Province of the EASTERN CAPE EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICS TOPIC TEST 1 OF 2020: STATISTICS

MARKS: 20

TIME: 24 Minutes Strictly!

This question paper consists of 7 pages, including ANSWER SHEETS.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 2 questions. Answer ALL questions in ANSWER SHEETS.

2. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.

3. Answers only will NOT necessarily be awarded full marks.

4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.

5. If necessary, round off answers to TWO decimal places, unless stated otherwise.

6. Diagrams are NOT necessarily drawn to scale.

7. Write neatly and legibly.

QUESTION 1

Each child in a group of four-year-old children was given the same puzzle to complete. The time taken (in minutes) by each child to complete the puzzle is shown in the table below.

TIME TAKEN (t) (IN MINUTES)	NUMBER OF CHILDREN
$2 < t \leq 6$	2
$6 < t \leq 10$	10
$10 < t \leq 14$	9
$14 < t \leq 18$	7
$18 < t \leq 22$	8
$22 < t \leq 26$	7
$26 < t \leq 30$	2

1.1   How many children completed the puzzle?   (1)

1.2   Calculate the estimated mean time taken to complete the puzzle.   (2)

1.3   Complete the cumulative frequency column in the table given in the ANSWER BOOK.   (2)

1.4   Draw a cumulative frequency graph (ogive) to represent the data on the grid provided in the ANSWER BOOK.   (3)

1.5   Use the graph to determine the median time taken to complete the puzzle.   (2)
                                                                                                                        [10]

QUESTION 2

Learners who scored a mark below 50% in a Mathematics test were selected to use a computer-based programme as part of an intervention strategy. On completing the programme, these learners wrote a second test to determine the effectiveness of the intervention strategy. The mark (as a percentage) scored by 15 of these learners in both tests is given in the table below.

LEARNER	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
TEST 1 (%)	10	18	23	24	27	34	34	36	37	39	40	44	45	48	49
TEST 2 (%)	33	21	32	20	58	43	49	48	41	55	50	45	62	68	60
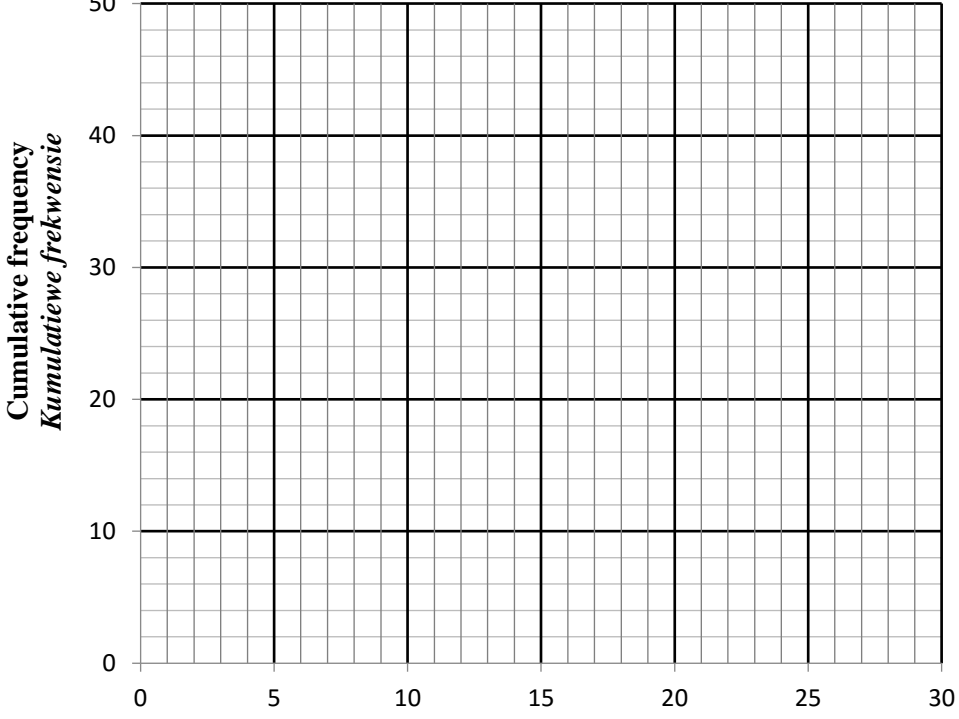
2.1   Determine the equation of the least squares regression line.   (3)

2.2   A learner's mark in the first test was 15 out of a maximum of 50 marks.

   2.2.1   Write down the learner's mark for this test as a percentage.   (1)

   2.2.2   Predict the learner's mark for the second test. Give your answer to the nearest integer.   (2)

2.3   For the 15 learners above, the mean mark of the second test is 45,67% and the standard deviation is 13,88%. The teacher discovered that he forgot to add the marks of the last question to the total mark of each of these learners. All the learners scored full marks in the last question. When the marks of the last question are added, the new mean mark is 50,67%.

   2.3.1   What is the standard deviation after the marks for the last question are added to each learner's total?   (2)

   2.3.2   What is the total mark of the last question?   (2)

[10]

SURNAME & NAME	
SCHOOL	

QUESTION/*VRAAG* 1

TIME TAKEN (*t*) (IN MINUTES)/ *TYD GENEEM (t)* (*IN MINUTE*)	NUMBER OF CHILDREN/ *GETAL KINDERS*
$2 < t \leq 6$	2
$6 < t \leq 10$	10
$10 < t \leq 14$	9
$14 < t \leq 18$	7
$18 < t \leq 22$	8
$22 < t \leq 26$	7
$26 < t \leq 30$	2

	Solution/*Oplossing*	Marks *Punte*
1.1		(1)
1.2		(2)

1. 3	Time in minutes (t) *Tyd in minute* (t)	Number of children *Getal kinders*	Cumulative frequency *Kumulatiewe frekwensie*	
	$2 < t \leq 6$	2		
	$6 < t \leq 10$	10		
	$10 < t \leq 14$	9		
	$14 < t \leq 18$	7		
	$18 < t \leq 22$	8		
	$22 < t \leq 26$	7		
	$26 < t \leq 30$	2		(2)

1. 4	CUMULATIVE FREQUENCY GRAPH (OGIVE) *KUMULATIEWEFREKWENSIEGRAFIEK (OGIEF)*	
		(3)

1.5		
		(2)

[10]

QUESTION/*VRAAG* 2

LEARNER/ *LEERDER*	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
TEST 1/ *TOETS 1* (%)	10	18	23	24	27	34	34	36	37	39	40	44	45	48	49
TEST 2/ *TOETS 2* (%)	33	21	32	20	58	43	49	48	41	55	50	45	62	68	60

	Solution/*Oplossing*	Marks *Punte*
2.1		(3)
2.2.1		(1)
2.2.2		(2)
2.3.1		(2)
2.3.2		(2)
		[10]