

**KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT****2026****MATHEMATICS****Prediction 4****903 Time: 2 hours Total: 100 marks**

Name .....

Assessment number .....

School .....

**INSTRUCTIONS TO CANDIDATES**

Answer all questions in Sections A and B.

Section A contains 20 multiple-choice questions. Choose ONE answer from A, B, C and D for each question. Record the letter in the answer sheet below.

Answer Section B in the spaces provided. Show all necessary working.

A non-programmable calculator and mathematical instruments may be used.

Use the calculator value of  $\pi$  unless otherwise stated.

Diagrams are not drawn to scale unless a question requires measurement. Print on A4 at 100% actual size.

| Section | Maximum mark | Score |
|---------|--------------|-------|
| A       | 20           |       |
| B       | 80           |       |
| Total   | 100          |       |

**SECTION A ANSWER SHEET**

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

**SECTION A (20 marks)**

Answer all questions. Each carries 1 mark.

**1.** Which pair consists of composite numbers only?

- A. 21 and 27
- B. 23 and 27
- C. 19 and 21
- D. 17 and 29

**2.** A club has 72 badges, 108 pencils and 90 cards. It makes the largest possible number of identical gift packs using every item. How many packs can it make?

- A. 6
- B. 9
- C. 18
- D. 36

**3.** The temperature at a camp was  $11^{\circ}\text{C}$ . It fell by  $17^{\circ}\text{C}$  overnight. What was the new temperature?

- A.  $-28^{\circ}\text{C}$
- B.  $6^{\circ}\text{C}$
- C.  $28^{\circ}\text{C}$
- D.  $-6^{\circ}\text{C}$

**4.** A machine was expected to take  $\frac{1}{8}$  hour to make each of 48 parts, but actually took  $\frac{1}{6}$  hour per part. Which expression gives the extra total time?

- A.  $48 \div (\frac{1}{6} - \frac{1}{8})$
- B.  $48 \times (\frac{1}{6} + \frac{1}{8})$
- C.  $48 \times (\frac{1}{6} - \frac{1}{8})$
- D.  $(\frac{1}{8} - \frac{1}{6}) \div 48$

**Working Space**

**Working Space****SECTION A (20 marks)**

Answer all questions. Each carries 1 mark.

5. A learner solves  $3^{x+1} = 81$ . What is  $x$ ?

- A. 4
- B. 2
- C. 5
- D. 3

6. A display has 135 models:  $x$  houses, three times as many vehicles, and some boats. Which expression gives the number of boats?

- A.  $135 + 4x$
- B.  $4x - 135$
- C.  $135 - 3x$
- D.  $135 - 4x$

7. A workshop admits at least 18 learners but fewer than 30. Which inequality describes the number  $n$  admitted?

- A.  $18 \leq n < 30$
- B.  $18 < n \leq 30$
- C.  $18 \leq n \leq 30$
- D.  $18 < n < 30$

8. The matrix below records sales in two shops. What is its order?

$$\begin{bmatrix} 6 & 9 & 4 & 8 \\ 7 & 3 & 5 & 2 \end{bmatrix}$$

- A.  $4 \times 2$
- B.  $2 \times 4$
- C.  $1 \times 8$
- D.  $8 \times 1$

**SECTION A (20 marks)**

Answer all questions. Each carries 1 mark.

**9.** The tip of a rotating arm 1.2 m long turns through  $150^\circ$ . What distance does it travel, correct to 2 decimal places?

- A. 1.57 m
- B. 3.14 m
- C. 7.54 m
- D. 6.28 m

**10.** An open cylinder has internal radius 4 cm. Water is 15 cm deep. What area of the cylinder is in contact with water, to 2 decimal places?

- A.  $50.27 \text{ cm}^2$
- B.  $427.26 \text{ cm}^2$
- C.  $376.99 \text{ cm}^2$
- D.  $477.52 \text{ cm}^2$

**11.** A rectangular tank has internal dimensions 28 cm by 15 cm by 12 cm. What is its capacity?

- A. 504 litres
- B. 50.4 litres
- C. 0.504 litres
- D. 5.04 litres

**12.** A liquid has temperature  $-12^\circ\text{C}$ . Using  $K = ^\circ\text{C} + 273$ , what is its temperature in kelvin?

- A.  $-285 \text{ K}$
- B.  $285 \text{ K}$
- C.  $261 \text{ K}$
- D.  $-261 \text{ K}$

**Working Space**

**Working Space****SECTION A (20 marks)**

Answer all questions. Each carries 1 mark.

**13.** Use the charges table below. An account has Ksh 5 600. Its owner sends Ksh 1 750, then withdraws Ksh 2 200. What balance remains, including both charges?

| Amount (Ksh) | Send | Withdraw |
|--------------|------|----------|
| 1-2 000      | 18   | 25       |
| 2 001-4 000  | 28   | 35       |

- A. Ksh 1 597
- B. Ksh 1 615
- C. Ksh 1 632
- D. Ksh 1 650

**14.** A length was estimated as 624 mm. Its actual value is 650 mm. What is the percentage error?

- A. 26%
- B. 4%
- C. 96%
- D. 4.17%

**15.** A quadrilateral has exactly one pair of parallel sides. What is its name?

- A. Rhombus
- B. Rectangle
- C. Trapezium
- D. Parallelogram

**16.** A 420 m road is represented on a plan at a scale of 1 : 3 500. How long is the road on the plan?

- A. 120 cm
- B. 1.2 cm
- C. 12 cm
- D. 0.12 cm

**SECTION A (20 marks)**

Answer all questions. Each carries 1 mark.

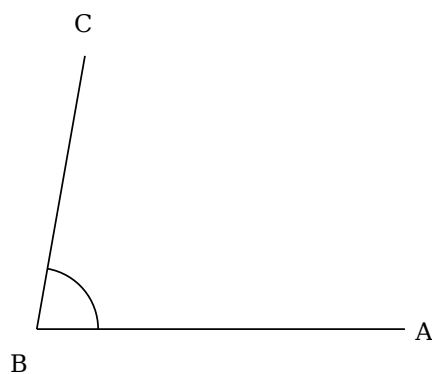
**17.** A line has equation  $4y - 3x = 8$ . What is the gradient of a line perpendicular to it?

- A.  $-4/3$
- B.  $4/3$
- C.  $3/4$
- D.  $-3/4$

**18.** An 18 cm design is reduced using a scale factor of  $5/6$ . What is its new length?

- A. 108 cm
- B. 15 cm
- C. 3 cm
- D. 21.6 cm

**19.** The angle is drawn accurately. Use a protractor to measure angle ABC.



- A.  $80^\circ$
- B.  $70^\circ$
- C.  $110^\circ$
- D.  $100^\circ$

**20.** Each letter of COMMUNITY is written on a separate card. One card is chosen at random. What is the probability of choosing M?

- A.  $1/9$
- B.  $2/7$
- C.  $1/3$
- D.  $2/9$

**Working Space**

**SECTION B (80 marks)**

Answer all questions in the spaces provided.

**21.** A cooperative plans to pack 15 000 food parcels. By Wednesday it has packed 9 467 parcels.

(a) Calculate the number of parcels still to be packed. **(1 mark)**

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(b) Write the number already packed in words. **(1 mark)**

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(c) Round the number already packed to the nearest hundred. **(1 mark)**

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**22.** A cubical storage compartment has an internal edge of 1.8 m.

(a) Calculate its internal volume. **(2 marks)**

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(b) Cubical boxes of edge 30 cm are stacked with their faces parallel to the walls. Determine the maximum number that fit inside. **(2 marks)**

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**23.** Three classes contribute exercise books in the ratio 3 : 4 : 5. They contribute 264 books altogether.

(a) How many books does the first class contribute? **(3 marks)**

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(b) How many more books does the second class contribute than the first? **(2 marks)**

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**24.** Eight identical packing machines, working 5 hours a day, complete an order in 9 days. How many days would six such machines working 6 hours a day take to complete the same order? Assume a constant rate for each machine. **(4 marks)**

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**25.** Express  $0.272727\dots$  as a fraction in its simplest form. The pair of digits 27 repeats. **(4 marks)**

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**26.** A tailoring group buys two rolls of cloth and three reels of thread for Ksh 780. Three rolls of the same cloth and two reels of the same thread cost Ksh 920. Find the cost of one roll of cloth and one reel of thread. **(4 marks)**

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**27.** Two stores, P and Q, record bags of beans, rice and maize flour received in two weeks.

| Week 1 | Beans | Rice | Maize flour |
|--------|-------|------|-------------|
| P      | 12    | 18   | 9           |
| Q      | 16    | 11   | 14          |

| Week 2 | Beans | Rice | Maize flour |
|--------|-------|------|-------------|
| P      | 8     | 7    | 6           |
| Q      | 5     | 13   | 10          |

(a) Form a matrix for each week. Use stores as rows and the items in the order shown as columns. **(1 mark)**

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(b) Use matrix addition to find the total bags of each item received by each store. **(1 mark)**

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**28.** A straight line on a coordinate plan passes through  $(-2, 5)$  and has gradient  $-3/2$ .

(a) Determine its equation. **(2 marks)**

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(b) Find the coordinates of its x-intercept. **(2 marks)**

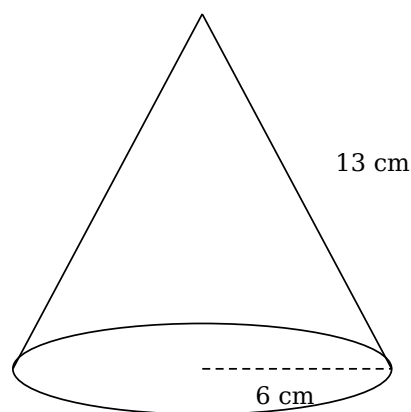
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**29.** A solid cone has base radius 6 cm and slant height 13 cm, as shown.



Calculate its total surface area, including the base, correct to 2 decimal places. **(5 marks)**

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**30.** A solid sphere of radius 3 cm is completely submerged in water in a cylindrical vessel of internal radius 4.5 cm. No water spills. Calculate the rise in water level, correct to 1 decimal place. **(4 marks)**

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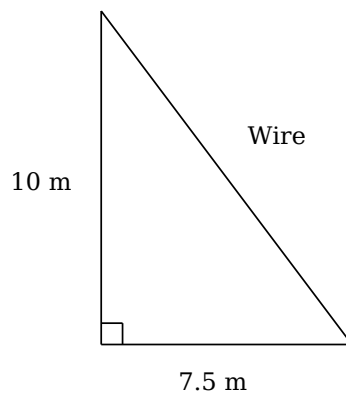
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**31.** A straight support wire runs from the top of a vertical 10 m pole to level ground 7.5 m from the pole's foot.



(a) Calculate the length of the wire. **(2 marks)**

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(b) A sample of the wire material has mass 2.625 kg and volume  $750 \text{ cm}^3$ . Calculate its density in  $\text{g/cm}^3$ . **(2 marks)**

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**32.** A live programme starts at a station at longitude  $63^{\circ}\text{W}$  at 8.15 a.m. on Friday. Determine the local time and day at a receiving station at longitude  $27^{\circ}\text{E}$ . Ignore signal travel time. **(4 marks)**

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**33.** Imported equipment has a customs value of Ksh 840 000. For this transaction, use the following charges:

- Import duty: 12% of the customs value.
- Excise duty: 10% of (customs value + import duty).
- VAT: 16% of (customs value + import duty + excise duty).

(a) Calculate the import duty. **(2 marks)**

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(b) Calculate the excise duty. **(2 marks)**

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(c) Calculate the VAT. **(1 mark)**

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**34.** A panel is represented by parallelogram PQRS.  $PQ = 6.8$  cm,  $PS = 5.0$  cm and angle  $SPQ = 60^\circ$ . Use a ruler and a pair of compasses only. Leave all construction arcs visible.

(a) Construct parallelogram PQRS. **(3 marks)**

(b) Construct the perpendicular from S to meet PQ at E. Measure SE to the nearest millimetre. **(2 marks)**

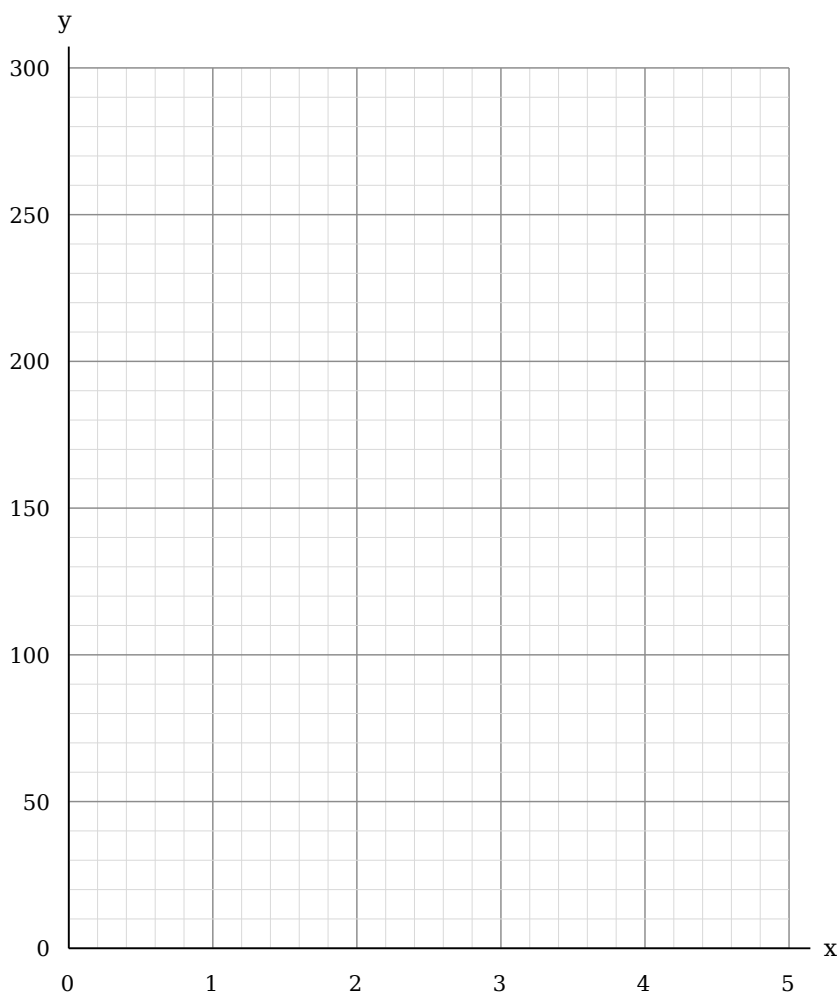
SE = ..... cm

**35.** A delivery service charges a fixed booking fee of Ksh 60 and Ksh 40 for each kilometre. The charge  $y$  shillings for  $x$  kilometres is  $y = 40x + 60$ .

(a) Complete the table. **(1 mark)**

| <b>x kilometres</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|---------------------|----------|----------|----------|----------|----------|----------|
| y shillings         | 60       |          | 140      |          | 220      | 260      |

(b) On the grid, draw the graph of  $y = 40x + 60$  for  $0 \leq x \leq 5$ . **(2 marks)**



**36.** The angle of elevation of the top of a vertical mast from a point 46 m from its foot on level ground is  $34^\circ$ . Calculate the height of the mast, correct to 1 decimal place. **(2 marks)**

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**37.** A surveyor walks 60 m from A on a bearing of  $030^\circ$  to B, then 80 m from B on a bearing of  $120^\circ$  to C.

(a) Using a scale of 1 cm to represent 20 m, draw the relative positions of A, B and C. Show north lines. **(3 marks)**

(b)(i) Use the drawing to determine the direct distance AC. **(1 mark)**

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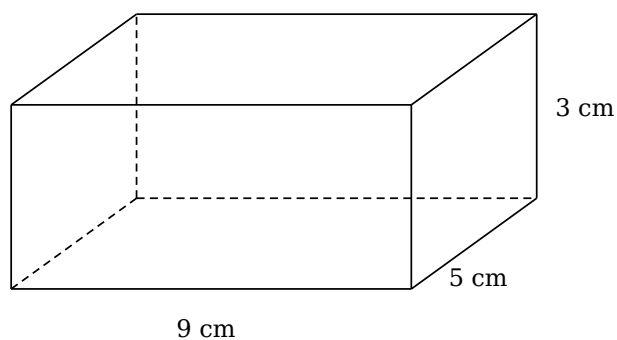
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(b)(ii) Use the drawing to determine the bearing of C from A. **(1 mark)**

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**38.** A closed cuboidal box has the dimensions shown.



(a) Draw a net of the box and label its dimensions. **(2 marks)**

(b) Use the net to calculate the total surface area of the box. **(3 marks)**

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**39.** The heights, in centimetres, of 20 young plants are recorded below.

12, 16, 20, 14, 18, 16, 22, 14, 16, 18,  
12, 20, 16, 14, 18, 22, 16, 20, 14, 18

(a) Prepare a frequency distribution table. **(2 marks)**

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(b)(i) Calculate the mean height. **(2 marks)**

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(b)(ii) Determine the median height. **(1 mark)**

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**40.** A fair spinner has three equal sectors labelled A, B and C. It is spun once while a fair coin is tossed.

(a) List the sample space as ordered pairs, spinner result first. **(2 marks)**

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(b) Find the probability of obtaining B on the spinner and a tail on the coin. **(1 mark)**

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