



# SEKOLAH BUKIT SION

AY 2021 – 2022

MATHEMATICS 0580

## CHAPTER TEST PROBABILITY

NAME: \_\_\_\_\_ CLASS: \_\_\_\_\_ DATE: \_\_\_\_\_

**Answer all questions. Show complete working.**  
**Marks may be deducted for missing necessary steps.**  
**Do not share your work with anyone. Shared work will be given a zero score on this test.**

### Problem 01

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Rina has a bag containing 5 black pens, 8 red pens and 3 blue pens only.  
She takes a pen out of the bag randomly.

Draw an arrow ( $\downarrow$ ) on the probability scale to show the probability that Rina takes

(a) a red pen



[1]

(b) a red pen or a blue pen



[1]

### Problem 02

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The probability that a sweet made in a factory is the wrong shape is 0.0028.  
One day, the factory makes 25 000 sweets.

Calculate an estimate of the number of the sweets that are expected to be the wrong shape.

*Answer:* ..... [2]

**Problem 03**

Each of the two boxes contains five pieces of paper labelled 1, 2, 3, 4 and 5. One piece of paper is selected at random from each box and the difference of the numbers on the chosen pieces of paper is calculated. [ *Difference = Bigger number – Smaller number* ]

Some of the differences are shown in the possibility diagram provided below.

		Box A				
		1	2	3	4	5
Box B	1			2		
	2					
	3				1	
	4	3				
	5					0

- (a) Complete the diagram. [2]
- (b) Using the diagram or otherwise, find the probability that the difference of the two numbers is
- (i) zero Answer: ..... [1]
  - (ii) a prime number Answer: ..... [1]
  - (iii) at least 4 Answer: ..... [1]
  - (iv) at most 2 Answer: ..... [1]
  - (v) even Answer: ..... [1]
  - (vi) negative Answer: ..... [1]

**Problem 04**

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There are 22 white marbles,  $x$  red marbles and  $2x + 8$  blue marbles in a bag.  
One marble is selected at random from the bag.

If the probability that the selected marble is red is equal to  $\frac{1}{6}$ ,

(a) calculate the value of  $x$ .

*Answer:* ..... [2]

(b) The selected marble is replaced, and another marble is then selected.  
Find the probability that the two marbles selected are

(i) both red

*Answer:* ..... [2]

(ii) of different colours

*Answer:* ..... [3]

**Problem 05**

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A group of 196 high school candidates were asked on the number of IGCSE subject examinations they are taking in April 2022. The table shows the result of the survey.

Number of examinations	5	6	7	8
Number of candidates	27	42	63	64

A candidate is selected at random.  
Find the probability that the candidate takes fewer than 8 subject examinations.

*Answer:* ..... [2]

**Problem 06**

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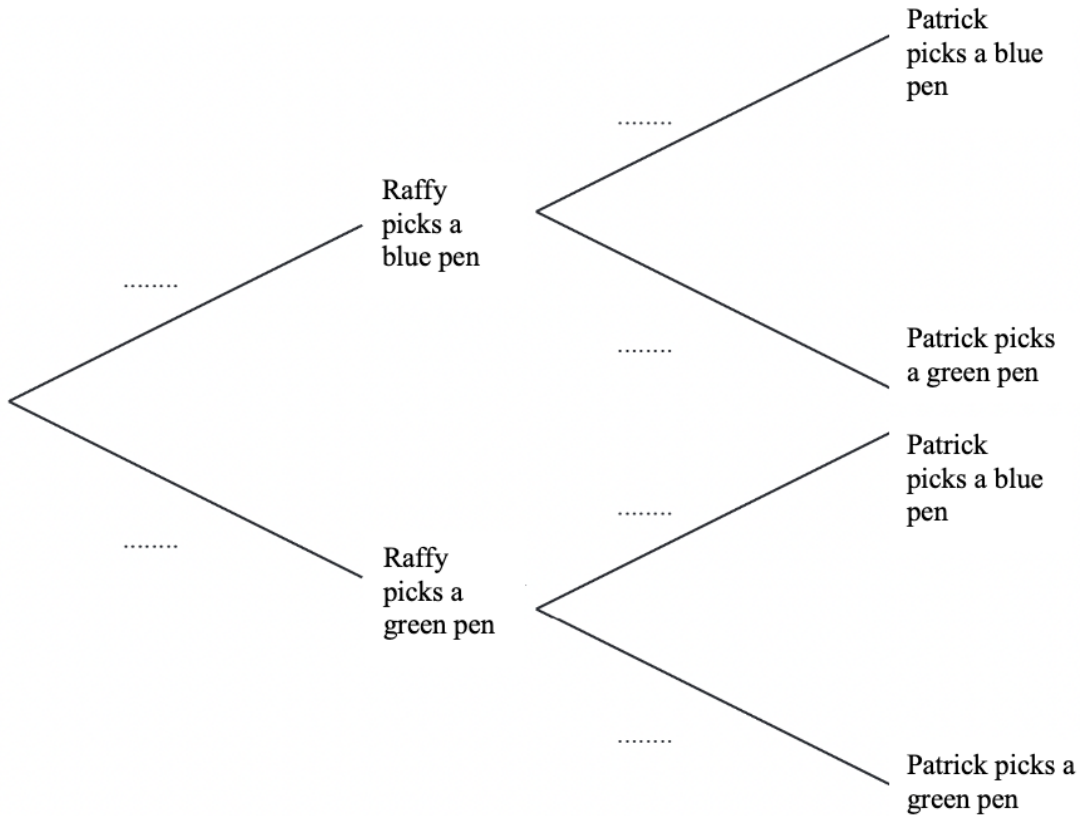
Bag *A* and Bag *B* each contain blue and green pens only.  
 Raffy picks a pen at random from Bag *A* and Patrick picks a pen at random from Bag *B*.

The probability that Raffy picks a blue pen is  $\frac{2}{3}$ .

The probability that **both** Raffy and Patrick pick a blue pen is  $\frac{8}{15}$ .

(a) Complete the probability tree below.

[3]



(b) Find the probability that Patrick picks a blue pen.

Answer: ..... [2]

(c) Find the probability that both Raffy and Patrick pick a green pen.

Answer: ..... [3]

**Problem 07**

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A bag contains 7 green and 5 blue marbles.  
Six marbles are drawn randomly one at a time from the bag, without replacement.

Determine the probability that the colours appear alternately.

*Answer:* ..... [3]

**Problem 08**

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7 cards contain the letters **S, U, C, C, E, S,** and **S** respectively.

- (a) One card is drawn randomly.  
Write down the probability that the card is the letter S.

*Answer:* ..... [1]

- (b) 2 cards are drawn at random.  
Calculate the probability that

- (i) the first card drawn is S and the second card is E

*Answer:* ..... [2]

- (ii) both cards are vowels

*Answer:* ..... [2]

- (c) 3 cards are drawn at random.  
Calculate the probability that the cards drawn are in the order C, U, and S.

*Answer:* ..... [3]