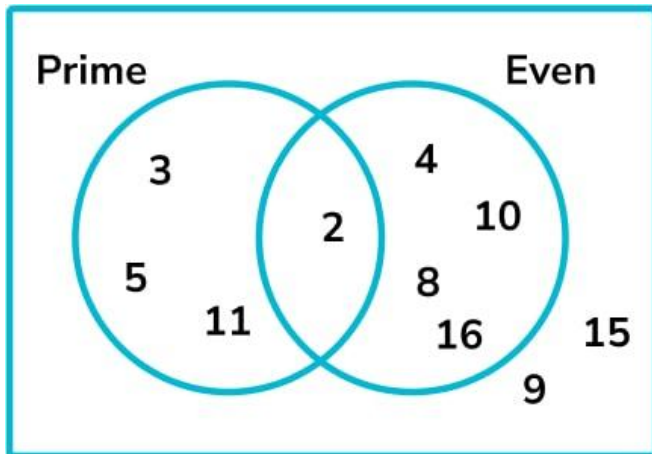
Venn Diagrams - Worksheet

7. Some people visit the theatre. The Venn diagram shows the number of people who bought ice cream and drinks in the interval.
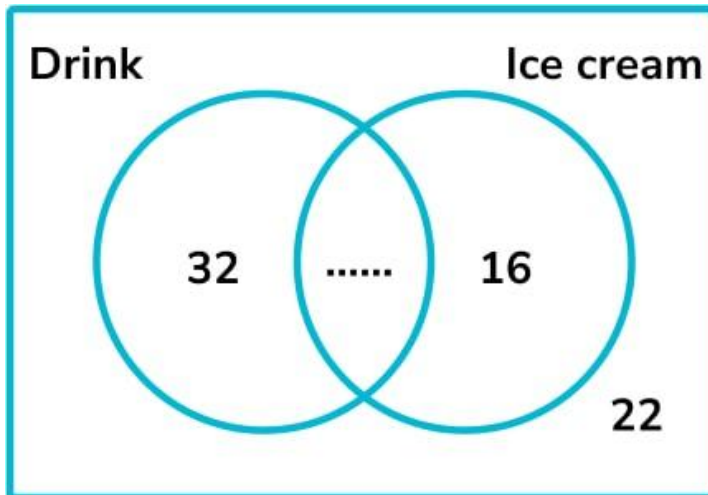

Ice cream is sold for £3 and drinks are sold for £2. A total of £262 is spent. How many people bought both a drink and an ice cream?

a) 27

b) 48

c) 22

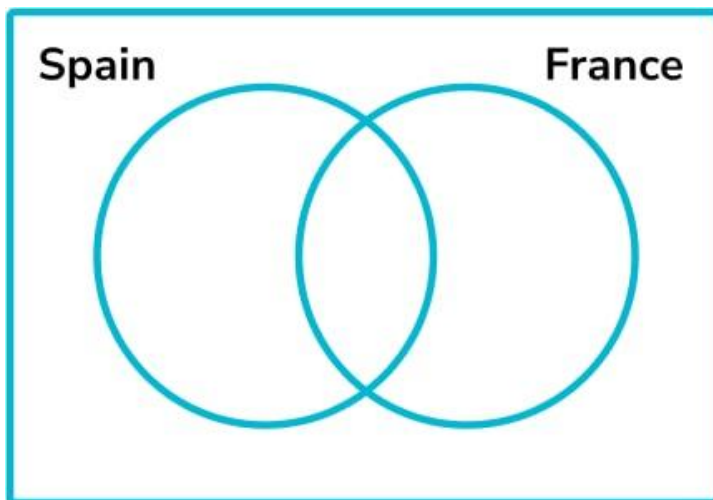**d)** 30

Venn Diagrams - Exam Questions

8. 50 people are asked whether they have been to France or Spain.

18 people have been to France.

23 people have been to Spain.

6 people have been to both.

By representing this information on a Venn diagram, find the probability that a person chosen at random has not been to Spain or France.
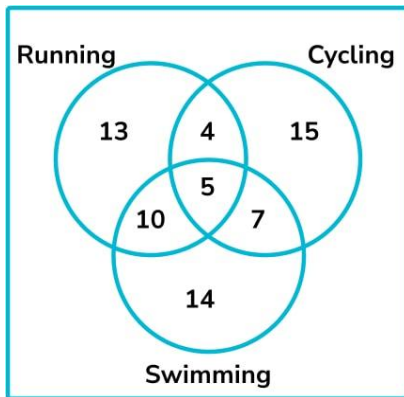

a) $\frac{3}{50}$

b) $\frac{15}{50}$

c) $\frac{32}{50}$

d) $\frac{27}{50}$

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6

Venn Diagrams - Exam Questions

9. Some people were asked whether they like running, cycling or swimming.

The results are shown in the Venn diagram below.

One person is chosen at random. What is the probability that the person likes running and cycling?

a) $\frac{4}{80}$

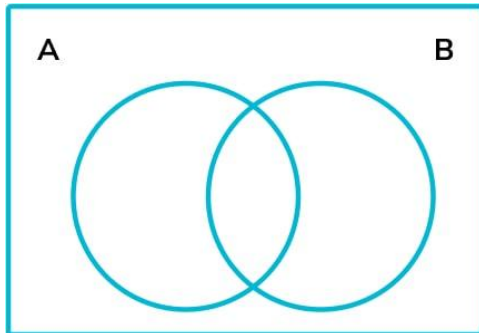b) $\frac{32}{80}$

c) $\frac{54}{80}$

d) $\frac{9}{80}$

Venn Diagrams - Exam Questions

10. ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16}

A = {even numbers}

B = {multiples of 3}

By completing the following Venn diagram, find P$(A \cup B')$.

a) $\dfrac{13}{16}$

b) $\dfrac{9}{16}$

c) $\dfrac{11}{16}$

d) $\dfrac{8}{16}$

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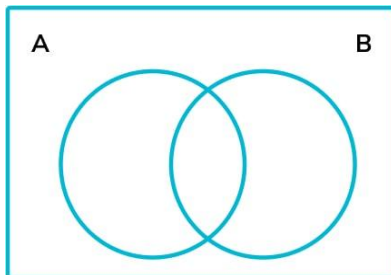
8

Venn Diagrams - Exam Questions

11. ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}

A={multiples of 2}

$A \cap B$ = {2, 4, 6, 12}

$A \cup B$ = {1, 2, 3, 4, 6, 8, 10, 12}

By putting this information onto the following Venn diagram, list all the elements of B.

a) 1, 3

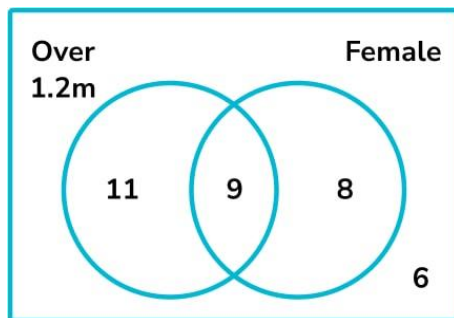**b)** 1, 2, 3, 4, 6, 12

c) 5, 7, 9, 11

d) ∅

---

12. Some people were asked whether they like strawberry ice cream or chocolate ice cream. 82% said they like strawberry ice cream and 70% said they like chocolate ice cream. 4% said they like neither. By putting this information onto a Venn diagram, find the percentage of people who like both strawberry and chocolate ice cream.
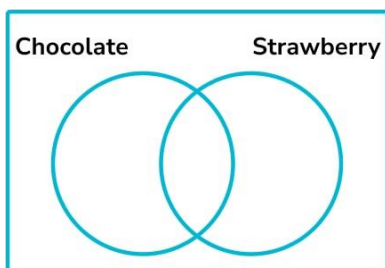
a) 56%

b) 152%

c) 12%

d) 4%

Venn Diagrams - Worksheet

13. The Venn diagram below shows some information about the height and gender of 40 students.

A student is chosen at random. Find the probability that the student is female given that they are over 1.2m.

a) $\frac{17}{34}$

b) $\frac{9}{20}$

c) $\frac{9}{34}$

d) $\frac{17}{28}$

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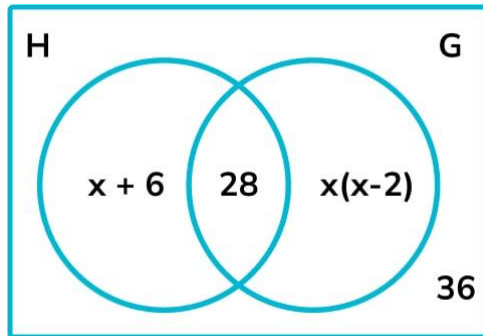
10

Venn Diagrams - Worksheet

14. The Venn diagram below shows information about the number of students who study history and geography.

ξ = 100

H = history

G = geography

Work out the probability that a student chosen at random studies only history.

a) $\frac{6}{100}$

b) $\frac{28}{100}$

c) $\frac{17}{100}$

d) $\frac{12}{100}$

Venn Diagrams - Worksheet

15. 50 people were asked whether they like camping, holiday home or hotel holidays.

18% of people said they like all three.

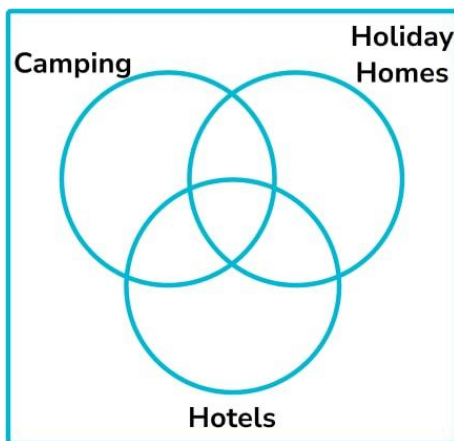**7 like camping and holiday homes but not hotels.**

11 like camping and hotels.

$\frac{13}{25}$ **like camping.**

Of the 27 who like holiday homes, all but 1 like at least one other type of holiday.

7 people do not like any of these types of holiday.

By representing this information on a Venn diagram, find the probability that a person chosen at random likes hotels given that they like holiday homes.
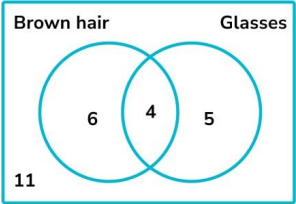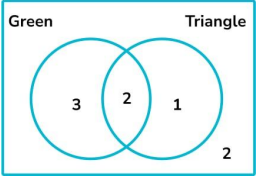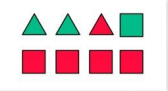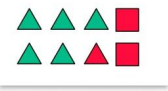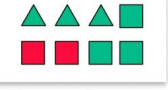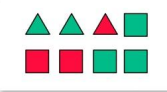

a) $\frac{19}{27}$

b) $\frac{19}{100}$
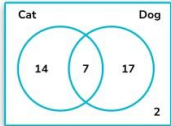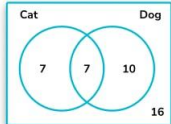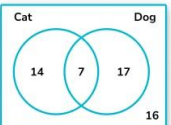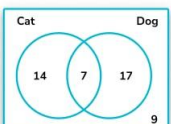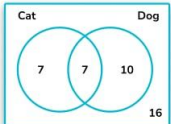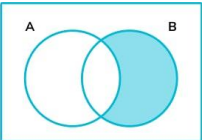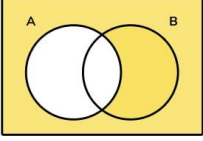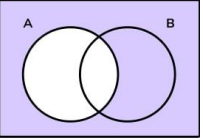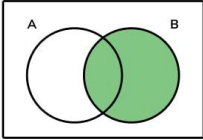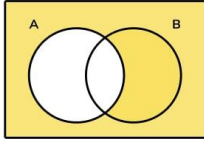
c) $\frac{10}{27}$

d) $\frac{9}{27}$
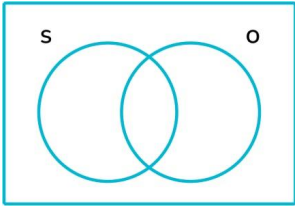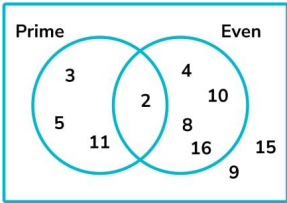
Venn Diagrams - Answers

	Question	Answer
1	This Venn diagram shows information about the number of people who have brown hair and the number of people who wear glasses. Brown hair / Glasses — 6, 4, 5, 11 **How many people have brown hair and glasses?** **a)** 10 **b)** 11 **c)** 4 **d)** 15	**c)** 4
2	**Which set of objects is represented by the Venn diagram below?** Green / Triangle — 3, 2, 1, 2 **a)** **b)** **c)** **d)**	**d)**
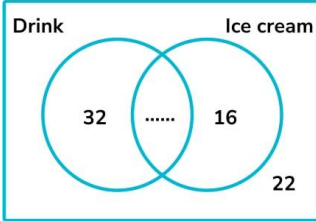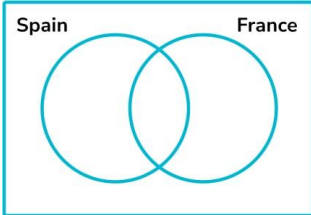
Venn Diagrams - Answers

3	Max asks 40 people whether they own a cat or a dog. 17 people own a dog, 14 people own a cat and 7 people own a cat and a dog. Represent this information on a Venn diagram.	
	a)	b)
	b)	
	c)	
	d)	
4	The following Venn diagrams each show two sets, set A and set B. On which Venn diagram has A' been shaded?	
	a)	b)
	b)	
	c)	
	d)	

Venn Diagrams - Answers
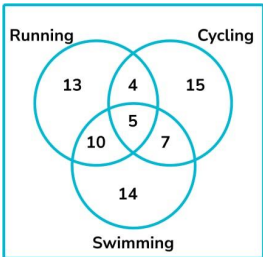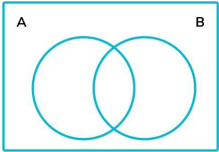
5	Place these values onto the following Venn diagram and use your diagram to find the number of elements in the set $S \cup O$. ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10} S = square numbers O = odd numbers	**a)** 6
	 a) 6 **b)** 2 **c)** 4 **d)** 3	
6	The Venn diagram below shows a set of numbers that have been sorted into prime numbers and even numbers. A number is chosen at random. Find the probability that the number is prime and not even. **a)** $\frac{3}{4}$ **b)** $\frac{5}{10}$ **c)** $\frac{3}{10}$ **d)** $\frac{3}{8}$	**c)** $\frac{3}{10}$

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Venn Diagrams - Answers

7	Some people visit the theatre. The Venn diagram shows the number of people who bought ice cream and drinks in the interval.	**d)** 30
	Drink Ice cream 32 ...... 16 22	
	Ice cream is sold for £3 and drinks are sold for £2. A total of £262 is spent. How many people bought both a drink and an ice cream? **a)** 27 **b)** 48 **c)** 22 **d)** 30	
8	50 people are asked whether they have been to France or Spain. 18 people have been to France. 23 people have been to Spain. 6 people have been to both. By representing this information on a Venn diagram, find the probability that a person chosen at random has not been to Spain or France.	**b)** $\frac{15}{50}$
	Spain France	
	a) $\frac{3}{50}$ **b)** $\frac{15}{50}$ **c)** $\frac{32}{50}$ **d)** $\frac{27}{50}$	

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Venn Diagrams - Answers

9	Some people were asked whether they like running, cycling or swimming. The results are shown in the Venn diagram below. One person is chosen at random. What is the probability that the person likes running and cycling? a) $\frac{4}{80}$ b) $\frac{32}{80}$ c) $\frac{54}{80}$ d) $\frac{9}{80}$	d) $\frac{9}{80}$
10	ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16} A = {even numbers} B = {multiples of 3} By completing the following Venn diagram, find **P**($A ∪ B'$). a) $\frac{13}{16}$ b) $\frac{9}{16}$ c) $\frac{11}{16}$ d) $\frac{8}{16}$	a) $\frac{13}{16}$
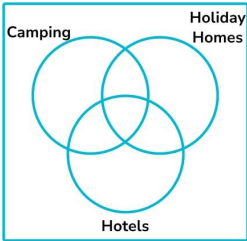
Venn Diagrams - Answers

11	ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} A={multiples of 2} $A \cap B$ = {2, 4, 6, 12} $A \cup B$ = {1, 2, 3, 4, 6, 8, 10, 12} **By putting this information onto the following Venn diagram, list all the elements of B.** **a)** 1, 3 **b)** 1, 2, 3, 4, 6, 12 **c)** 5, 7, 9, 11 **d)** $\varnothing$	**b)** 1, 2, 3, 4, 6, 12
12	**Some people were asked whether they like strawberry ice cream or chocolate ice cream. 82% said they like strawberry ice cream and 70% said they like chocolate ice cream. 4% said they like neither. By putting this information onto a Venn diagram, find the percentage of people who like both strawberry and chocolate ice cream.** **a)** 56% **b)** 152% **c)** 12% **d)** 4%	**a)** 56%

Venn Diagrams - Answers

13	The Venn diagram below shows some information about the height and gender of 40 students.	b) $\frac{9}{20}$
	Over 1.2m ... **Female** 11, 9, 8, 6	
	A student is chosen at random. Find the probability that the student is female given that they are over 1.2m.	
	a) $\frac{17}{34}$	
	b) $\frac{9}{20}$	
	c) $\frac{9}{34}$	
	d) $\frac{17}{28}$	
14	The Venn diagram below shows information about the number of students who study history and geography.	d) $\frac{12}{100}$
	$\xi = 100$	
	H = history	
	G = geography	
	H ... **G** $x + 6$, 28, $x(x-2)$, 36	
	Work out the probability that a student chosen at random studies only history.	
	a) $\frac{6}{100}$	
	b) $\frac{28}{100}$	
	c) $\frac{17}{100}$	
	d) $\frac{12}{100}$	

THIRD SPACE
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Venn Diagrams - Answers

| 15 | 50 people were asked whether they like camping, holiday home or hotel holidays.
 18% of people said they like all three.
 7 like camping and holiday homes but not hotels.
 11 like camping and hotels.
 $\frac{13}{25}$ like camping.

 Of the 27 who like holiday homes, all but 1 like at least one other type of holiday.
 7 people do not like any of these types of holiday.

 By representing this information on a Venn diagram, find the probability that a person chosen at random likes hotels given that they like holiday homes.

 a) $\frac{19}{27}$
 b) $\frac{19}{100}$
 c) $\frac{10}{27}$
 d) $\frac{9}{27}$ | **a)** $\frac{19}{27}$ |

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