**Set Theory and Notation GREEN**

**Question 1**

Mrs Smith asks 24 pupils in her class about their families. She sorts them into:

S - {has sisters}

B - {has brothers}

She showed her results on a Venn diagram.

a) Describe the shaded region in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Describe the region S ’ ∪ B ’ in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) How many students are in S ’ ? \_\_\_\_\_

d) Work out P (S ∩ B). \_\_\_\_\_

e) Work out P (S ’ ∩ B). \_\_\_\_\_

**Question 2**

 O – {odd numbers}

 T – {Multiples of three}

a) Using numbers from 1 to 10, complete this Venn diagram.

b) Shade in the region showing a multiple of three but not an odd number.

c) Describe the region O ∪ T in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) How many numbers are in O ’ ? \_\_\_\_\_

e) Work out P (O ∩ T). \_\_\_\_\_

f) Work out P (O ∩ T ’). \_\_\_\_\_

**Question 3**

 I = {the letters in the word India}

 E = {the letters in the word Europe}

 A= {the letters in the word America}

a) Complete the Venn diagram.



b) List the elements of I ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) List the elements of I ∩ A: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) List the elements of A ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) How many elements are there in E ∪ I ? \_\_\_\_\_

f) How many elements are there in E ∪ A ? \_\_\_\_\_

g) How many elements are there in I ∪ A ? \_\_\_\_\_

h) How many elements are there in I ∩ A ‘ ? \_\_\_\_\_

i) How many elements are there in E ‘ ∩ A ‘ ? \_\_\_\_\_

**Set Theory and Notation AMBER**

**Question 1**

Mrs Smith asks 24 pupils in her class about their families. She sorts them into:

S - {has sisters}

B - {has brothers}

She showed her results on a Venn diagram.

a) Describe the shaded region in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Describe the region S ’ ∪ B ’ in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) How many students are in S ’ ? \_\_\_\_\_

d) Work out P (S ∩ B). \_\_\_\_\_

Remember to express probability as a fraction, decimal or percentage.

e) Work out P (S ’ ∩ B). \_\_\_\_\_

**Question 2**

 O – {odd numbers}

 T – {Multiples of three}

a) Using numbers from 1 to 10, complete this Venn diagram.

b) Shade in the region showing a multiple of three but not an odd number.

c) Describe the region O ∪ T in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) How many numbers are in O ’ ? \_\_\_\_\_

e) Work out P (O ∩ T). \_\_\_\_\_

Remember to express probability as a fraction, decimal or percentage.

f) Work out P (O ∩ T ’). \_\_\_\_\_

**Question 3**

 I = {the letters in the word India}

 E = {the letters in the word Europe}

 A= {the letters in the word America}

Make sure you include all 26 letters!

a) Complete the Venn diagram.



b) List the elements of I ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) List the elements of I ∩ A: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) List the elements of A ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) How many elements are there in E ∪ I ? \_\_\_\_\_

f) How many elements are there in E ∪ A ? \_\_\_\_\_

g) How many elements are there in I ∪ A ? \_\_\_\_\_

h) How many elements are there in I ∩ A ‘ ? \_\_\_\_\_

i) How many elements are there in E ‘ ∩ A ‘ ? \_\_\_\_\_

**Set Theory and Notation RED**

**Question 1**

Mrs Smith asks 24 pupils in her class about their families. She sorts them into:

S - {has sisters}

B - {has brothers}

She showed her results on a Venn diagram.

a) Describe the shaded region in words.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Describe the region S ’ ∪ B ’ in words.

Not S OR not B

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) How many students are in S ’ ? \_\_\_\_\_

Not S

d) Work out P (S ∩ B). \_\_\_\_\_

Remember to express probability as a fraction, decimal or percentage.

e) Work out P (S ’ ∩ B). \_\_\_\_\_

**Question 2**

 O – {odd numbers}

 T – {Multiples of three}

a) Using numbers from 1 to 10, complete this Venn diagram.

b) Shade in the region showing a multiple of three but not an odd number.

c) Describe the region O ∪ T in words.

O OR T

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Not O

d) How many numbers are in O ’ ? \_\_\_\_\_

e) Work out P (O ∩ T). \_\_\_\_\_

Remember to express probability as a fraction, decimal or percentage.

f) Work out P (O ∩ T ’). \_\_\_\_\_

**Question 3**

 I = {the letters in the word India}

 E = {the letters in the word Europe}

 A= {the letters in the word America}

Make sure you include all 26 letters!

a) Complete the Venn diagram.



I AND E

b) List the elements of I ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) List the elements of I ∩ A: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) List the elements of A ∩ E: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

E OR I

e) How many elements are there in E ∪ I ? \_\_\_\_\_

f) How many elements are there in E ∪ A ? \_\_\_\_\_

g) How many elements are there in I ∪ A ? \_\_\_\_\_

I AND not A

h) How many elements are there in I ∩ A ‘ ? \_\_\_\_\_

i) How many elements are there in E ‘ ∩ A ‘ ? \_\_\_\_\_

Not E AND not A