

503

# MATHEMATICS

Mar. 2022 – 2 hours



## INSTRUCTIONS TO CANDIDATES (Please read these instructions carefully)

1. You have been given this question booklet and a separate answer sheet. The question booklet contains 50 questions.
2. Do any necessary rough work in this booklet.
3. When you have chosen your answer, mark it on the **ANSWER SHEET**, not in this question booklet.

### HOW TO USE THE ANSWER SHEET

4. Use an ordinary pencil.
5. Confirm that the answer sheet that you have been provided with has the following:

**YOUR INDEX NUMBER**  
**YOUR NAME**  
**NAME OF YOUR SCHOOL**

6. Do not make any marks outside the boxes.
7. Keep the sheet as clean as possible and do not fold it.
8. For each of the questions 1–50, four answers are given. The answers are lettered A, B, C and D. In each case only **ONE** of the four answers is correct. Choose the correct answer.
9. On the answer sheet, show the correct answer by drawing a **dark line** inside the box in which the letter you have chosen is written.

### Example:

#### In the Question Booklet:

12. What is the value of  $\frac{6(24-18)+6 \times 4}{6}$ ?

- A. 30
- B. 25
- C. 10
- D. 28

The correct answer is C.

#### On the answer sheet:

In the set of boxes numbered 12, draw a **dark line** inside the box with the letter C printed in it as indicated below.

[A]  [B]  [C]  [D]

10. Your **dark line MUST** be inside the box.
11. For each question **ONLY ONE** box is to be marked in each set of four boxes.

This Question Paper consists of 16 printed pages.



1. What is seventy six thousand five hundred forty three and two hundredths in numerals?
  - A. 76543.002
  - B. 76543.200
  - C. 76543.02
  - D. 76543.2
  
2. How many groups of a hundred are there in the total value of digit 3 in the number 973604?
  - A. 30
  - B. 300
  - C. 3000
  - D. 300000
  
3. What is  $\frac{1}{4}$ ,  $\frac{5}{11}$ ,  $\frac{6}{7}$ ,  $\frac{3}{8}$  arranged in descending order?
  - A.  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{5}{11}$ ,  $\frac{6}{7}$
  - B.  $\frac{3}{8}$ ,  $\frac{6}{7}$ ,  $\frac{5}{11}$ ,  $\frac{1}{4}$
  - C.  $\frac{5}{11}$ ,  $\frac{3}{8}$ ,  $\frac{6}{7}$ ,  $\frac{1}{4}$
  - D.  $\frac{6}{7}$ ,  $\frac{5}{11}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$
  
4. What is the value of  $7\frac{1}{2} + 1\frac{1}{4}$  of  $3\frac{1}{6} + 2\frac{1}{2}$ ?
  - A.  $7\frac{25}{38}$
  - B.  $9\frac{1}{12}$
  - C.  $11\frac{1}{12}$
  - D.  $17\frac{19}{48}$
  
5. What is the next number in the pattern:  
85,66,49,36,\_\_\_\_?
  - A. 11
  - B. 23
  - C. 25
  - D. 47

6. What is 19.347 to the nearest hundredths?
- A. 19.30
  - B. 19.34
  - C. 19.35
  - D. 19.350
7. What is the value of  $0.63 + 45.4 - 0.07 + 0.2$ ?
- A. 46.16
  - B. 45.76
  - C. 45.53
  - D. 45.16
8. There are 600 animals in a farm. 0.32 are cows, 0.11 are sheep and the rest are goats. How many goats are in the farm?
- A. 66
  - B. 192
  - C. 258
  - D. 342
9. In a census carried out in a certain town, the number of women was 5 236 and that of men was 580 less than the number of women. The number of children was half the number of adults. What was the total population of the town?
- A. 16 578
  - B. 14 838
  - C. 9 892
  - D. 4 656
10. Three bells ring at intervals of 30 minutes, 40 minutes and 48 minutes. The bells rang together at 1230 h. What time, in a.m./p.m., will they ring together next?
- A. 8.30 p.m.
  - B. 8.30 a.m.
  - C. 4.30 p.m.
  - D. 4.30 a.m.

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11. The table below shows the quantity of maize flour consumed in a school for one week. The quantity for Wednesday is not indicated.

Day	Mon	Tue	Wed	Thur	Fri	Sat	Sun
Mass in kg	40	55	—	30	47	30	48

The average mass of the flour consumed that week was 45 kg. What was the quantity of the flour consumed on Wednesday?

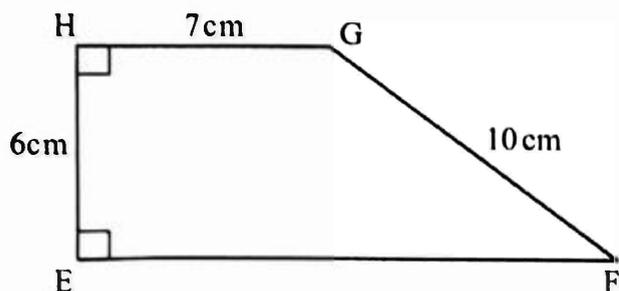
- A. 30  
 B. 41.7  
 C. 43.5  
 D. 65
12. The area of a square plot of land is  $1296\text{ m}^2$ . It was fenced using four strands of barbed wire. What was the total length of the barbed wire used?
- A. 36m  
 B. 144m  
 C. 576m  
 D. 5184m
13. A matatu left Nairobi for Mombasa at 1935h on Monday. The journey took 11 hours 55 minutes. What time and day did it reach Mombasa?
- A. 0730 h, Tuesday  
 B. 0730 h, Wednesday  
 C. 0740 h, Monday  
 D. 1930 h, Tuesday
14. The area of a triangular piece of land is 3 hectares. It has a base of 500 metres. What is its height in metres?
- A. 6  
 B. 12  
 C. 60  
 D. 120

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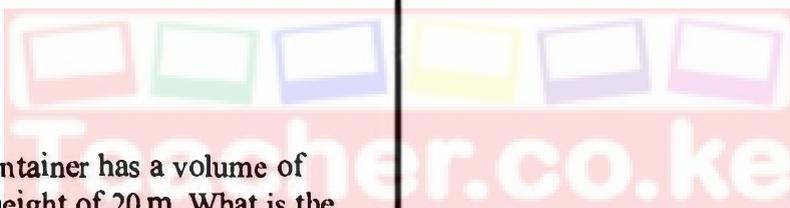


15. The area of the trapezium EFGH shown below is  $66\text{cm}^2$ .



What is the length of EF?

- A. 4cm  
 B. 8cm  
 C. 15cm  
 D. 22cm
16. A room measuring 10 m long, 8 m wide and 5 m high has all the walls painted. The door and windows occupy an area of  $72\text{m}^2$ . What was the total area of the walls that were painted?
- A.  $108\text{m}^2$   
 B.  $180\text{m}^2$   
 C.  $252\text{m}^2$   
 D.  $340\text{m}^2$
17. A cylindrical container has a volume of  $3080\text{m}^3$  and a height of 20 m. What is the diameter of the container in metres?
- (Take  $\pi = \frac{22}{7}$ )
- A. 154  
 B. 49  
 C. 14  
 D. 7



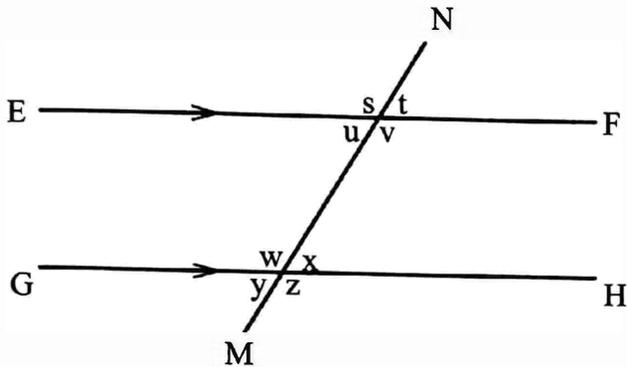
18. A metallic library door is made up of a rectangular frame with a semicircular shape on top. The height of the frame is 2 m and its width is 1.4 m. What is the area of the door?

(Take  $\pi = \frac{22}{7}$ )

- A.  $2.59\text{m}^2$   
B.  $2.80\text{m}^2$   
C.  $3.36\text{m}^2$   
D.  $3.57\text{m}^2$
19. The area of a right angled triangle is  $24\text{cm}^2$ . The height of the triangle is 8 cm. What is the length of the longest side?
- A. 3cm  
B. 6cm  
C. 10cm  
D. 14cm
20. A square based tank of side 4 metres has a height of 5 metres. The tank contains water to a height of 2 metres. How many litres of water is required to fill the tank?
- A. 480000  
B. 80000  
C. 48000  
D. 32000
21. A milk factory was supplied with 3 000 litres of milk by some farmers. The milk was then packed into 2-decilitre packets. How many packets were obtained?
- A. 30000  
B. 15000  
C. 6000  
D. 1500

22. Electricity poles are fixed at equal intervals of 50 metres apart. A total of 51 poles are used along one side of a street in a town. What is the total distance between the first and the last pole?
- A. 2450m  
B. 2500m  
C. 2550m  
D. 2600m

23. In the figure shown below, line EF is parallel to line GH. Line MN is a transversal.



Which one of the following statements is correct?

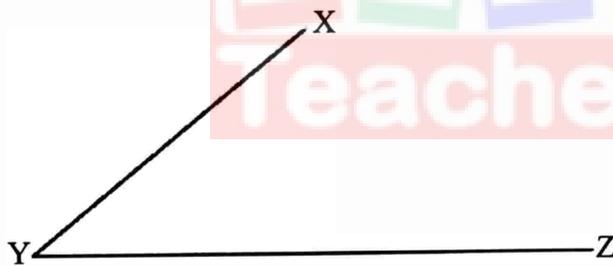
- A. Angle  $(t + u) = 180^\circ$   
B. Angle  $(u + x) = 180^\circ$   
C. Angle  $(s + w) = 180^\circ$   
D. Angle  $(u + w) = 180^\circ$
24. What is the product of the number of vertices and the number of edges of a triangular prism?
- A. 54  
B. 45  
C. 30  
D. 15

25. Construct an equilateral triangle of side 6 cm. Construct a circle touching all the vertices of the triangle. What is the radius of the circle?
- A. 1.6 cm  
B. 3.2 cm  
C. 3.5 cm  
D. 7.0 cm

26. The following are properties of quadrilaterals:
- (i) *Has two pairs of parallel lines.*  
(ii) *All angles are not equal.*  
(iii) *Diagonals are not equal and bisect at  $90^\circ$ .*  
(iv) *Diagonals bisect the interior angles.*

Which pair of the properties above describe both a rhombus and a square?

- A. (i) and (iii)  
B. (i) and (iv)  
C. (ii) and (iv)  
D. (iii) and (iv)
27. What is the size of the supplement of angle XYZ drawn below?



- A.  $320^\circ$   
B.  $140^\circ$   
C.  $50^\circ$   
D.  $40^\circ$



28. What is the value of  $\frac{m+n^2}{2t-1}$ , when

$$m = 3, t = m - 1 \text{ and } n = t + 5?$$

- A.  $3\frac{1}{3}$
- B.  $5\frac{2}{3}$
- C.  $17\frac{1}{3}$
- D.  $33\frac{1}{3}$

29. Peter has sh  $x$  and Maria has four times as much money as Peter. Ali has sh 7 less than Maria. How much money do they have altogether?

- A. sh  $(5x - 7)$
- B. sh  $(6x - 7)$
- C. sh  $(9x - 7)$
- D. sh  $(9x + 7)$

30. A teacher shared 20 books amongst Kevin, Jane and Aron. Jane got twice as many books as Kevin. Aron got four books less than Kevin. How many books did Aron get?

- A. 2
- B. 6
- C. 8
- D. 12

31. What is the value of  $y$  in the equation,

$$2y + \frac{4(y+3)}{5} = 12?$$

- A.  $3\frac{3}{7}$
- B.  $4\frac{1}{14}$
- C.  $5\frac{1}{7}$
- D. 8



32. The cash price of a water tank is sh 22 500. The hire purchase price of the tank is 15% more than the cash price. Otieno bought the tank on hire purchase terms. He finally paid sh 22 000 as total monthly instalments. How much money did he pay as deposit?
- A. sh 25 875  
B. sh 3875  
C. sh 3375  
D. sh 3300
33. Mama Yusuf bought the following items from a shop:
- 2 packets of funga @ sh 130*  
*5 loaves of bread @ sh 50*  
 *$4\frac{1}{2}$  litres of milk @ sh 60 per litre*  
*3 kg of sugar for sh 270*
- She paid for the items using 2 one thousand shilling notes. How much balance did she receive?
- A. sh 1 050  
B. sh 950  
C. sh 510  
D. sh 410
34. A trader sold an item for sh 1 700 making a loss of 15%. How much would the trader have sold the item to get a profit of 20%?
- A. sh 1 785  
B. sh 2000  
C. sh 2040  
D. sh 2400

35. A salesman earns a basic salary of sh 20 000 per month. He is also paid a commission of 10.5% on goods sold above sh 100 000. In a certain month, he earned a total of sh 41 000. What was his total sales for that month?

- A. sh 120000
- B. sh 161000
- C. sh 200000
- D. sh 300000

36. What is  $\frac{1}{4}(24x+28y)+\frac{1}{3}(9x-6y)$

expressed in its simplest form?

- A.  $9x+y$
- B.  $9x+5y$
- C.  $9x+9y$
- D.  $9x+22y$

37. What is 1:4 written as a percentage?

- A. 20
- B. 25
- C. 80
- D. 140

38. Rotich invested sh 36 000 in a bank. The bank paid compound interest at the rate of 10% per annum. How much interest did he earn at the end of two years?

- A. sh 43560
- B. sh 43200
- C. sh 7560
- D. sh 7200

39. Construct a parallelogram MNOP such that line  $MN = 3.5$  cm, line  $NO = 6.5$  cm and angle  $MNO = 60^\circ$ . What is the measure of the length of the longer diagonal?

- A. 5.7 cm
- B. 6.5 cm
- C. 8.7 cm
- D. 10.0 cm

40. Two hundred and fifty babies were immunised at a hospital in a certain month. This number increased by 20% the next month. How many babies were immunised after the increase?

- A. 50
- B. 200
- C. 270
- D. 300

41. A pupil scored the following marks in a test:

<i>Mathematics</i>	80%
<i>English</i>	84%
<i>Kiswahili</i>	90%
<i>Science</i>	78%
<i>Social Studies &amp; Religious Education</i>	68%

The marks were represented on a pie chart. What angle represented the Kiswahili score?

- A.  $81^\circ$
- B.  $90^\circ$
- C.  $100^\circ$
- D.  $279^\circ$

42. A road measuring 4 cm on a map has an actual distance of 8 km. What is the scale used in drawing the map?

- A. 1: 200000
- B. 1: 20000
- C. 1:2000
- D. 1:200



3. The table below shows a train travel timetable from station L to station P.

Station	Arrival time	Departure time
L	—	0720h
M	0904h	0936h
N	1102h	1127h
O	1308h	1338h
P	1450h	—

Between which two stations did the train take the longest time to travel?

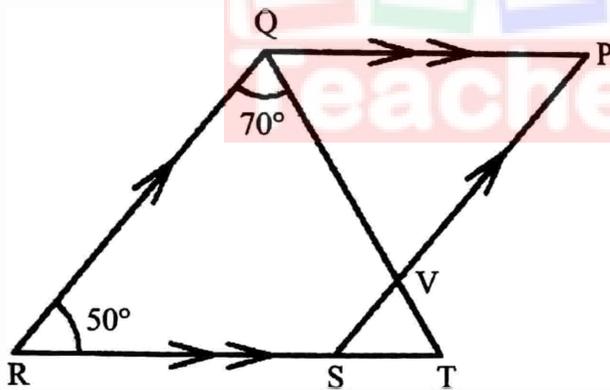
- A. O and P  
 B. N and O  
 C. M and N  
 D. L and M
4. The ages of 8 learners at Elimu School were recorded as follows:  
 10, 13, 7, 14, 8, 6, 15, 7.  
 What was the median age of the learners?
- A. 7  
 B. 9  
 C. 10  
 D. 11
5. Mrs Kamau paid sh 12 000 for a television set after she was given a discount of 20%.  
 What was the marked price of the set?
- A. sh 9600  
 B. sh 10000  
 C. sh 14400  
 D. sh 15000

46. The table below shows the cost of breakfast in a restaurant.

	Coffee	Tea	Cocoa
Fried eggs	sh 50	sh40	sh60
Sandwich	sh60	sh60	sh80
Chapati	sh45	sh35	sh55

A group of 14 pupils took breakfast in the restaurant. Four pupils took tea with fried eggs, five pupils took cocoa with chapati and the rest took cocoa with sandwich. How much money did they pay altogether?

- A. sh330  
 B. sh435  
 C. sh485  
 D. sh835
47. In the figure below PQRS is a parallelogram. Lines QP and RT are parallel. Lines RQ and SP are parallel. Angle QRS =  $50^\circ$  and angle RQT =  $70^\circ$ .

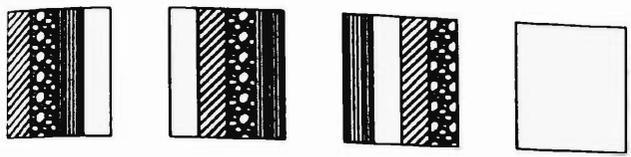


What is the size of angle PQV?

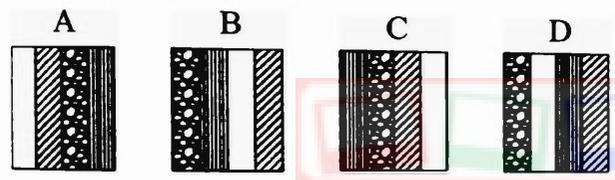
- A.  $60^\circ$   
 B.  $110^\circ$   
 C.  $120^\circ$   
 D.  $130^\circ$

48. Twenty four men working at the same rate can finish a job in 6 days. Eight men failed to turn up to do the job. How many more days will the remaining men working at the same rate take to finish the same job?
- A. 3
  - B. 4
  - C. 9
  - D. 15

49. The figure below shows a pattern of shapes.



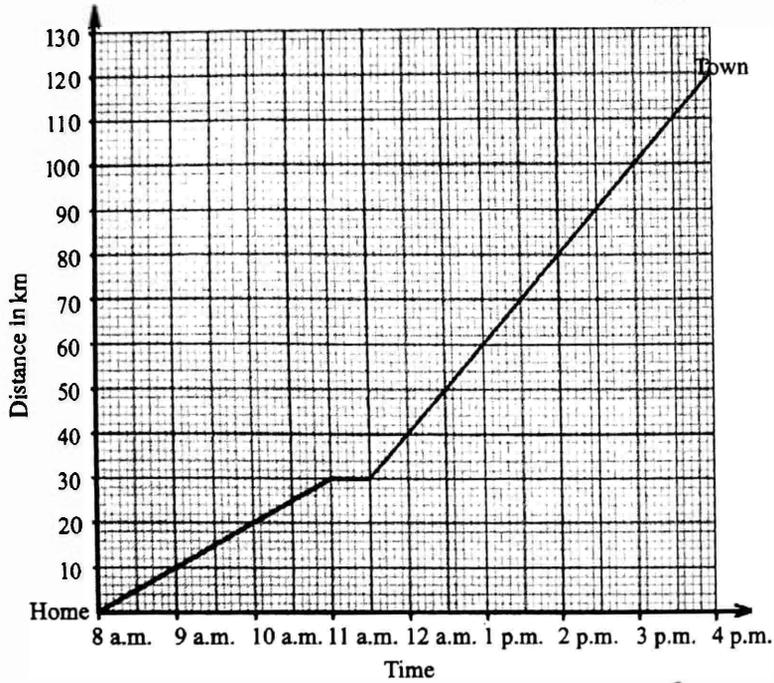
Which one of the the shapes below should be drawn in the blank box to continue with the pattern?



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50. The graph below shows a journey of a motor cyclist from home to town. On the way, he got a puncture and stopped to repair it. He then continued with the journey to town.

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What was his average speed for the whole journey?

- A. 10 km/h
- B. 13 km/h
- C. 15 km/h
- D. 16 km/h



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