



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

GRADE 10

MATHEMATICS
COMMON TEST
AUGUST 2024

Marks: 75

Duration: 1½ hours

This question paper consists of 6 pages

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, et cetera that 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 nongraphical), unless stated otherwise.
7. If necessary, round off answers to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale.
9. Write neatly and legibly.

QUESTION 1

- 1.1 A fisherman and his son keep a record of the number of fish that they catch each day. The data for 15 days is shown below.

12 13 8 13 4 15 3 14 15 11 15 13 10 12 7

- 1.1.1 Calculate the range of the given data (1)
 1.1.2 Calculate the mean of the given data (2)
 1.1.3 Determine the median of the number of fish caught. (1)
 1.1.4 Calculate the interquartile range (2)
 1.1.5 Draw a box and whisker diagram for the data above. (4)
 1.1.6 Comment on the skewness of the data. Justify your answer. (2)
- 1.2 A student conducts a study on the number of hours per month that a group of Grade 10 learners spend on social media. The information is given in the frequency table below.

Class intervals (time in hours)	Number of learners (frequency)	Midpoints	Midpoint×Frequency
$10 \leq h < 20$	4		
$20 \leq h < 30$	7		
$30 \leq h < 40$	15		
$40 \leq h < 50$	11		
$50 \leq h < 60$	8		
$60 \leq h < 70$	5		

- 1.2.1 How many Grade 10 learners were part of the study? (1)
 1.2.2 Write down the modal class for the data. (2)
 1.2.3 In which class interval does the median lie? (2)
 1.2.4 Calculate the estimated mean of the given data. Show all calculations. (4)
 1.2.5 Calculate the percentage of Grade 10 learners who spend at least 50 hours per month on social media. (2)

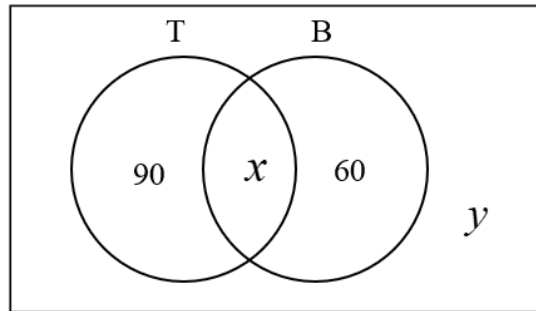
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QUESTION 2

- 2.1 For two events A and B , it is given that
 $P(A) = 0,42$; $P(\text{not } B) = 0,49$ and $P(A \text{ or } B) = 0,63$

- 2.1.1 Calculate $P(B)$ (1)
 2.1.2 Calculate $P(A \text{ and } B)$ (2)
 2.1.3 Hence, represent the above information in a Venn diagram. (3)
 2.1.4 Are the events A and B mutually exclusive? Give a reason. (2)

- 2.2 Some people watch television (T) to relax, whilst others read a book (B). 200 people were interviewed at a mall and asked which they preferred. We are also told that 30 people like to watch television and read a book for relaxation. The results are given in the partially completed Venn diagram below.

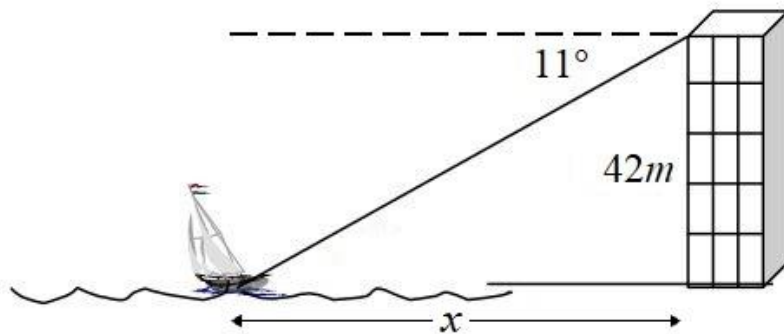


- 2.2.1 Determine the value of x (1)
 2.2.2 Determine the value of y (2)
 2.2.3 What is the probability of meeting someone who prefers watching television? (2)
 2.2.4 What is the probability of meeting someone who ONLY prefers reading books for relaxation? (2)
 2.2.5 What is the probability of meeting someone who prefers to neither watch television nor read a book for relaxation? (2)
- 2.3 A bag contains 3 red balls, 5 green balls and 8 blue balls.
- 2.3.1 What is the probability of pulling out a green ball? (1)
 2.3.2 What is the probability of pulling out a red ball or a blue ball? (1)
 2.3.3 What is the probability of NOT pulling out a red ball? (1)
 2.3.4 A green ball is removed and not put back into the bag. What is the probability of pulling out a blue ball after this event? (2)

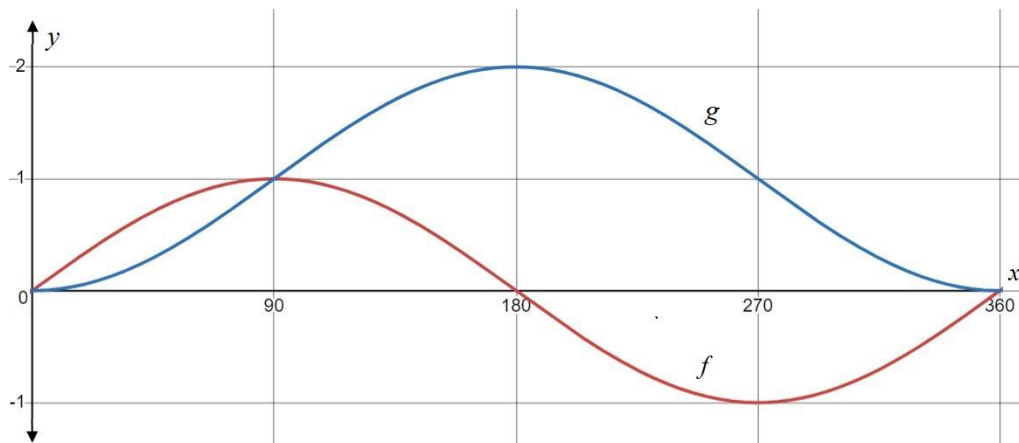
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QUESTION 3

- 3.1 In the diagram below, the angle of depression from the top of a hotel to a boat is 11° .



- 3.1.1 What is the angle of elevation? (1)
- 3.1.2 Showing all calculations, how far is the boat from the base of the hotel (this distance is indicated by x)? (4)
- 3.2 The graphs of $f(x) = \sin x$ and $g(x) = a \cos x + q$ for $x \in [0^\circ; 360^\circ]$ are sketched below.



- 3.2.1 Write down the value of a . (2)
- 3.2.2 Write down the value of q . (2)
- 3.2.3 Write down the range of g . (2)
- 3.2.4 For which values of x for $x \in [0^\circ; 360^\circ]$ will $f(x) \cdot g(x) < 0$? (2)
- 3.2.5 The graph f is reflected about the x -axis and then shifted 2 units downwards to obtain the graph h . Write down the equation of h . (2)

[15]

QUESTION 4

- 4.1 Six years ago, a certain amount of money was invested in a bank. The value of the investment is currently R 254 644,75. Calculate the original amount that was invested (P) if the interest rate was 7,5% per annum compound interest. (3)
- 4.2 Jessica buys a laptop costing R13 000. She pays a 15% deposit and then takes out a twenty four month hire-purchase loan on the balance. The interest rate charged on the loan is 22% per annum simple interest.
- 4.2.1 Calculate the deposit that Jessica paid. (1)
- 4.2.2 Calculate Jessica's monthly payments. (3)
- 4.2.3 How much interest does Jessica pay over the hire-purchase period? (2)
- 4.3 David bought a camera in Germany for € 1025. The same camera cost £ 950 in England. The exchange rate is €1= £0,85. Is the camera cheaper in Germany or England? Show your working. (3)
- 4.4 The tuition fees at university for a bachelors degree is currently R 65 000 per year. Assuming the inflation rate remains constant at 5,5%, what would the tuition fees cost in 20 years' time? (3)

[15]**TOTAL: [75]**