



MATHEMATICS

TERM 3 PRACTICE TEST

GRADE 10

QUESTION 1 (17 MARKS)

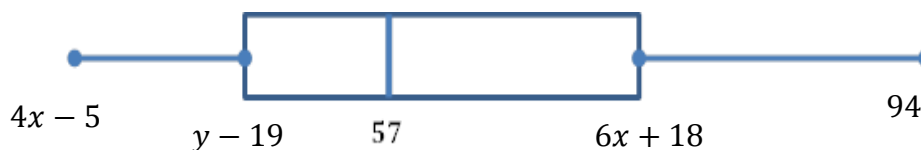
- 1.1. A group of learners in grade 12 at Sebokeng High School wrote a test out of 80 marks. Their marks obtained are in the table below.

45	35	42	26	31	33
69	35	55	72	46	58
51	36	39	57	44	58

- 1.1.1. Write down the median mark (1)
- 1.1.2. Write down the mode of the data. (2)
- 1.1.3. Determine the mean mark of the test. (3)
- 1.1.4. If the pass percentage for the test is 45%. Determine what percentage of the learners failed the test. (2)
- 1.1.5. Comment on the skewedness of the data. (2)

- 1.2. The box and whisker diagram below shows the points scored by 36 employees at a certain factory in Midrand who participated in an interview out of 100.

- The range of the data is y .
- The semi IQR is 14.
- Minimum = $4x - 5$
- Maximum = 94
- Lower Quartile = $y - 19$
- Upper Quartile = $6x + 18$



- 1.2.1. Determine the values of x and y . (5)
- 1.2.2. If $x = 9$ and $y = 63$, determine how many employees scored between $y - 19$ and 94? (2)





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QUESTION 2 (13 MARKS)

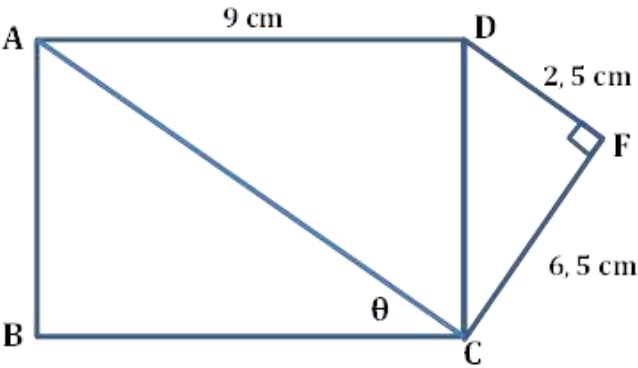
The frequency table below shows the distance travelled by students each day to school in Konka Village.

Distance (km)	Frequency	Midpoint	Mid $\times$ Freq
$4 \leq x < 8$	9		54
$8 \leq x < 12$	11		
$12 \leq x < 16$		14	308
$16 \leq x < 20$	14	18	
$20 \leq x < 24$			154
$24 \leq x < 28$	4		

- 2.1. Complete the table in your **ANSWER BOOK** (3)
- 2.2. Write down the modal class interval (1)
- 2.3. Calculate the estimated average distance travelled. (3)
- 2.4. Draw the HISTOGRAM to represent the given information. (3)
- 2.5. Use the frequency table to:
- 2.5.1. determine the number of students who travelled a distance less than 16 km (2)
- 2.5.2. determine the interval in which the 50th quartile lies (2)

QUESTION 3 (10 MARKS)

In the diagram below, A, B, C and D is a rectangle with $AD = 9$ cm. $DF = 2,5$ cm and $CF = 6,5$ cm. AC is a diagonal. $\hat{ACB} = \theta$.



- 3.1. Determine the length of AC , correct to one decimal place. (4)
- 3.2. Show that $\theta = 37.9^\circ$ (2)
- 3.3. Determine the area of $\triangle BCFD$ (4)





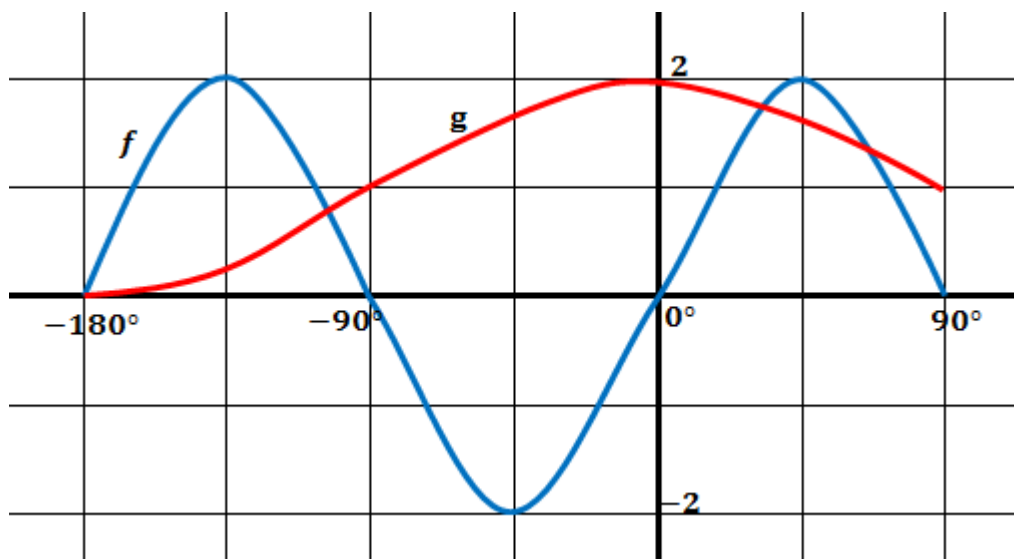
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QUESTION 4 (12 MARKS)

Sketched below are the graphs of $f(x) = 2 \sin bx$ and $g(x) = a \cos x + q$ for $x \in [-180^\circ; 90^\circ]$



4.1. Write down the:

4.1.1. amplitude of $g\left(\frac{x}{2}\right)$ (1)

4.1.2. period of $-f$ (1)

4.2. Determine the values of a , b and q (3)

4.3. If $h(x) = -g(x) + 2$. Determine the range of h (2)

4.4. Determine the number of solutions $f(x) = g(x)$ (1)

4.5. For which values of x is:

4.5.1. $\frac{f(x)}{g(x)} \leq 0$ for $x \in [-180^\circ; 0^\circ]$ (2)

4.5.2. $f(x) - g(x) = 1$ (2)





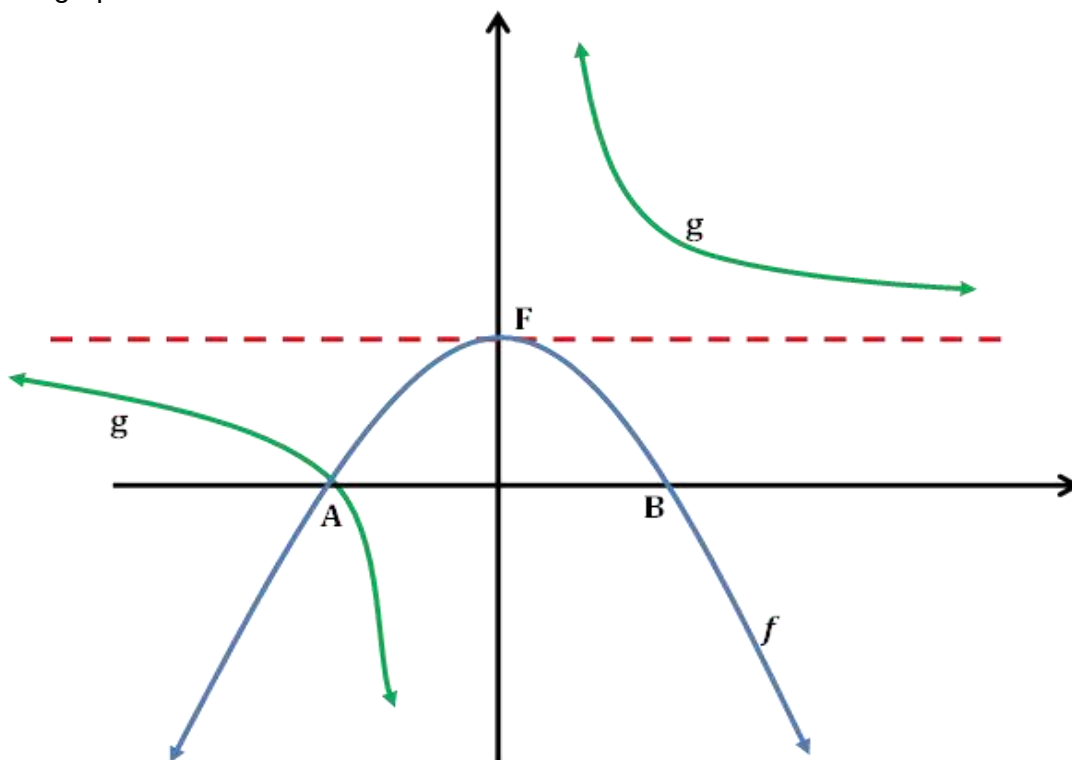
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QUESTION 5 (19 MARKS)

Sketched below are the graphs of $f(x) = ax^2 - k$ and $g(x) = \frac{12}{x} + 4$. A and B are the x -intercept of f . F is the turning point of f . The line of symmetry of g intersect with f at F. The two graphs intersect at A.



- 5.1. Determine the
- 5.1.1. Coordinates of A (3)
- 5.1.2. range of f (2)
- 5.2. Show that $a = -\frac{4}{9}$ and $k = -4$ (4)
- 5.3. Determine the average gradient between A and F. (3)
- 5.4. If the coordinates of B are (3 ; 0) Determine the values of x for which:
- 5.4.1. $x \cdot f(x) \geq 0$ (2)
- 5.4.2. $f(x) - g(x) < 0$ (2)
- 5.5. Write down the equation of the axes of symmetry of f . (1)





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QUESTION 6 (12 MARKS)

Given: $h(x) = 2.3^{-x} - 6$ and $p(x) = 2x - 4$

- 6.1. Write down the range of $-h(x) - 2$ (2)
- 6.2. Determine the coordinates of the intercepts of h (5)
- 6.3. Sketch the graph of h and p on the same set of axes. Clearly show all intercepts with the axes as well as asymptote. (3)
- 6.4. Describe the transformation from h to m if $m(x) = 2.3^x - 4$. (2)

QUESTION 7 (8 MARKS)

When a Sompies is promoted to grade 10 he has to pick between COMMERCE, SCIENCE or CONSUMER STUDIES. Sompies has 22% chance of choosing COMMERCE and 11% chance of choosing CONSUMER STUDIES. If he chooses COMMERCE, the probability that he will attend all classes is $\frac{3}{5}$. If he chooses CONSUMER STUDIES, the probability that he will attend all classes is $\frac{1}{4}$ and if he chooses SCIENCE, the probability he will attend all classes is $\frac{5}{7}$.

- 7.1. Represent the given information in a tree diagram. Show all outcomes (5)
- 7.2. Determine the probability that a learner will attend all classes. (3)

QUESTION 8 (10 MARKS)

An investigation was conducted among students at Makwapa Secondary School to determine which meal they preferred during the trip between PIZZA and BURGER

- 59 preferred BURGER
- 63 preferred PIZZA
- x preferred PIZZA and BURGER
- 93 preferred AT LEAST ONE meal
- 25 did not prefer any of the meals

- 8.1. How many learners participated in an investigation? (1)
- 8.2. Draw a Venn diagram to represent the given information (3)
- 8.3. Calculate the value of x (2)
- 8.4. Determine the:
 - 8.4.1. $P(\text{Pizza Only})$ (2)
 - 8.4.2. $P(\text{Pizza and NOT Burger})$ (2)



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NAME AND SURNAME: _____

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HISTOGRAM OF DISTANCE TRAVELLED

