KCPE 2003

MATHEMATICS

Time: 2 hours

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 only an ordinary pencil.

5. Make sure that you have written on the answer sheet:

   YOUR INDEX NUMBER
   YOUR NAME
   NAME OF YOUR SCHOOL

6. By drawing a **dark line** inside the correct numbered boxes mark your full Index Number (i.e. School Code Number and the three-figure Candidate's Number) in the grid near the top of the answer sheet.

7. Do not make any marks outside the boxes.

8. Keep the sheet as clean as possible and do not fold it.

9. 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.

10. On the answer sheet the correct answer is to be shown by drawing a **dark line** inside the box in which the letter you have chosen is written.

    Example
    In the Question Booklet:

    4. An empty box weighed 2·5 kg. Kombe packed books in the box until the total weight was 9·5 kg. If each book weighed 250 g, how many books were packed?
    A. 10
    B. 28
    C. 38
    D. 280

    The correct answer is B (28).

    On the answer sheet:

    4 |A| ▬ |C| |D| 14 |A| |B| |C| |D| 24 |A| |B| |C| |D| 34 |A| |B| |C| |D| 44 |A| |B| |C| |D|

    In the first set, the box with the letter B printed in it is marked.

11. Your **dark line** MUST be within the box.

12. For each question **ONLY ONE** box is to be marked in each set of four boxes.

This Question Paper consists of 13 printed pages and 3 blank pages.

30

1. What is the place value of digit 3 in the number 7830402?
   A. Hundred thousands
   B. Ten thousands
   C. Thousands
   D. Hundreds

2. What is the value of $3(5^2 - 4^2) + 51 \div 17$?
   A. $4\frac{10}{17}$
   B. 9
   C. 30
   D. 62

3. The heights of six pupils were recorded as 1·35 m, 1·42 m, 1·40 m, 1·50 m, 1·35 m and 1·38 m. What was the median height?
   A. 1·35 m
   B. 1·39 m
   C. 1·40 m
   D. 1·45 m

4. Florence bought 18 bags of fruits at sh 300 per bag. She spent sh 700 on transport. The fruits in two bags got spoilt and she sold the rest at sh 520 per bag. How much profit did she make?
   A. sh 8 320
   B. sh 3 260
   C. sh 2 920
   D. sh 2 220

5. Which one of the following is 30030030 in words?
   A. Thirty million three hundred and thirty.
   B. Thirty million three thousand and thirty.
   C. Thirty million thirty thousand and thirty.
   D. Thirty million three hundred thousand and thirty.

6. What is the value of $\dfrac{0 \cdot 31 \times 1 \cdot 02}{1 \cdot 2}$?
   A. 263·5
   B. 2·635
   C. 0·2635
   D. 0·02635

7. Wasilwa bought the following items from a shop:

   6 kg of sugar @ sh 45·00
   ½ kg of tea for sh 90·00
   3 kg of rice @ sh 30·00
   2 kg of cooking fat @ sh 70·00

   If he used a one thousand shillings note to pay for the items, what balance did he receive?
   A. sh 410
   B. sh 455
   C. sh 590
   D. sh 765

8. What is 468·3894 rounded off to the nearest tenth?
   A. 470
   B. 468·3
   C. 468·39
   D. 468·4

9. Kamau wants to get change for a sh 1000 note. The change is to consist of sh 500, sh 200, sh 100 and sh 50 notes. What is the smallest number of notes he can get?
   A. 4
   B. 5
   C. 6
   D. 7

10. Oloo slept at 2315 h on Sunday and woke up six hours later. On what day and time did he wake up?
    A. Sunday 5·15 am
    B. Monday 5·15 pm
    C. Monday 5·15 am
    D. Sunday 5·15 pm

11. What is the difference in value between the LCM of 8 and 12, and the GCD of 36 and 54?
    A. 104
    B. 84
    C. 14
    D. 6

12. What is the value of $\frac{7}{8}$ of $\left(\frac{4}{5} + \frac{1}{2}\right) \div \frac{1}{4}$?
    A. $\frac{91}{320}$
    B. $2\frac{7}{10}$
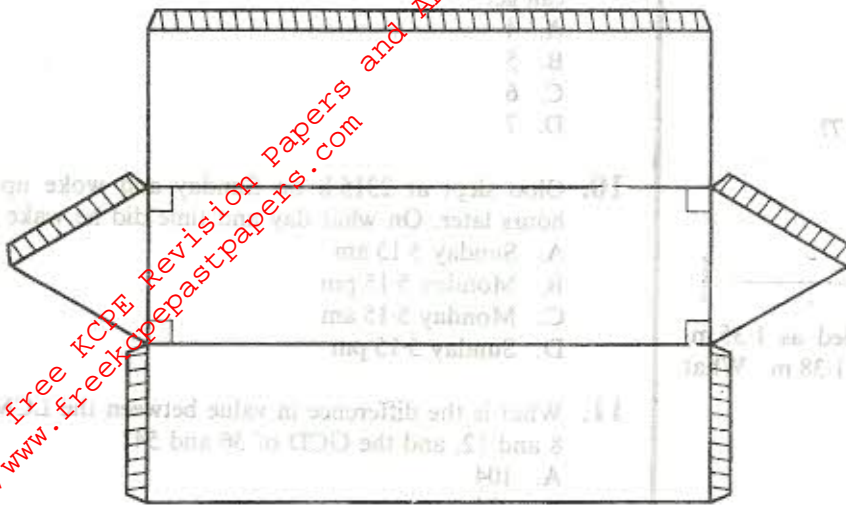   C. $4\frac{11}{20}$
    D. $4\frac{4}{5}$

13. A rectangular container measures 75 cm by 50 cm by 1 m. What is the capacity of the container in litres?
    A. 3 750 l
    B. 375 l
    C. 37·5 l
    D. 3·75 l

14. What is the measure of the interior angle XYZ of the quadrilateral WXYZ constructed below?

    A. 220°
    B. 140°
    C. 25°
    D. 20°

31
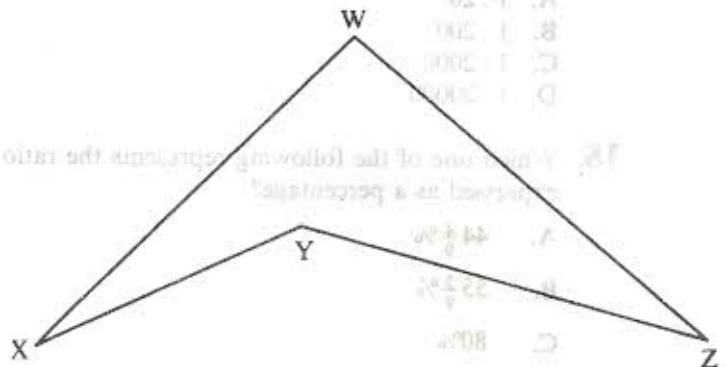
15. The figure below, shows a net made up of three rectangles and two triangles.

Which one of the following solids can be formed from this net?
A. rectangular prism
B. triangular pyramid
C. rectangular pyramid
D. triangular prism

16. A plot of land is made up of a semi-circle and a rectangle. The semi-circle has a diameter of 14 m while the rectangle measures 20 m by 5 m. What is the area of the plot?

(Take $\pi = \frac{22}{7}$)
A. 122 m²
B. 177 m²
C. 254 m²
D. 408 m²

17. A distance of 480 m is represented on a scale drawing by a line measuring 2·4 cm. What is the scale used?
A. 1 : 20
B. 1 : 200
C. 1 : 2000
D. 1 : 20000

18. Which one of the following represents the ratio 4 : 5 expressed as a percentage?

A. $44\frac{4}{9}\%$

B. $55\frac{5}{9}\%$

C. 80%

D. 125%

19. The table below shows the number of times the teams Simba, Moto and Dawa won, drew and lost in a competition. Three points were awarded for each game won, one point for each game drawn and no points for a game lost.

	SIMBA	MOTO	DAWA
WON	2	4	3
DRAWN	5	1	5
LOST	3	5	2

Which one of the following is the order in which the teams were ranked?

	1st	2nd	3rd
A.	Simba	Moto	Dawa
B.	Moto	Dawa	Simba
C.	Dawa	Simba	Moto
D.	Dawa	Moto	Simba

20. A shopkeeper bought cooking fat in 30 one kilogram packets and 20 five hundred gram packets. She repacked the fat in packets of 125 grams each. How many packets did she get?
A. 400
B. 320
C. 104
D. 32

21. The total number of pupils enrolled in schools in a district was 48 000. In a pie chart the number enrolled in secondary schools was represented by an angle of 120° while, that in the primary schools was represented by 150°. The rest were enrolled in the pre-primary schools. What was the number in the pre-primary schools?
A. 36 000
B. 20 000
C. 16 000
D. 12 000

22. Which one of the following sets of measurements can be used to construct a right-angled triangle?
A. $4\frac{1}{2}$ cm, 6 cm, 9 cm
B. $3\frac{3}{4}$ cm, $5\frac{1}{4}$ cm, 6 cm
C. $2\frac{1}{4}$ cm, 3 cm, $3\frac{3}{4}$ cm
D. $5\frac{1}{4}$ cm, 9 cm, $11\frac{1}{4}$ cm

23. In one year the population of gazelles in a pack was 3 400. In the following year, the population reduced by 25%. What was the size of the population of gazelles after the reduction?
A. 850
B. 4 250
C. 3 375
D. 2 550

24. The two parallel sides of a trapezium measure 16 cm and 12 cm. The perpendicular distance between the parallel sides is 8 cm. What is the area of the trapezium?
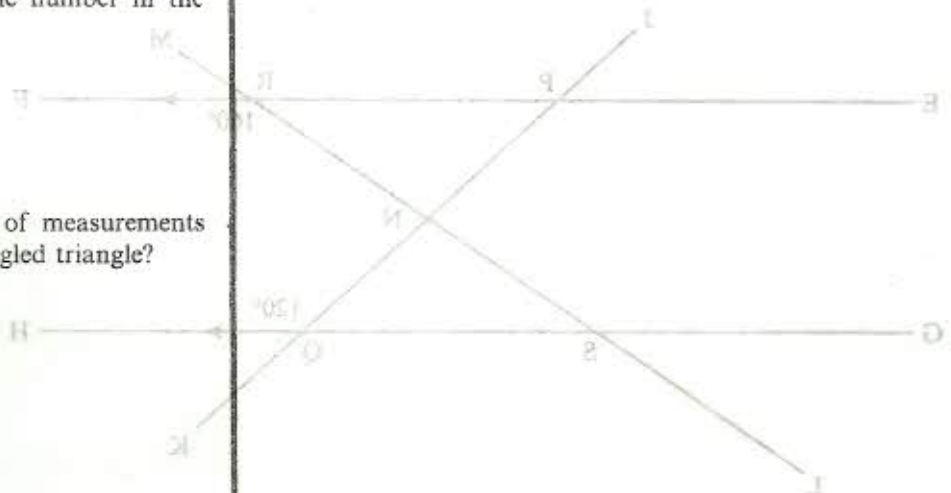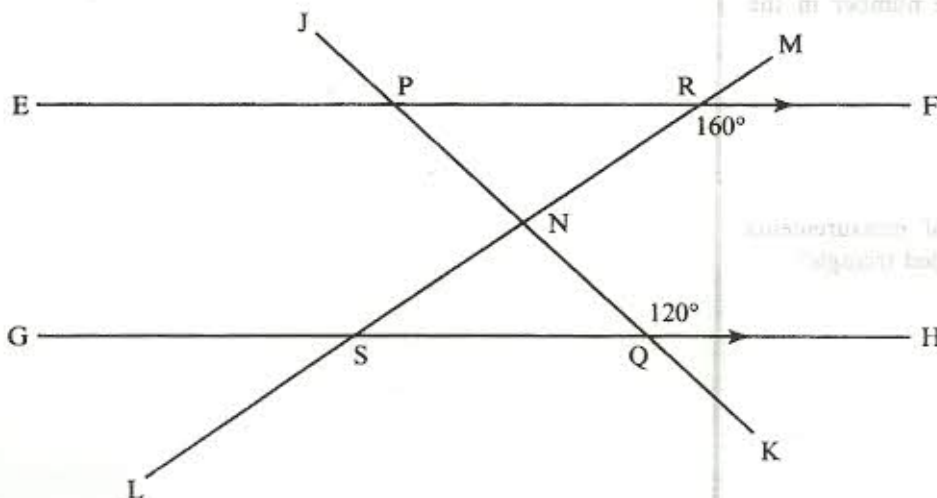A. 112 cm²
B. 208 cm²
C. 224 cm²
D. 160 cm²

25. The length of the two diagonals of a rhombus are 8 cm and 6 cm. What is the length of one side of the rhombus?
A. 3 cm
B. 4 cm
C. 5 cm
D. 10 cm

26. Amina paid sh 24 000 for a TV set after getting a 20% discount. What was the marked price of the TV set?
A. sh 30 000
B. sh 28 800
C. sh 19 200
D. sh 20 000

27. In the figure below, line EF is parallel to line GH. Lines JK and LM intersect at N. Angle NOH = 120° and angle NPF = 160°.

What is the size of angle PNS?
A. 100°
B. 80°
C. 60°
D. 20°

33

23. In one year the population of gazelles in a park was 3 400. In the following year, the population reduced by 25%. What was the size of the population of gazelles after the reduction?

A. 850
B. 4 250
C. 3 375
D. 2 550

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D. sh 20 000

27. In the figure below, line EF is parallel to line GH. Lines JK and LM intersect at N. Angle NQH = 120° and angle NRF = 160°.

What is the size of angle PNS?

A. 100°
B. 80°
C. 60°
D. 20°

28. Construct triangle PQR such that line QR = 8 cm, angle PQR = 45° and angle RPQ = 55°. What is the length of line PQ?

A. 6·8 cm
B. 6·6 cm
C. 13·7 cm
D. 9·6 cm

29. A Saleslady earns a basic salary of sh 4 000. For any sales above sh 10 000 she is also paid a commission. In one month she sold items worth sh 40 000 and earned a total of sh 4 900. What was her percentage commission?

A. $2\frac{3}{4}\%$
B. 3%
C. $16\frac{1}{3}\%$
D. $22\frac{1}{2}\%$

30. Agola bought n oranges and Mwangi bought $n + 1$ oranges. Mueni bought twice as many oranges as both Agola and Mwangi. Which one of the following expressions shows the total number of oranges they bought?

A. $6n + 3$
B. $5n + 2$
C. $4n + 2$
D. $2n + 3$

31. Twenty members of a group contributed sh 80 000 each to buy a piece of land. They already had sh 120 000 in a bank out of which sh 20 000 was to remain in the bank and the rest spent in buying the piece of land.

How much did the piece of land cost?
A. sh 1 720 000
B. sh 1 700 000
C. sh 1 600 000
D. sh 180 000

32. The diagram below represents triangle EFG in which line FG = 15 cm, line EG = 17 cm and angle EFG = 90°.
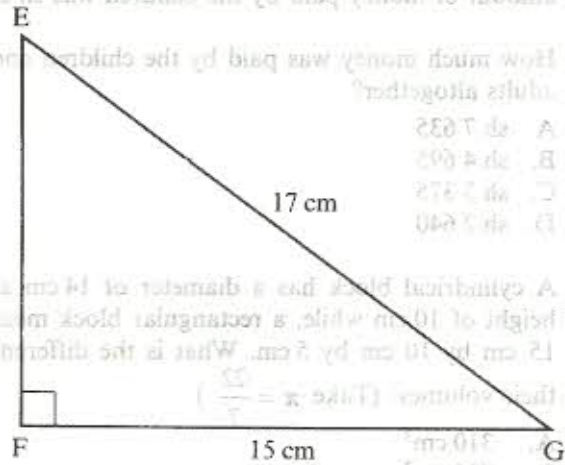
What is the area of the triangle?

A. 60 cm²
B. 68 cm²
C. 120 cm²
D. 127·5 cm²

33. Pupils in a school prepared a circular flower garden of diameter 28 metres. They dug holes each 4 metres apart along the circumference for planting flowers.

How many holes were dug? (Take $\pi = \frac{22}{7}$)
A. 154
B. 88
C. 11
D. 22

34. Jane deposited sh 2 000 in a bank that paid compound interest at the rate of 12% p.a. How much money was in her account at the end of two years?

A. sh 2508·80
B. sh 2480
C. sh 2240
D. sh 508·80

35. What is the value of x in the equation

$$\frac{3}{5}(x - 5) + \frac{2}{5}(3x + 5) = 10 ?$$

A. $6\frac{1}{9}$
B. $5\frac{5}{9}$
C. 5
D. $1\frac{2}{3}$

35

36. The number of children at a film show was 49 more than that of adults. The entry fee for each child was sh 15 while that of each adult was sh 30. The total amount of money paid by the children was sh 2 055.

How much money was paid by the children and the adults altogether?

A. sh 7 635
B. sh 4 695
C. sh 3 375
D. sh 2 640

37. A cylindrical block has a diameter of 14 cm and a height of 10 cm while, a rectangular block measures 15 cm by 10 cm by 5 cm. What is the difference in their volumes? (Take $\pi = \dfrac{22}{7}$)

A. 310 cm³
B. 790 cm³
C. 2290 cm³
D. 5410 cm³

38. A clock gains 12·5 seconds every hour. If it was set correctly at 8·00 am on Sunday, what time will it show when the correct time is 8·00 am on Thursday?

A. 8·25 am
B. 8·20 am
C. 8·10 am
D. 8·05 am

39. Kaole, Mwasi and Mbithe shared some money.

Mwasi got $\dfrac{2}{7}$ of the money and Mbithe got $\dfrac{2}{3}$ of the remainder. What fraction of the money did Kaole receive?

A. $\dfrac{16}{21}$
B. $\dfrac{11}{21}$
C. $\dfrac{5}{21}$
D. $\dfrac{1}{21}$

Working Space

40. The graph below shows a school advisor's journey from schools W to P through schools L, K and M.
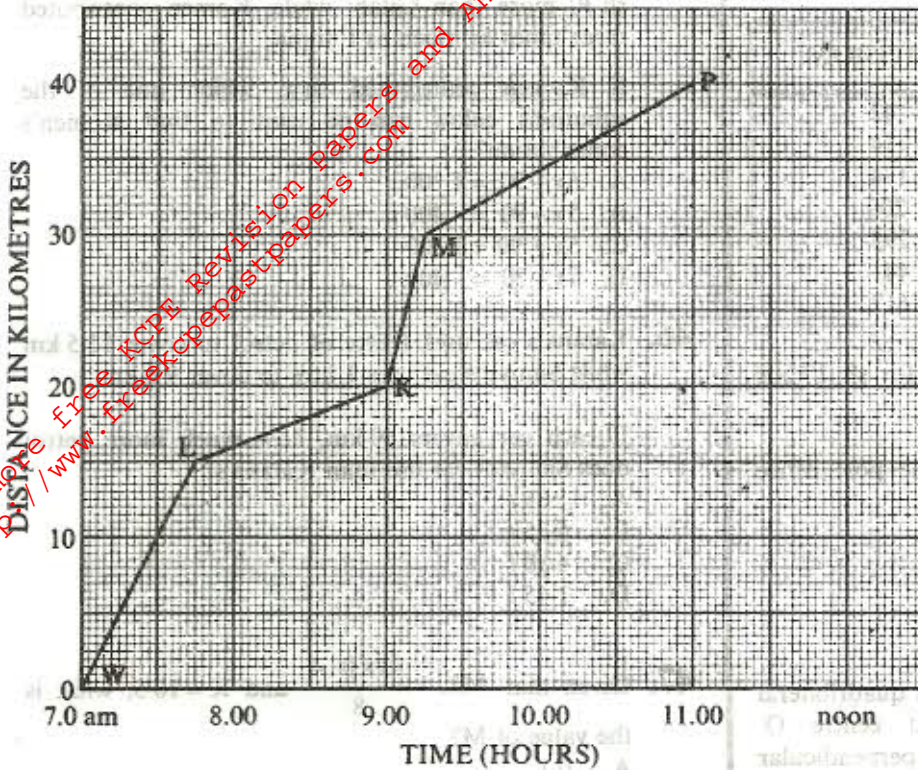
Between which two schools was she travelling at the highest speed?

A. M and P
B. K and M
C. L and K
D. W and L

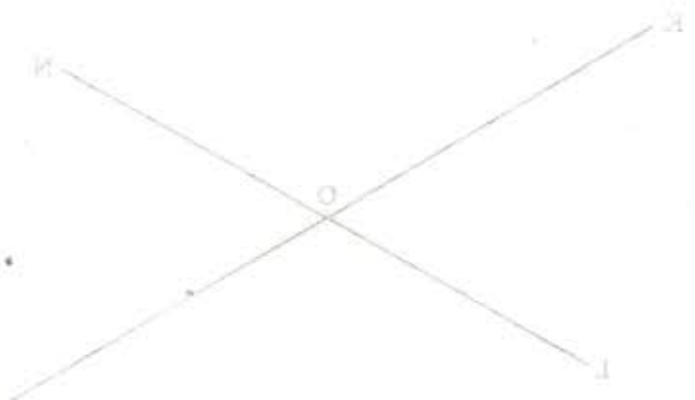**41.** An open cylinder has a radius of $3\frac{1}{2}$ cm and a height of 10 cm. What is its surface area?

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

A. 385 cm²
B. 220 cm²
C. $258\frac{1}{2}$ cm²
D. 297 cm²

Working Space

42. The table below shows the postal rates for sending a money order.

VALUE OF ORDER IN sh	COMMISSION
Not exceeding 500	sh
501 – 1 000	sh
1 001 – 3 000	sh
3 001 – 5 000	sh
5 001 – 10 000	sh
10 001 – 20 000	sh
20 001 – 20 000	sh

Mambo sent two money orders, one of and the other sh 10 000.

How much money did he pay at the altogether?

A. sh 236
B. sh 27 500
C. sh 28 276
D. sh 28 117

43. Below is part of the construction of a quadrilateral KLMN with diagonals meeting at point O. Complete the construction and draw a perpendicular from L to meet KN at P.

What is the length of LP?
A. 7.8 cm
B. 8.7 cm
C. 4.6 cm
D. 9.6 cm

44. Muya earns sh 3 400 after working for 24 days. How much money should he receive if he is absent for 6 days?

A. sh 1 350
B. sh 4 050
C. sh 7 200
D. sh 6 750

48. The floor of a square room is covered by four equal square carpets. The area of each carpet is $32\frac{1}{4}$ m².

What is the metres?

A. 6
B. 7
C. 3
D. 14

49. The hire purchase terms of a cupboard is a deposit of sh 4 400 and six monthly instalments of sh 900 each. The hire purchase price is 175% of the cost price while the cash price is 25% more than the cost price.

What is the cash price of the cupboard?

A. sh 9 800
B. sh 5 600
C. sh 7 840
D. sh 7 000

42. The table below shows the postal rates for sending a money order.

VALUE OF ORDER IN sh	COMMISSION
Not exceeding 500	sh 42
501– 1 000	sh 114
1 001– 3 000	sh 174
3 001– 5 000	sh 209
5 001–10 000	sh 295
10 001–20 000	sh 441
20 001–30 000	sh 617

Mambo sent two money orders, one for sh 17 500 and the other sh 10 000.

How much money did he pay at the post office altogether?

A. sh   736
B. sh 27 500
C. sh 28 236
D. sh 28 117

43. Below is part of the construction of a quadrilateral KLMN with diagonals meeting at centre O. Complete the construction and draw a perpendicular from L to meet KN at P.
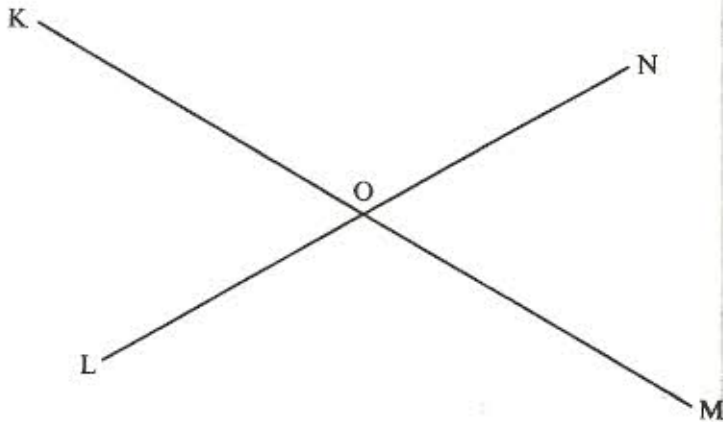
What is the length of LP?
A. 7·8 cm
B. 6·7 cm
C. 4·6 cm
D. 4·4 cm

44. Muya earns sh 5 400 after working for 24 days. How much money should he receive if he is absent for 6 days?
A. sh 1 350
B. sh 4 050
C. sh 7 200
D. sh 6 750

45. Three pupils Furaha, Gitahi and Komen contributed a total of sh 400 for a party. Furaha contributed sh 30 more than Gitahi while, Komen contributed three times as much as Furaha.

If Komen contributed sh x, which one of the equations below can be used to find Komen's contribution?
A. $5x - 90 = 1\ 200$
B. $5x - 90 = 400$
C. $5x + 90 = 1\ 200$
D. $7x - 30 = 400$

46. Katana's car uses 1 litre of petrol to cover 12·5 km while Simiyu's car uses 1 litre to cover 9·6 km.

If each car covers 60 km, how much more petrol does Simiyu's car use than Katana's?
A. 11·05 l
B. 6·25 l
C. 4·80 l
D. 1·45 l

47. Given that $MK = \dfrac{33 \times 0 \cdot 4}{8}$ and $K = 16 \cdot 5$, what is the value of M?
A. 0·1
B. 1
C. 0·01
D. 10

48. The floor of a square room is covered completely by four equal square carpets. The area of each carpet is $3\frac{22}{49}$ m^2.
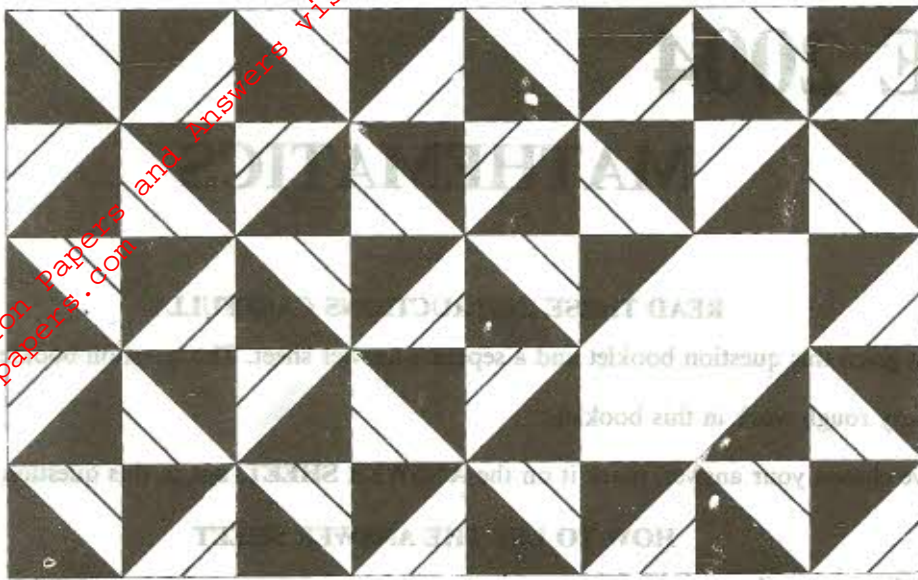
What is the length of one side of the room in metres?
A. $6\frac{44}{9}$
B. $7\frac{3}{7}$
C. $3\frac{5}{7}$
D. $1\frac{6}{7}$

49. The hire purchase terms of a cupboard is a deposit of sh 4 400 and six monthly instalments of sh 900 each. The hire purchase price is 175% of the cost price while the cash price is 25% more than the cost price.
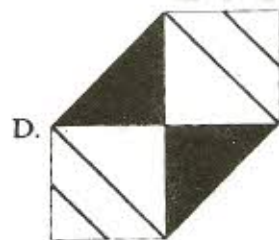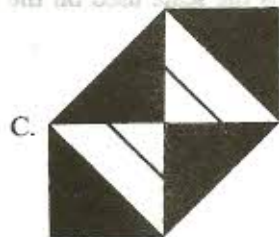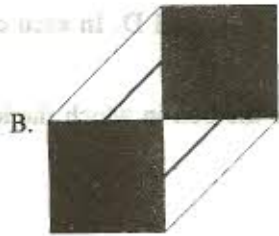
What is the cash price of the cupboard?
A. sh 9 800
B. sh 5 600
C. sh 7 840
D. sh 7 000

50.

Which one of the following shapes can complete the pattern above?

A.

B.

C.

D.