

SEKOLAH BUKIT SION – HIGH SCHOOL AY 2020-2021

MATHEMATICS 0580 CHAPTER 3 TEST: PROBABILITY

NAME: _____ CLASS: _____ DATE: _____

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INSTRUCTIONS:

1. CHOOSE/ANSWER ONLY 6 QUESTIONS.
QUESTION 07 MUST BE ANSWERED. Select 5 more questions from 1-6.
2. Use a file paper to answer the questions in an orderly and neat manner.
Show necessary working. Marks may be deducted for incomplete working.
3. Use **black** or **blue** pen for working.
Do not use highlighter or correction tape.
4. Once you are done, scan and upload your test **in pdf** as **pdf printout** on the assigned page for this Chapter Test **OR** by *“Add work”*.

If you upload by add work, use the filename format indicated below.
Filename format: *NameClass_C3Test* Example: *Emman10.5_C3Test*

5. Submit on-time. You only are given an extra 5 minutes after the specified time duration to scan and attach your files.

After the closing time, your work may NO LONGER be accepted.
You may be given a zero score.

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QUESTION 01

A box contains 3 red pencils, 2 blue pencils and 4 green pencils.

Raj chooses a pencil at random and replaces it. He then takes another pencil.

(a) Create a probability tree as described. [3]

(b) Calculate the probability that

(i) they are both red [2]

(ii) they are both of the same colour [3]

(iii) exactly one of the two pencils is green [3]

QUESTION 02

Box A contains 9 balls numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9.

Box B contains 6 balls numbered 1, 2, 3, 4, 5 and 6.

Archie chooses a box at random and a ball is selected at random from that box.

Find the probability that

(a) box B is chosen, [1]

(b) the ball selected has an even number on it, [2]

(c) ball is from box B given that it contains the number 6 [3]

(d) box B is chosen and the ball selected has a prime number on it. [2]

QUESTION 03

All the red cards and all the picture cards from a standard deck of cards are placed in a box. A card is selected at random from the box. Find the probability that the card is:

- (a) a picture card
- (b) the Jack of Spades
- (c) the King of Hearts
- (d) the Queen of Diamonds or the Jack of Hearts
- (e) the Ace of Clubs
- (f) a red card

[6]

QUESTION 04



The letters of the word **NATION** are printed on 6 cards as shown above.

- (a) A card is chosen at random.
Write down the probability that
 - (i) it has the letter **T** printed on it. [1]
 - (ii) it does not have the letter **N** printed on it. [1]
 - (iii) the letter printed on it has no lines symmetry. [1]
- (b) Lara chooses 2 cards at random.
Calculate the probability that only **one** of the cards she chooses has the letter **N** printed on it. [3]

QUESTION 05

There were 30 students in a classroom, x of them are boys.

- (a) Write, in terms of x , the probability that a student chosen at random was a
(i) boy
(ii) girl [2]

- (b) 8 more boys and 14 more girls entered the classroom.
The probability that a girl was chosen at random from the students in the classroom became $\frac{7}{13}$.

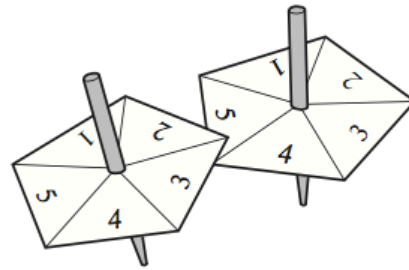
- (i) Find the value of x .
(ii) $(y + 1)$ boys and $(3y - 1)$ girls then left the classroom.
The probability that a boy was chosen at random from the students in the classroom became $\frac{1}{2}$. Find the value of y . [4]
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QUESTION 06

Two spinners have sections numbered from 1 to 5.
Each is spun once and each number is equally likely.
The possibility diagram is shown below.

5	+	+	+	+	+
4	+	+	+	+	+
3	+	+	+	+	+
2	+	+	+	+	+
1	+	+	+	+	+
	1	2	3	4	5

First spinner



- Find the probability that
(a) both spinners show the same number [2]
(b) the sum of the numbers shown on the two spinners is 7. [2]

QUESTION 07 (REQUIRED)

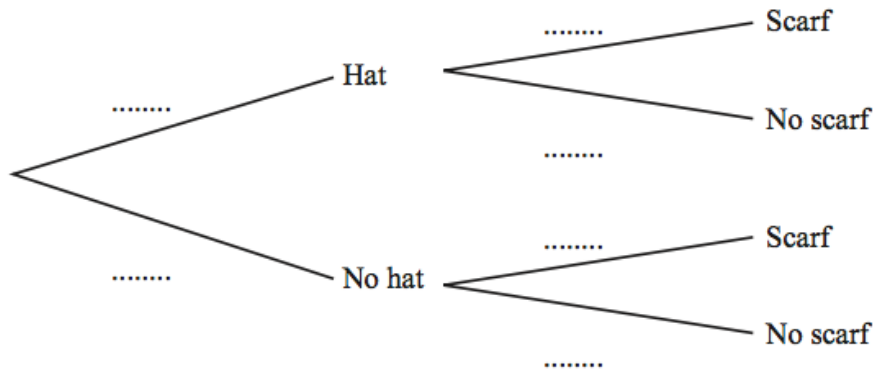
When Ivan goes to school in winter, the probability that he wears a hat is $\frac{5}{8}$.

If he wears a hat, the probability that he wears a scarf is $\frac{2}{3}$.

If he does not wear a hat, the probability that he wears a scarf is $\frac{1}{6}$.

(a) Complete the tree diagram.

[3]



(b) Find the probability that Ivan

(i) does not wear a hat and does not wear a scarf

[2]

(ii) wears a hat but does not wear a scarf

[2]

(iii) wears a hat or a scarf but not both

[3]

(iv) does not wear hat, given that he wears a scarf.

[3]

(c) If Ivan wears a hat and a scarf, the probability that he wears gloves is $\frac{7}{10}$.

Calculate the probability that Ivan does **not** wear all three of hat, scarf and gloves. [3]