KCPE 2004

MATHEMATICS

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:

    44. A road measuring 3 cm on a map has an actual length of 12 kilometres. What is the scale used on the map?
    A. 1:4
    B. 1:400
    C. 1:4 000
    D. 1:400 000

    The correct answer is D (1:400 000).

    On the answer sheet:

    4 ⌊A⌋ ⌊B⌋ ⌊C⌋ ⌊D⌋ 14 ⌊A⌋ ⌊B⌋ ⌊C⌋ ⌊D⌋ 24 ⌊A⌋ ⌊B⌋ ⌊C⌋ ⌊D⌋ 34 ⌊A⌋ ⌊B⌋ ⌊C⌋ ⌊D⌋ 44 ⌊A⌋ ⌊B⌋ ⌊C⌋ ▬

    In the fifth set, the box with the letter D 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 15 printed pages and 1 blank page.

1. What is 399·90485 rounded off to the nearest hundredth?
   A. 400
   B. 399·905
   C. 399·90
   D. 399·9

2. What is the Greatest Common Divisor (GCD) of the numbers 32, 48 and 56?
   A. 8
   B. 168
   C. 672
   D. 86016

3. What is three million six thousand four hundred and seventy two less one thousand written in symbols?
   A. 3599472
   B. 3005472
   C. 3007472
   D. 3059472

4. Which is the correct order of writing the fractions $\frac{3}{8}, \frac{5}{16}, \frac{11}{32}, \frac{13}{48}$ from the largest to the smallest?
   A. $\frac{13}{48}, \frac{11}{32}, \frac{5}{16}, \frac{3}{8}$
   B. $\frac{3}{8}, \frac{5}{16}, \frac{11}{32}, \frac{13}{48}$
   C. $\frac{13}{48}, \frac{5}{16}, \frac{11}{32}, \frac{3}{8}$
   D. $\frac{3}{8}, \frac{11}{32}, \frac{5}{16}, \frac{13}{48}$

5. What is the place value of the digit 7 in the number 3470268?
   A. Thousands
   B. Ten thousands
   C. Seventy thousands
   D. Hundred thousands

6. In the figure below lines ST and SR are equal. Angle RPQ = 45° and angle PQR = 76°.
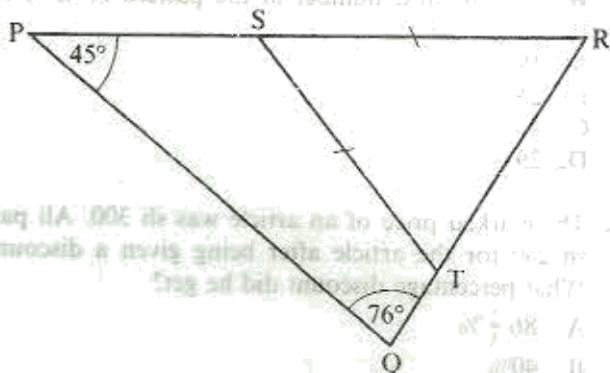
   What is the size of angle PST?
   A. 135°
   B. 121°
   C. 118°
   D. 62°

7. A company sold 2·5 tonnes of rice in 2-kg packets. How many packets were sold?
   A. 125
   B. 1250
   C. 2500
   D. 5000

8. Below is the number of tree seedlings planted by each pupil on a tree planting day:

   | 8 | 15 | 11 | 9 | 17 | 14 | 12 | 14 | 13 |
   | 10 | 18 | 8 | 9 | 16 | 13 | 13 | 10 | 12 |

   What was the mean number of seedlings planted by each pupil?
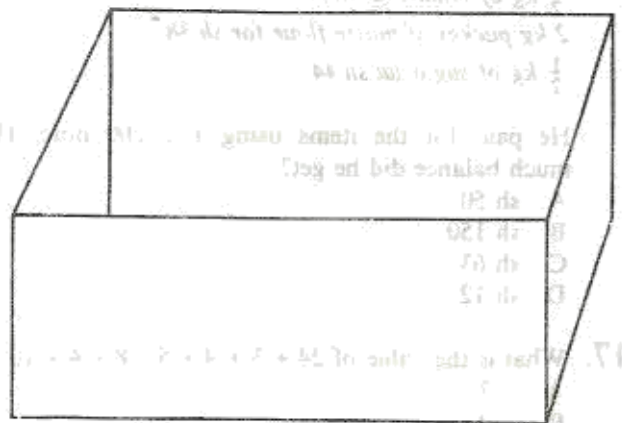   A. $12\frac{1}{3}$
   B. 222
   C. $12\frac{1}{2}$
   D. 13

9. What is the value of $\frac{0\cdot5 + 0\cdot2 \times 4\cdot1 - 0\cdot31}{0\cdot02}$?
   A. 128
   B. 60
   C. 132·65
   D. 50·5

10. A length of 4·6 cm on a scale drawing represents an actual length of 9200 m. What is the scale used?
    A. 1 : 200
    B. 1 : 2000
    C. 1 : 20000
    D. 1 : 200000

11. The diagram below represents an open rectangular trough.

    What is the difference between the number of faces and the number of edges?

    A. 7
    B. 6
    C. 5
    D. 12

12. What is the value of $\frac{5}{8} + \frac{1}{8} + \frac{2}{3} - \frac{3}{8}$?

  A. $1\frac{3}{56}$

  B. $\frac{3}{4}$

  C. $\frac{7}{16}$

  D. $\frac{1}{3}$

13. A bag of sugar weighed 108·5 kg. Mwangi bought 16 bags. He then removed 0·3 kg of sugar from each bag. What total weight of sugar remained?

  A. 1736 kg
  B. 108·2 kg
  C. 1731·2 kg
  D. 1735·7 kg

14. What is $1\frac{1}{2}\%$ expressed as a ratio in its simplest form?

  A. 3 : 2
  B. 2 : 300
  C. 3 : 200
  D. 200 : 3

15. One hundred and twenty litres of juice is packed in two decilitre packets. How many packets are needed?

  A. 60
  B. 600
  C. 6000
  D. 60000

16. Musa bought the following items from a kiosk:

  3 kg of tomatoes @ sh 25

  $\frac{1}{2}$ *kg of onions @ sh 30*

  2 kg packet of maize flour for sh 38

  $\frac{1}{2}$ *kg of sugar @ sh 44*

He paid for the items using a sh 200 note. How much balance did he get?

  A. sh 50
  B. sh 150
  C. sh 63
  D. sh 12

17. What is the value of $24 \div 3 + 4 \times 5 - 8 \div 4 \times 10 + 1$?

  A. 7
  B. 9
  C. 41
  D. 131

18. The table below shows the cost in shillings of sending parcels through the post office.

Weight steps	Africa	Europe/ Near East	Rest of the world
Up to 1 kg	940·00	1030·00	1070·00
Over 1 kg up to 3 kg	1335·00	1390·00	1455·00
Over 3 kg up to 5 kg	1695·00	1740·00	1920·00
Over 5 kg up to 10 kg	2370·00	2380·00	2755·00

Asif sent one parcel weighing 2 kg to Africa and another weighing 3 kg 600 g to Near East. How much did he spend?

  A. sh 3075
  B. sh 1335
  C. sh 3030
  D. sh 2380

19. The figure below shows a rectangular lawn ABCD in which AB = 12 m and AC = 15 m.
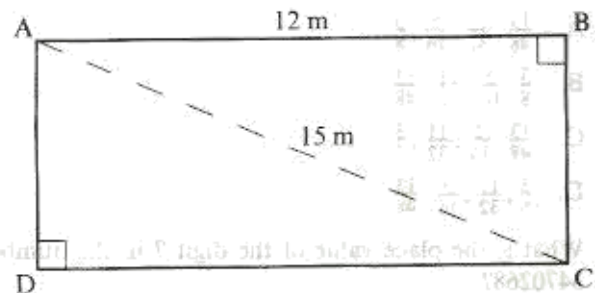
What is the area of the lawn?

  A. 180 m²
  B. 108 m²
  C. 54 m²
  D. 36 m²

20. What is the next number in the pattern 3, 4, 7, 11, 18, ___, ...?

  A. 19
  B. 25
  C. 43
  D. 29

21. The marked price of an article was sh 300. Ali paid sh 260 for the article after being given a discount. What percentage discount did he get?

  A. $86\frac{2}{3}\%$

  B. 40%

  C. $15\frac{5}{13}\%$

  D. $13\frac{1}{3}\%$

22. The figure below represents a vegetable garden bounded by two semi-circles, 5 m apart. The diameter of the larger semi-circle is 30 m.

What is the perimeter of the garden? (Take π = 3.14)
- A. 78·50 m
- B. 88·50 m
- C. 83·50 m
- D. 96·35 m

23. Asha was given a loan of sh 48 000. She repaid the loan after two years with compound interest at the rate of 25% p.a.
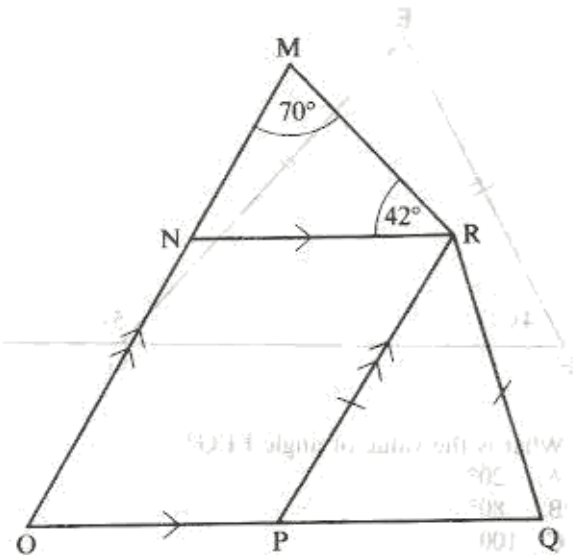
How much money did she pay altogether?
- A. sh 60 000
- B. sh 63 000
- C. sh 72 000
- D. sh 75 000

24. What is the square root of $1\frac{7}{9}$?
- A. $\frac{4}{9}$
- B. $\frac{8}{9}$
- C. $1\frac{1}{3}$
- D. $3\frac{13}{81}$

25. The figure below is made up of a parallelogram NOPR, triangles PRQ and MNR. Angle NMR = 70° and angle NRM = 42°

What is the size of angle PRQ?
- A. 112°
- B. 68°
- C. 44°
- D. 70°

26. A saleswoman was paid a monthly salary of sh 9000. She was also paid a commission of 10% for all the goods she sold above sh 10 000. In one month she sold goods worth sh 25 000.

What did she earn at the end of that month?
- A. sh 11 500
- B. sh 12 500
- C. sh 10 500
- D. sh 1500

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27. In triangle EFG line EF = EG, angle EFG = $4x°$ and angle EGH = $5x°$.
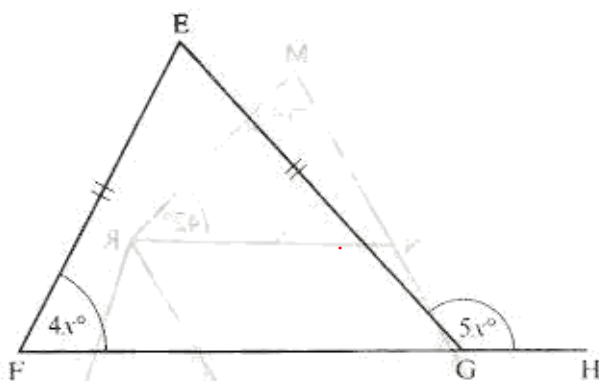
What is the value of angle FEG?
A. 20°
B. 80°
C. 100°
D. 120°

28. Kigen bought goods worth sh 2400. He gave the shopkeeper three sh 1000 notes. He received the balance in equal numbers of sh 200 and sh 100 notes.

What total number of notes did he receive?
A. 6
B. 5
C. 4
D. 3

29. The table below shows the number of tonnes of sugar produced and sold by a factory in 6 days.

Days	Mon	Tue	Wed	Thur	Fri	Sat
Tonnes produced	60	25	30	20	25	15
Tonnes sold	40	70	40	30	50	25

On which day was the number of tonnes of sugar sold one and a half times the number of tonnes produced?
A. Thur
B. Mon
C. Wed
D. Sat

30. The number of patients who visited a health centre on Monday was 125, on Tuesday was 163 and on Wednesday was 210.

On Thursday the number was 15 less than those who visited on Wednesday. Equal number of patients visited the centre on Friday and on Saturday. The total number of patients who visited the centre in the six days was 1089

How many patients visited the centre on Friday?
A. 396
B. 288
C. 183
D. 198

31. The area of the curved surface of a cylinder is 6160 cm². The height of the cylinder is 10 cm.

What is the radius of the cylinder in centimetres?
$\left(\text{Take } \pi = \frac{22}{7}\right)$
A. 98
B. 14
C. 196
D. 968

32. The table below shows Mwasi's income from the sale of farm produce, during one year. The information on the income for potatoes is not given.

Produce	Wheat	Maize	Beans	Potatoes
Income	sh 45 000	sh 36 000	sh 21 000	

A pie-chart was drawn to represent the information above. If the angle representing the income for beans was 63°, what was the income for potatoes?
A. sh 120 000
B. sh 18 000
C. sh 17 850
D. sh 102 000

33. A bus left Migori town for Nairobi at 19 00 h. It arrived in Nairobi 9 hours later. At what time did the bus arrive in Nairobi?
A. 3.00 p.m.
B. 3.00 a.m.
C. 4.00 p.m.
D. 4.00 a.m.

34. According to a survey, three antelopes die every five minutes whereas four are born every minute. What is the difference between the number of antelopes that are born and those that die in one day?
A. 4896
B. 1440
C. 5760
D. 2448

35. Construct the triangle JKL such that JK = JL = 5·5 cm and KL = 7 cm. Draw the bisector of angle KJL to meet line KL at M.

Which one of the following statements is correct from the construction?

A. Triangle JML is an isosceles triangle.
B. Triangle JKL is right angled.
C. Line JM is perpendicular to KL.
D. Angle JKL = 45°.

36. The hire purchase price of a TV set is 40% more than the cash price. The cash price is sh 20 000. Ochieng paid sh 2100 as a monthly instalment for 10 months.

How much had he paid as deposit?

A. sh 8000
B. sh 13 000
C. sh 1000
D. sh 7000

37. A factory hires 12 workers to complete a piece of work in 5 hours. If 2 of the workers do not turn up, how long will it take to complete the work?

A. 60 h
B. 30 h
C. 24 h
D. 6 h

38. Construct a triangle XYZ such that side YZ = 6 cm, angle YZX = 50° and angle ZXY = 35°

What is the length of side XZ?

A. 8·1 cm
B. 10·4 cm
C. 4·6 cm
D. 3·4 cm

39. Which one of the following expressions is the

simplest form of $\dfrac{4(tq + t) + 2(3q - 2tq)}{2(t + q) + 2q}$?

A. $\dfrac{2t + 3q}{t + 2q}$

B. $\dfrac{2tq + 4t + 3q}{t + 3q}$

C. $\dfrac{2tq + t + 6q}{2t + 3q}$

D. $\dfrac{2t + 3q}{t + 3q}$

40. Construct the circle that touches the sides of triangle TUV below.
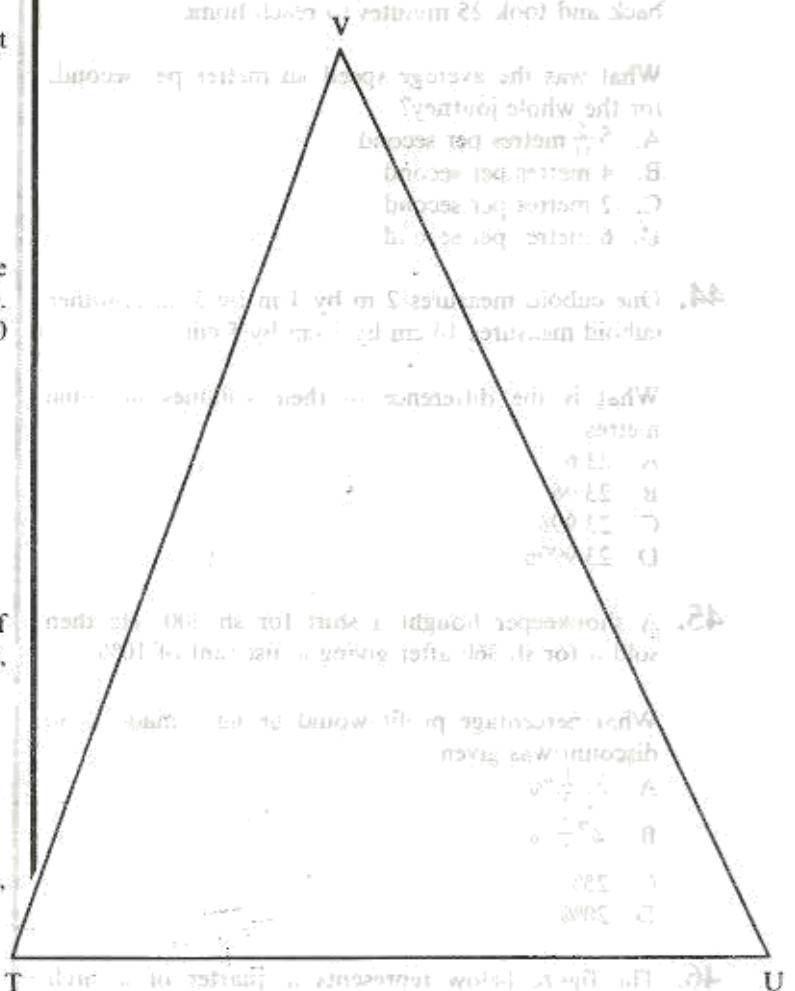
What is the radius of the circle?

A. 7 cm
B. 6·3 cm
C. 3·3 cm
D. 5·8 cm

41. A shopkeeper bought 5 trays of eggs at sh 120 per tray. Ten eggs broke and she sold the rest at sh 6 per egg.

If a tray holds 30 eggs, what percentage profit did she make?

A. 50%
B. 40%
C. $28\frac{4}{7}$%
D. 240%

42. Muli spent $\frac{3}{10}$ of his salary on food and $\frac{2}{5}$ on rent. he was left with sh 2100.

What was his salary?

A. sh 3000
B. sh 3675
C. sh 4900
D. sh 7000

43. Mambo took 30 minutes to cycle from home to the market at an average speed of 5 metres per second. After staying at the market for 20 minutes, he cycled back and took 25 minutes to reach home.

What was the average speed, in metres per second, for the whole journey?
A. $5\frac{5}{11}$ metres per second
B. 4 metres per second
C. 2 metres per second
D. 6 metres per second

44. One cuboid measures 2 m by 4 m by 3 m. Another cuboid measures 10 cm by 8 cm by 5 cm.

What is the difference in their volumes in cubic metres?
A. 23·6
B. 23·96
C. 23·996
D. 23·9996

45. A shopkeeper bought a shirt for sh 300. He then sold it for sh 360 after giving a discount of 10%.

What percentage profit would he have made if no discount was given?
A. $33\frac{1}{3}$ %
B. $27\frac{7}{9}$%
C. 25%
D. 20%

46. The figure below represents a quarter of a circle centre O. The radius of the circle is 7 cm.
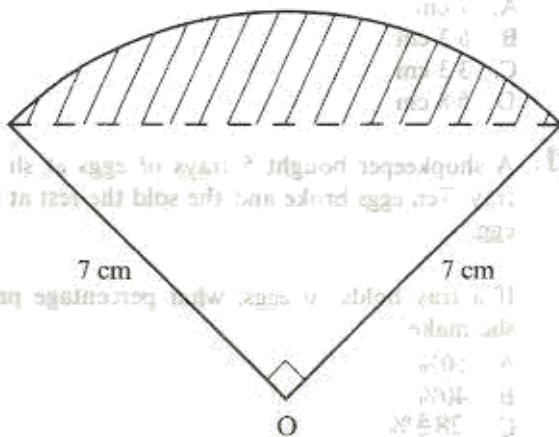
What is the area of the shaded part? $\left(\text{Take } \pi = \frac{22}{7}\right)$
A. 24·5 cm²
B. 14 cm²
C. 28·5 cm²
D. 63 cm²

47. Sara bought pawpaws, oranges and mangoes. The number of pawpaws bought was 8 more than the number of oranges. The number of mangoes was twice the total number of oranges and pawpaws.

The total number of fruits bought was 48.

If the number of oranges was x, which of the equations below can be used to find the number of oranges bought?
A. $3x + 24 = 48$
B. $6x + 16 = 48$
C. $6x + 24 = 48$
D. $4x + 16 = 48$

48. A shopkeeper bought sodas as follows:

Two crates of 300 ml @ sh 415
*Three crates of 500 ml @ sh 563*
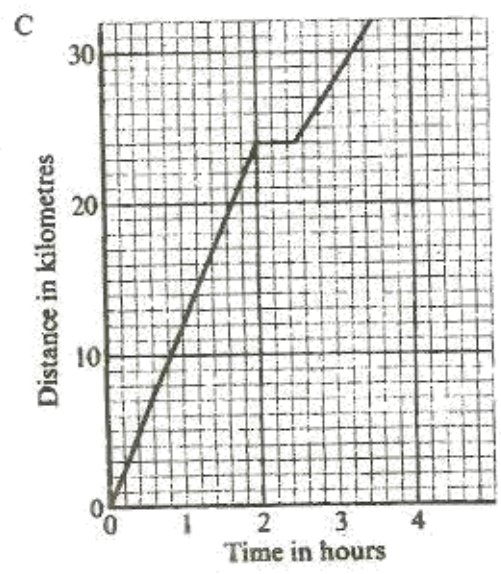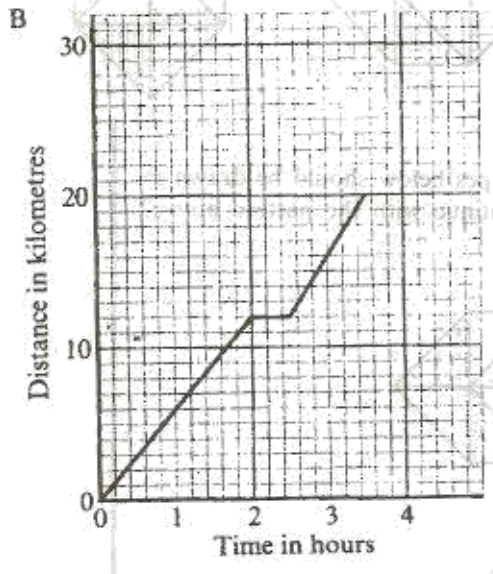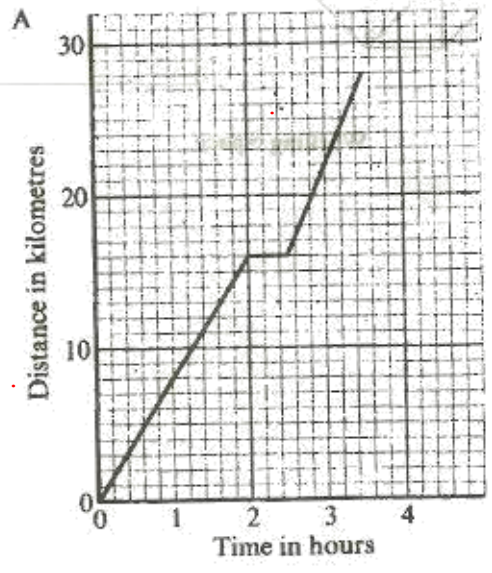*Five crates of one litre @ sh 415.*

He then spent sh 50 on transport.

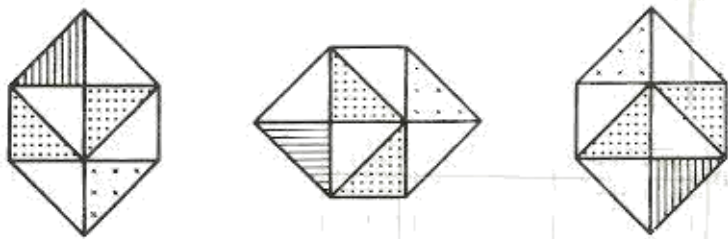If he had five thousand shillings, how much money did he remain with?
A. sh 356
B. sh 406
C. sh 3557
D. sh 4644

49. A cyclist rode for two hours at an average speed of 12 km/h. He rested for 30 minutes and continued for one hour at an average speed of 8 km/h.
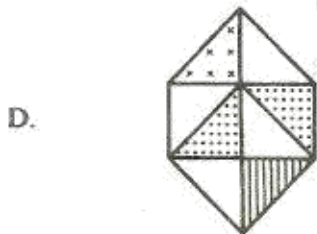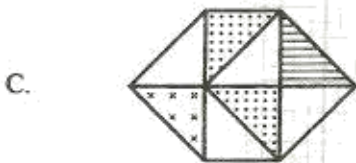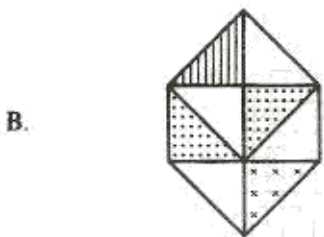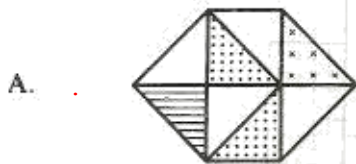
Which one of the graphs below represents the cyclist's journey?

A

B

C

D
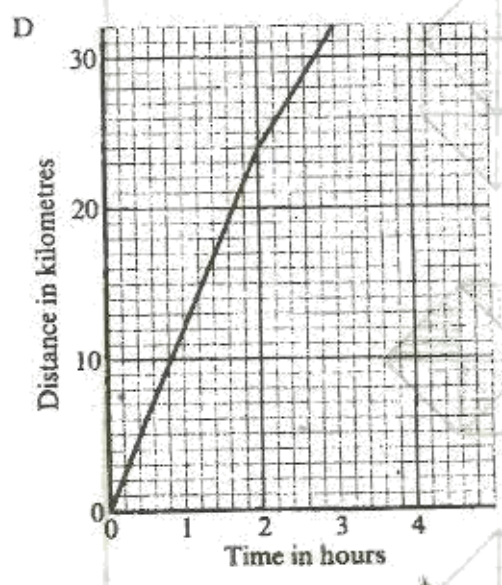
50.

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

A.

B.

C.

D.