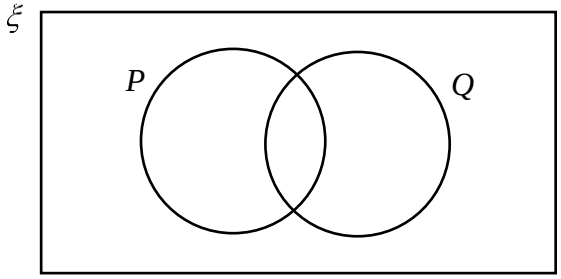
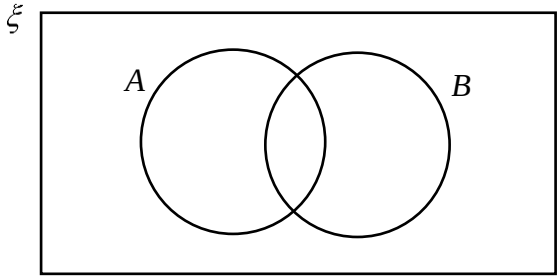
1 On each of the Venn diagrams, shade the region represented by the set notation.

(a) $P' \cap Q$ [1]



(b) $A' \cup (A \cap B)$ [1]



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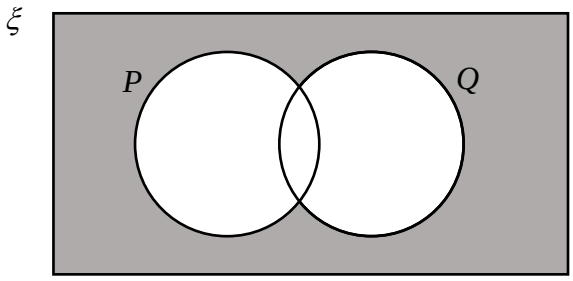
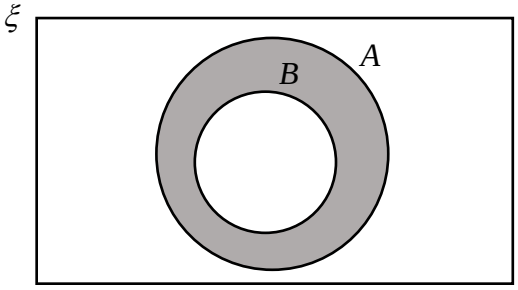
2 Write down the set notation that represents the shaded region in the Venn diagrams as shown below.

(a)



Answer …….. [1]

(b)



Answer …….. [1]

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3 It is given that $X = \{a, b, c, d, e, f, g\}$ and $Y = \{a, b, d, g\}$.

(a) Draw a Venn diagram to represent sets *X* and *Y*. [1]

(b) Is *Y* a proper subset of *X* ? Explain.

……

……

…… [1]

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4 It is given that $\xi = \{x : x \text{ is an integer such that } 1 \leq x < 15\}$, $A = \{x : x \text{ is an odd number}\}$ and $B = \{x : x \text{ is a multiple of } 3\}$.

(a) Illustrate the given information using a Venn diagram. [2]

(b) List the elements in the set $A \cup B'$.

Answer …….. [1]

(c) Find $\mathrm{n}(A \cap B)'$.

Answer …….. [1]

(d) A number a is chosen at random from ξ. Find the probability that $a \in (A \cup B)$.

Answer …….. [1]

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5 Amy has 40 red balls, x yellow balls and $(3x - 8)$ blue balls in a bag.
She selects a ball from the bag at random. Given that the probability of a yellow ball being selected is $\frac{1}{5}$, find

(a) the value of x,

Answer $x =$ ……. [2]

(b) the probability of selecting a red or blue ball from the bag.

Answer ……..…. [1]

Please note that the concepts for Questions 6 and 7 are not tested for WA1.
Feel free to attempt the questions for your own revision

6 In a school examination, the probabilities that Daisy will pass Mathematics, English and Science are $\frac{7}{8}$, $\frac{7}{10}$ and $\frac{4}{5}$ respectively. Find the probability that Daisy

(a) passes Science only,

Answer ……..…. [2]

(b) fails exactly two subjects,

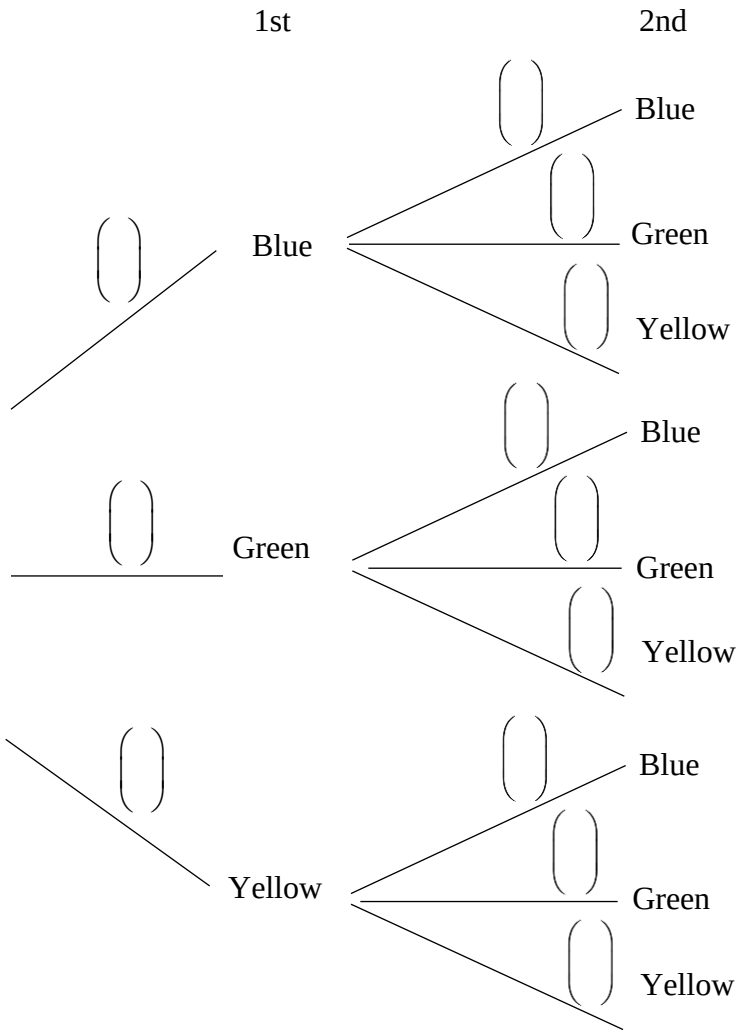
Answer ……..…. [2]

(c) passes at least one subject.

Answer ……..…. [2]

7 A bag contains 6 blue, 5 green and 7 yellow marbles. A child is allowed to pick two marbles from the bag, one after another without replacement.

(a) Complete the tree diagram below. [2]



(b) Find the probability that the two marbles picked are

(i) of the same colour,

Answer ……..…. [2]

(ii) exactly one green and one yellow,

Answer ……..…. [2]

(iii) not green.

Answer ……..…. [2]

(c) If a third marble is picked, find the probability that all three marbles are green.

Answer ……..…. [2]

End of Paper

Answers :

2a. $\left(P \cup Q\right)'$ b. $B' \cap A$

4b. 1,2,3,4,5,7,8,9,10,11,13,14

4c. 12

4d. $\frac{9}{14}$

5a. 32 b. $\frac{4}{5}$ 6a. $\frac{3}{100}$ b. $\frac{1}{10}$ c. $\frac{397}{400}$

6bi. $\frac{46}{153}$ ii. $\frac{35}{153}$ iii. $\frac{26}{51}$ iv. $\frac{5}{408}$