KWAZULU-NATAL PROVINCE

EDUCATION

REPUBLIC OF SOUTH AFRICA

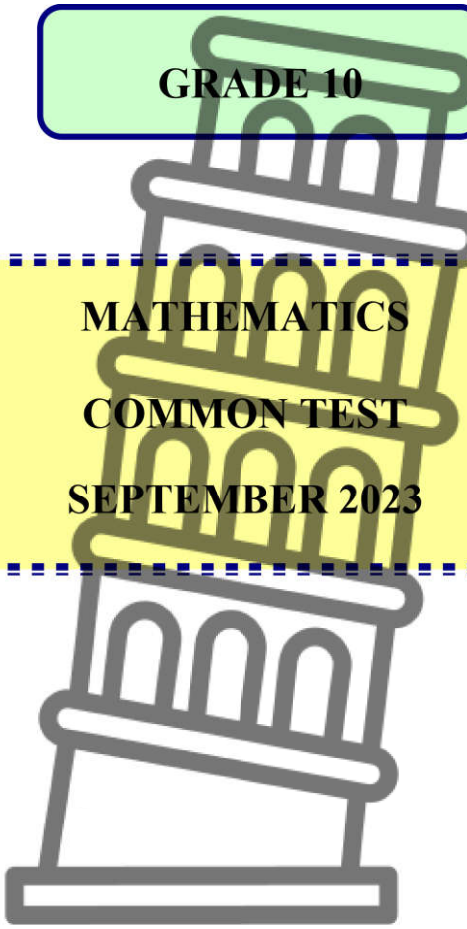
NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS

COMMON TEST

SEPTEMBER 2023



MARKS: 75

TIME: 1½ hours

This question papers consists of 6 pages and 1 ANSWER SHEET.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 4 questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
5. Answers only will NOT necessarily be awarded full marks.
6. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
7. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale.
9. An ANSWER SHEET for QUESTION 3.2.2, QUESTION 3.2.3 is attached at the end of this question paper. Detach the ANSWER SHEET hand in together with your ANSWER BOOK.
10. Write neatly and legibly.

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QUESTION 1

1.1 A newly married couple bought furniture on hire-purchase for R60 000.They paid a cash deposit of 20%. The balance will be paid off over 5 years at an interest rate of 22% p.a. They also must pay a monthly insurance fee of R120. This is added to their monthly repayments.

1.1.1 Calculate the amount paid as a deposit. (1)

1.1.2 Calculate their monthly repayments. (4)

1.2 Calculate how many years it will take for an investment, earning 7,5% p.a. simple interest, to double in value. (3)

1.3 The price of a 700g loaf of brown bread in 2015 was R11,50. The current price of a 700g loaf of brown bread in 2023 is R16,00. Determine the rate of inflation, as a percentage, if we assume that the inflation rate remained unchanged for this period. (3)

1.4 The following exchange rates are given:

€ 1 = R 20,05
£ 1 = R 23,40

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Use the given information to answer the following questions:

1.4.1 How many rand (R) is €100? (1)

1.4.2 How many pounds (£) is R2300? (1)

1.4.3 How many euros (€) is £250? (2)

[15]

QUESTION 2

2.1 There are 120 grade 10 learners in a school.

- 55 learners take Mathematics.
- 80 learners take Geography.
- 25 learners take neither Mathematics nor Geography.

Let the number of learners who take both Mathematics and Geography be x.

2.1.1 Represent this information in a Venn diagram.

Let M = {learners who take Mathematics} and
G = {learners who take Geography} (4)

2.1.2 Calculate the value of x. (2)

2.1.3 Use your Venn diagram to calculate the probability that a learner chosen at random from this group:

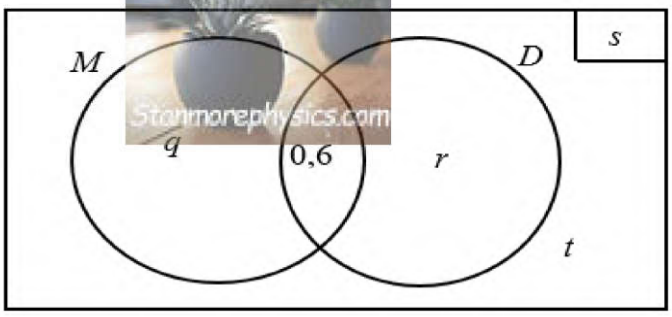
(a) takes Mathematics only (2)
(b) does not take Geography (2)
(c) takes Mathematics **or** Geography (2)
(d) takes Mathematics **and** Geography (2)

Round your answers off to 3 decimal places.

2.2 The probability that a randomly chosen Grade 10 learner will take

- Music (*M)* is 0,8
- Dance (*D)* is 0,7
- Both Music and Dance is 0,6

The Venn diagram representing the probabilities is shown below with some missing information.



2.2.1 Write down the value of s. (1)

2.2.2 Determine the values of q and r, showing all calculations. (3)

2.2.3 Determine the value of t. (2)

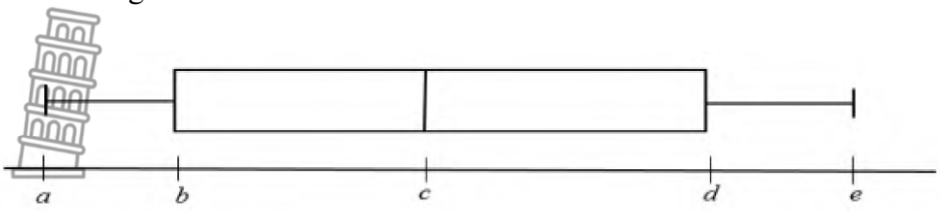
2.2.4 Determine the probability that a learner chosen at random from this group will not take Dance. (2)

2.2.5 Determine the probability that if a learner is chosen at random will take exactly ONE form of the arts. (2)

[24]

QUESTION 3

3.1 The data at a certain school for a mathematics test out of 50 marks are given in a form of a box-and-whisker diagram as shown.



Additional information about the data is listed below:

- Minimum is 1
- Upper quartile is 29
- Median is 20
- Range is 38
- Interquartile range is 18

3.1.1 Write down the values of *a, c* and *d.* (3)

3.1.2 Determine the value of *e.* (2)

3.1.3 Determine the value of *b.* (2)

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3.1.4 Learners said that the test was difficult. Do you agree with this statement? Use the information above to justify your answer. (3)

3.2 A mathematics teacher records the time taken by the learners of his grade 10 class to complete a class test.

Time in minutes	Number of learners (frequency)	Midpoints
$10 < t \leq 20$	2	
$20 < t \leq 30$	5	
$30 < t \leq 40$	7	
$40 < t \leq 50$	8	
$50 < t \leq 60$	18	
$60 < t \leq 70$	20	

3.2.1 Determine the modal class of the given data. (2)

3.2.2 Complete the midpoints column of the data on the ANSWER SHEET provided. (2)

3.2.3 Draw the frequency polygon of the given data on the system of axes provided. (4)

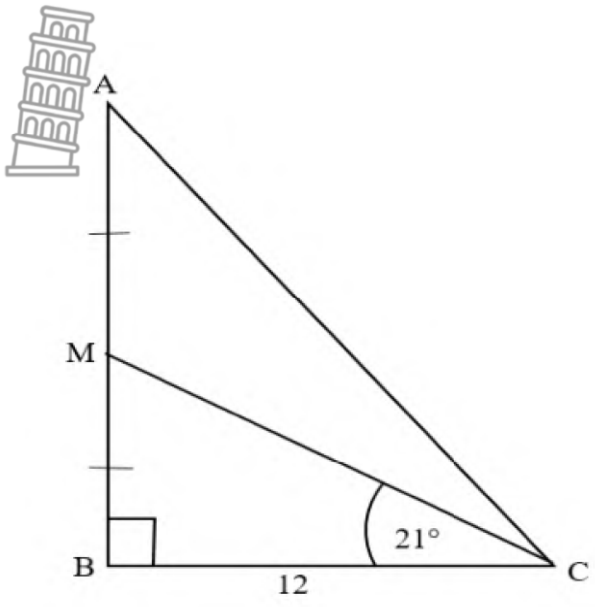
3.2.4 Calculate the estimated the mean of the given data. Show all calculations. (4)

[22]

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QUESTION 4

4.1 In the diagram below, CBM and ABC are right-angled triangles. $\hat{B} = 90°$, $B\hat{C}M = 21°$ and BC =12 units. M is the mid-point of AB.



Determine, with reasons:

4.1.1 the size of $A\widehat{M}C$. (2)

4.1.2 the length of MB. (3)

\ 4.1.3 the length of AB. (2)

4.1.4 the size of $A\hat{C}M$. (4)

4.1.5 the length of AC. (3)
[14]

TOTAL MARKS: 75

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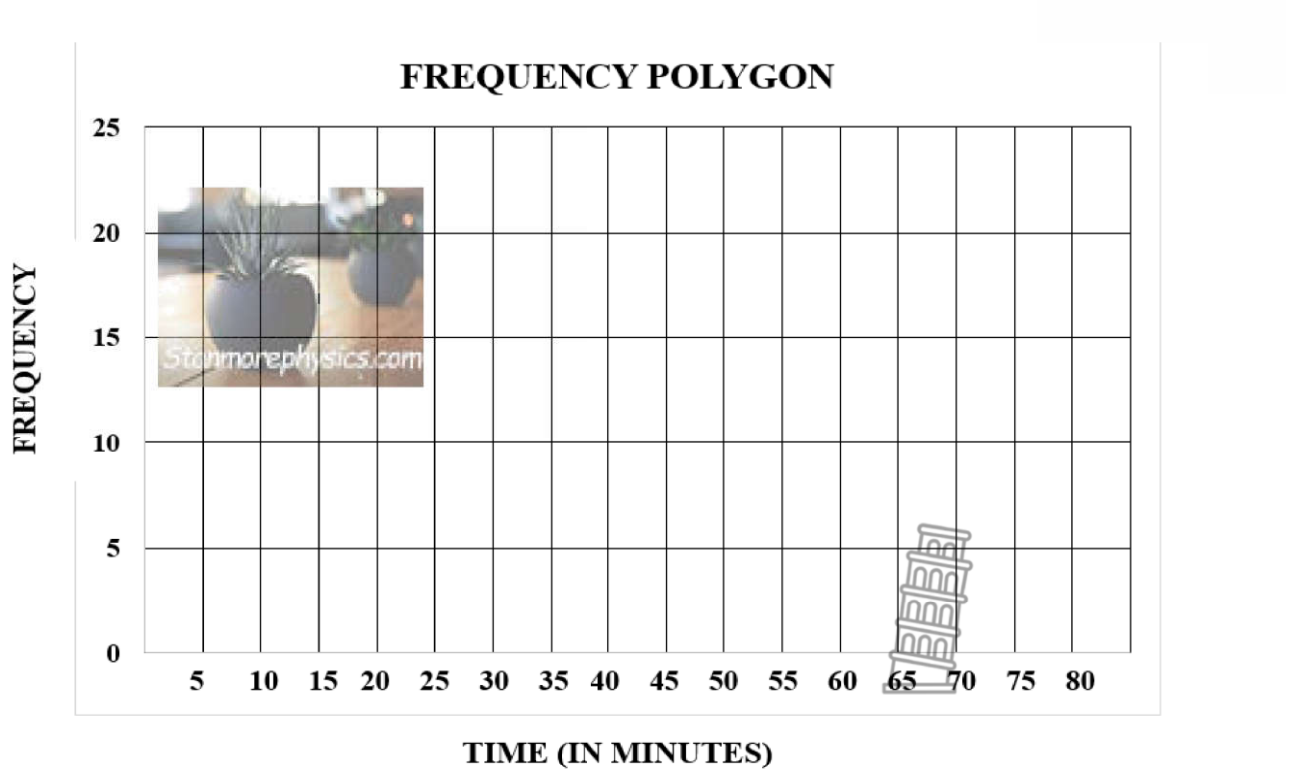
NAME & SURNAME: _____

ANSWER SHEET

QUESTION 3.2.2

Time in minutes	Number of learners (frequency)	Midpoints
$10 < t \leq 20$	2	
$20 < t \leq 30$	5	
$30 < t \leq 40$	7	
$40 < t \leq 50$	8	
$50 < t \leq 60$	18	
$60 < t \leq 70$	20	

QUESTION 3.2.3



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