

**KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT**

**KEJSEA ENDTERM ONE 2025**

**GRADE 9**

**903- MATHEMATICS**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Duration:** 2 Hours  
**Total Marks:** 70 marks

**FOR FACILITATOR’S USE ONLY**

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| --- | --- | --- | --- | --- |
| SCORE RANGE | 60-69 | 50-59 | 26-49 | 0-25 |
| LEVEL | EXCEEDING EXPECTATION | MEETING EXPECTATION | APPROACHING EXPECTATION | BELOW EXPECTATION |
| LEARNER’S SCORE |  |  |  |  |
| TICK LEVEL |  |  |  |  |

**General Instructions:**

1. **Read all questions carefully** before answering.
2. **Write your answers in the space provided** for each question.
3. **Use clear and concise language** in your responses.
4. **Answer all questions** to the best of your ability.
5. **Write legibly**. Unreadable answers may not be awarded marks.
6. **You are allowed to use a calculator** for mathematical questions.
7. Show all workings for full marks.
8. Calculators may be used.

**SECTION A (20 marks)**

1. Simplify: 3
   * A) 8x−7
   * B) 3x−7
   * C) 5x+7
   * D) 8x+7
2. Solve for x:
   * A) x=3
   * B) x=4
   * C) x=5
   * D) x=6
3. What is the LCM of 15 and 25?
   * A) 30
   * B) 45
   * C) 75
   * D) 100
4. Simplify:
   * A) 6x+2
   * B) 6x+2−4
   * C) 6x+2
   * D) 6x−2
5. The ratio of boys to girls in a class is 4:5. If there are 80 boys, how many girls are there?
   * A) 100
   * B) 120
   * C) 160
   * D) 200
6. Solve for x:
   * A) x=10
   * B) x=12
   * C) x=8
   * D) x=20
7. A car travels 180 km in 6 hours. What is the speed of the car in km/h?
   * A) 30 km/h
   * B) 36 km/h
   * C) 40 km/h
   * D) 45 km/h
8. A shirt originally costs Ksh 1,500. After a 10% discount, what is the final price of the shirt?
   * A) Ksh 1,350
   * B) Ksh 1,400
   * C) Ksh 1,500
   * D) Ksh 1,600
9. What is 25% of 320?
   * A) 60
   * B) 80
   * C) 90
   * D) 100
10. The population of a town increases by 10% every year. If the current population is 50,000, what will the population be after 2 years?

* A) 55,000
* B) 60,000
* C) 61,000
* D) 62,100

1. What is the area of a rectangle with length 10 cm and width 6 cm?

* A) 30 cm²
* B) 40 cm²
* C) 60 cm²
* D) 100 cm²

1. The volume of a sphere is calculated using the formula V= πr3. If the radius of a sphere is 3 cm, what is its volume? (Use π=3.14)

* A) 84.78 cm³
* B) 113.04 cm³
* C) 27 cm³
* D) 15.4 cm³

1. What is the surface area of a cube with side length 4 cm?

* A) 48 cm²
* B) 64 cm²
* C) 96 cm²
* D) 128 cm²

1. The marks obtained by a student in five subjects are: 70, 80, 90, 75, and 85. What is the median of the marks?

* A) 75
* B) 80
* C) 85
* D) 90

1. If the mode of a data set is 12, which of the following could be the data set?

* A) 10, 12, 14, 16
* B) 5, 7, 12, 12, 12, 13
* C) 5, 5, 8, 8, 12, 13
* D) 6, 7, 8, 10, 12, 15

1. If the equation of a line is y=2x+1, what is the y-intercept?

* A) 0
* B) 1
* C) 2
* D) 3

1. What is the slope of the line passing through the points (0, 2) and (3, 8)?

* A)
* B)
* C) 2
* D)

1. The points (2, 3) and (4, 7) lie on a straight line. What is the slope of the line?

* A)
* B)
* C)
* D) 2

**SECTION B: 80 MARKS**

**Number Operations and Algebra (20 Marks)**

1. Simplify the following expressions:  
   a) 5a−3b+2a−7b

b) 3x(x+2)−4(x+2)

1. Solve for x in the equation:  
   2x+3=11
2. Find the LCM and HCF of 18 and 24.

**Ratios and Proportions (15 Marks)**

1. A school has 120 boys and 80 girls. Find the ratio of boys to girls in its simplest form.
2. Solve for x in the following proportion:
3. A car travels 120 km in 3 hours. How far will it travel in 5 hours at the same speed?

**Percentages (15 Marks)**

1. A laptop originally costs Ksh 30,000. After a 15% discount, what is the price of the laptop?
2. A population of a town increases by 12% annually. If the current population is 50,000, what will be the population after 2 years?
3. Calculate the simple interest on a loan of Ksh 20,000 at 8% per annum for 3 years.

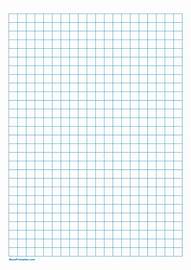
**Measurement (20 Marks)**

1. Find the area of a triangle with a base of 10 cm and a height of 6 cm.
2. Calculate the volume of a cylinder with a radius of 7 cm and height of 14 cm. Use π=
3. Find the surface area of a cube with a side length of 5 cm.

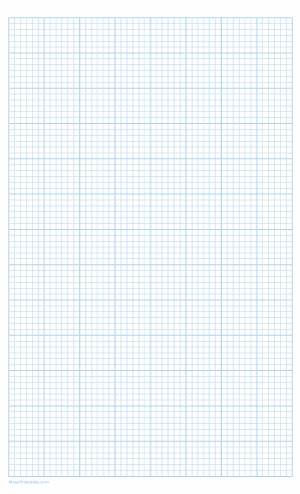
**Data handling (15 Marks)**

1. The marks obtained by a student in five subjects are: 70, 85, 90, 65, and 75.
   1. Find the mean, median, and mode of the marks.

b) Construct a bar graph to represent these marks.



**Linear Graphs (15 Marks)**

1. Plot the following points on a graph:  
   A(0, 2), B(2, 4), C(4, 6), D(6, 8).

a) Draw the line that passes through these points.

b) Find the gradient of the line.

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**MARKING SCHEME**

**Section A:**

1. **Simplify the following expressions:**  
   a) 5a−3b+2a−7b  
   Combine like terms:  
   (5a+2a)+(−3b−7b)=7a−10b

b) 3x(x+2) −4(x+2)  
Expand both terms:  
3x2+6x−4x−8=3x2+2x−8

1. **Solve for xxx in the equation:**  
   2x+3=11  
   Subtract 3 from both sides:  
   2x=11−3  
   2x=8  
   Divide both sides by 2:  
   x==4
2. **Find the LCM and HCF of 18 and 24.**

**LCM of 18 and 24:**  
Prime factorization of 18 = 2×32  
Prime factorization of 24 = 23×3  
LCM = Highest powers of all primes:  
LCM=23×32=72

**HCF of 18 and 24:**  
HCF = Product of the lowest powers of common primes:  
HCF=2×3=6

1. **A school has 120 boys and 80 girls. Find the ratio of boys to girls in its simplest form.**  
   Ratio =   
   So, the ratio of boys to girls is **3:2**.
2. **Solve for x in the following proportion:**  
   3/4=x/12   
   Cross-multiply:  
   3×12=4×x

36=4x  
Divide both sides by 4:  
x==9

1. **A car travels 120 km in 3 hours. How far will it travel in 5 hours at the same speed?**  
   Speed = =40 km/hour  
   Distance in 5 hours = 40×5=200 km
2. **A laptop originally costs Ksh 30,000. After a 15% discount, what is the price of the laptop?**  
   Discount = 15%×30,000=0.15×30,000=4,50015\% \times 30,000 = 0.15 \times 30,000 = 4,50015%×30,000=0.15×30,000=4,500  
   Price after discount = 30,000−4,500=25,50030,000 - 4,500 = 25,50030,000−4,500=25,500  
   So, the price of the laptop after discount is **Ksh 25,500**.
3. **A population of a town increases by 12% annually. If the current population is 50,000, what will be the population after 2 years?**  
   Population after 1 year = 50,000×(1+0.12)=50,000×1.12=56,00050,000 \times (1 + 0.12) = 50,000 \times 1.12 = 56,00050,000×(1+0.12)=50,000×1.12=56,000  
   Population after 2 years = 56,000×1.12=62,72056,000 \times 1.12 = 62,72056,000×1.12=62,720  
   So, the population after 2 years will be **62,720**.
4. **Calculate the simple interest on a loan of Ksh 20,000 at 8% per annum for 3 years.**  
   Simple Interest = P×R×T100\frac{P \times R \times T}{100}100P×R×T​  
   SI=20,000×8×3100=480,000100=4,800SI = \frac{20,000 \times 8 \times 3}{100} = \frac{480,000}{100} = 4,800SI=10020,000×8×3​=100480,000​=4,800  
   So, the simple interest is **Ksh 4,800**.
5. **Find the area of a triangle with a base of 10 cm and a height of 6 cm.**  
   Area = 12×base×height\frac{1}{2} \times \text{base} \times \text{height}21​×base×height  
   Area=12×10×6=30 cm2Area = \frac{1}{2} \times 10 \times 6 = 30 \, \text{cm}^2Area=21​×10×6=30cm2
6. **Calculate the volume of a cylinder with a radius of 7 cm and height of 14 cm. Use π=227\pi = \frac{22}{7}π=722​.**  
   Volume = πr2h\pi r^2 hπr2h  
   V=227×72×14=227×49×14=22×49×2=2156 cm3V = \frac{22}{7} \times 7^2 \times 14 = \frac{22}{7} \times 49 \times 14 = 22 \times 49 \times 2 = 2156 \, \text{cm}^3V=722​×72×14=722​×49×14=22×49×2=2156cm3
7. **Find the surface area of a cube with a side length of 5 cm.**  
   Surface Area of a cube = 6×side26 \times \text{side}^26×side2  
   SA=6×52=6×25=150 cm2SA = 6 \times 5^2 = 6 \times 25 = 150 \, \text{cm}^2SA=6×52=6×25=150cm2
8. **The marks obtained by a student in five subjects are: 70, 85, 90, 65, and 75.**

a) **Find the mean, median, and mode of the marks.**

* **Mean** = 70+85+90+65+755=3855=77\frac{70 + 85 + 90 + 65 + 75}{5} = \frac{385}{5} = 77570+85+90+65+75​=5385​=77
* **Median** = Middle value when the data is arranged in order: 65, 70, 75, 85, 90 → **75**
* **Mode** = No repeated values → No mode.

b) **Construct a bar graph:**  
[You would need to draw this on graph paper or use a software tool.]

1. **Plot the following points on a graph:**  
   A(0, 2), B(2, 4), C(4, 6), D(6, 8).

a) **Draw the line that passes through these points.**  
Plot the points on a coordinate plane and draw the line that connects them. The line is straight.

b) **Find the gradient of the line.**  
Gradient (slope) = ΔyΔx  
Using points A(0, 2) and B(2, 4):  
Gradient=4−22−0=22=1\text{Gradient} = \frac{4 - 2}{2 - 0} = \frac{2}{2} = 1Gradient=2−04−2​=22​=1  
So, the gradient of the line is **1**.