KCPE 2012

250381
MATHEMATICS

Time: 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 only an ordinary pencil.

5. Make sure that you have written on the answer sheet:
    YOUR INDEX NUMBER
    YOUR NAME
    NAME OF YOUR SCHOOL

<div style="border:1px solid">

DAY 1
Tuesday – 13/11/2012
8.00 am – 10.00 am

</div>

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:

    11. What is the value of $\dfrac{6(24-18)+6\times4}{6}$?
    A. 30
    B. 25
    C. 10
    D. 28

    The correct answer is C (10).

    On the answer sheet:

    1 [A] [B] [C] [D] 11 [A] [B] [C] [D] 21 [A] [B] [C] [D] 31 [A] [B] [C] [D] 41 [A] [B] [C] [D]

    In the set of boxes numbered 11, the box with the letter C 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 16 printed pages.

902503   © *The Kenya National Examinations Council, 2012*   **TURN OVER**

1. What is 20075803 written in words?
   A. Two hundred million seven hundred fifty eight thousand and three.
   B. Two hundred million seventy five thousand eight hundred and three.
   C. Twenty million seven hundred fifty eight thousand and three.
   D. Twenty million seventy five thousand eight hundred and three.

2. In the number 14205, what is the difference between the total values of the digits 4 and 2?
   A. 4000
   B. 3800
   C. 4200
   D. 200

3. What is 4689.99975 rounded off to the nearest thousandths?
   A. 5000
   B. 4689.999
   C. 4690.000
   D. 4689.9998

4. What is the value of:
   $(16905 - 1500 + 1025 - 1225) \div 5$?
   A. 15205
   B. 3121
   C. 3041
   D. 2631

5. Which one of the following expressions is correct?
   A. $\frac{7}{8} > \frac{3}{4}$
   B. $72.5 - 2.57 < 49.9 + 20.03$
   C. $506 + 45 > 330 + 222$
   D. $0.65 < 0.065$

6. What is the value of $\frac{3}{5} + \frac{1}{8} - \frac{1}{4} \div \frac{1}{2}$?
   A. $\frac{33}{40}$
   B. $\frac{14}{25}$
   C. $\frac{1}{5}$
   D. $\frac{9}{40}$

7. What is the next number in the pattern below?
   2, 6, 12, 20, 30, _____
   A. 52
   B. 44
   C. 42
   D. 40

2

8. What is the square root of the number obtained when 196 is multiplied by 4?
A. 28
B. 56
C. 392
D. 784

9. In the figure below line AB and CD are parallel. Line EF is a transversal.
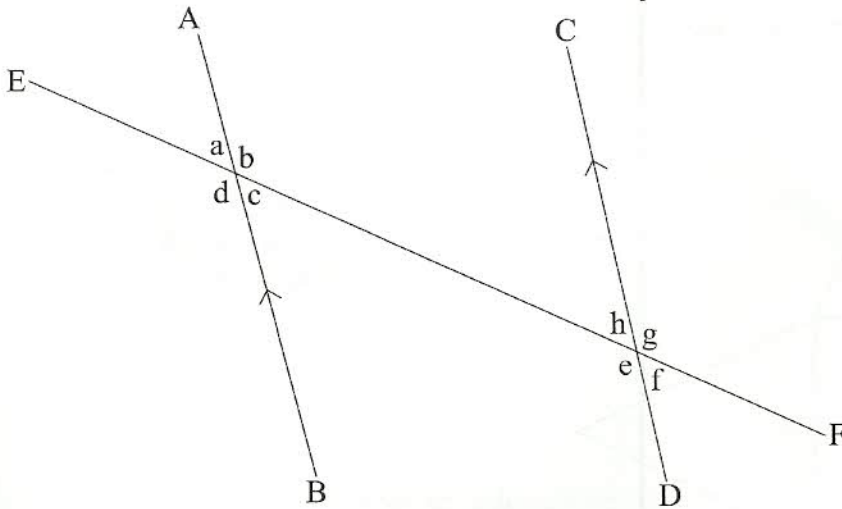
Which one of the following choices contains equal angles?
A. a and e
B. c and g
C. b and f
D. d and g

10. What is the value of 2b (a + c) + ac when a = b = 3 and c = 2?
A. 66
B. 36
C. 30
D. 21

11. Andona bought 50 pineapples at sh 30 each and paid sh 100 for transport to the market. During transportation 5 pineapples got spoilt. She sold the rest at sh 50 each. What percentage profit did she make?
A. $56\frac{1}{4}$
B. $46\frac{7}{8}$
C. $43\frac{1}{3}$
D. $40\frac{5}{8}$

3

12. Interschool soccer competition started at 3.15 p.m. After 45 minutes, players went for a 15 minutes break. The game then took 55 minutes to end. At what time in the 24 hour system did the game end?

A. 17 10 h

B. 05 10 h

C. 16 55 h

D. 16 30 h

13. The figure below represents the net of a solid.
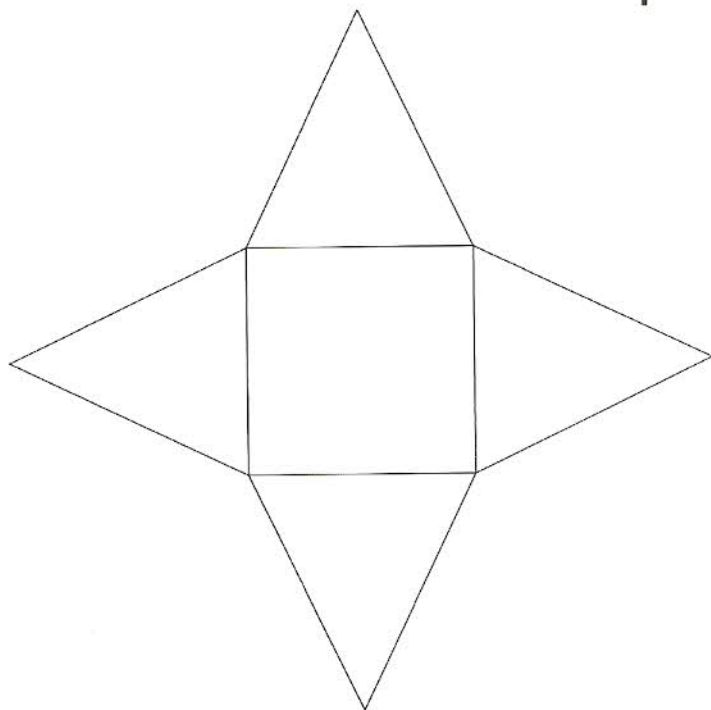
The net is folded to form the solid. How many edges will the solid have?

A. 4

B. 5

C. 8

D. 12

**14.** The table below shows the number of people who attended an agricultural show.

Male Adults	Female Adults	Children
986	3145	5807

How many more children than adults attended the show?

A. 1676

B. 2662

C. 4131

D. 4821

902503   4

15. A kiosk owner bought 10 litres of milk on Monday. On Tuesday and Wednesday, a total of 50 litres were bought. Equal numbers of litres were bought on Thursday and Friday. Altogether 120 litres were bought during the five days. In a Pie chart, what angle would represent the amount of milk bought on Friday?

  A. 30°
  B. 90°
  C. 150°
  D. 180°

16. Two pickups were used to collect garbage from a market. Each pickup carried 2 tonnes 300 kg of garbage per trip. Each pickup was to make five trips. After the fourth trip one of the pickups broke down and did not carry the garbage. What was the total mass of garbage collected?

  A. 23 tonnes 0 kg
  B. 20 tonnes 700 kg
  C. 18 tonnes 400 kg
  D. 11 tonnes 500 kg

17. A company gives a commission on sales above sh 100 000. In a certain month a salesgirl received a commission of sh 36 000 after selling goods worth sh 800 000. What was the percentage commission offered?

  A. 36
  B. 4
  C. $4\frac{1}{2}$
  D. $5\frac{1}{7}$

18. Paint was stored in three containers of 48 litres, 72 litres and 30 litres. The paint in each container was then repacked into smaller containers. The amount of paint in each of the smaller containers was the same. What was the capacity of the largest container used to repack the paint?

  A.   3 litres
  B.   6 litres
  C. 72 litres
  D. 720 litres

19. Jane gave money to her three children. She gave $\frac{1}{3}$ of the total amount to the first child and $\frac{2}{5}$ of the remainder to the second child. She was then left with sh 2 400 which she gave to the third child. How much money did she give out altogether?

A. sh 9 000
B. sh 6 000
C. sh 4 000
D. sh 3 600

20. The mean mass of four pupils was 49.5 kg. When the masses of another pupil and a teacher were included, the mean mass became 53 kg. If the mass of the pupil was 16 kg less than that of the teacher, what was the teacher's mass?
A. 44 kg
B. 52 kg
C. 76 kg
D. 68 kg

21. On the triangle PQR drawn below, construct line RS parallel to line QP. Draw a perpendicular from P to meet line RS at T.

P

Q   R
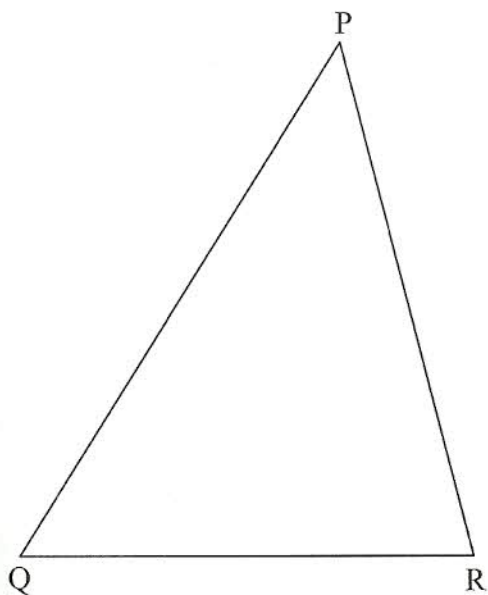
What is the length of the line PT?
A. 4.8 cm
B. 5.1 cm
C. 6.8 cm
D. 9.5 cm

22. In the year 2008, there were 850 pupils in a school of whom $\frac{3}{5}$ were boys. In the year 2009, ten girls joined the school and twenty boys transferred to another school. What was the ratio of boys to girls in the school in the year 2009?

A. 3:2

B. 53:33

C. 13:8

D. 7:5

23. A farmer harvested 900 bags of maize. She sold 0.7 of the bags and gave 0.1 of the remainder to a charitable organization. She then kept the rest. How many bags of maize were kept?

A. 27

B. 180

C. 243

D. 270

24. What is the value of x in $3(x + 4) - 10 = 32$?

A. $16\frac{2}{3}$

B. $12\frac{2}{3}$

C. $11\frac{1}{3}$

D. 10

25. In a right-angled triangle the length of the hypotenuse is 40 cm. Which one of the following pairs are the possible lengths of the two shorter sides?

A. 12 cm, 5 cm

B. 25 cm, 15 cm

C. 24 cm, 7 cm

D. 32 cm, 24 cm

26. Muli obtained a total score of 180 marks in English, Mathematics and Science. His score in English was half the score obtained in Mathematics. The score in Mathematics was 10 more than the score obtained in Science. If the score obtained in Science is represented by x, which one of the equations below can be used to get the value of x?

A. $2\frac{1}{2}x + 15 = 180$

B. $2\frac{1}{2}x - 15 = 180$

C. $4x + 30 = 180$

D. $x + 15 = 180$

27. The table below shows inland postal charges for letters.

Weight of letter	sh	ct
Up to 20 g	25	00
Over 20 g up to 50 g	30	00
Over 50 g up to 100 g	35	00
Over 100 g up to 250 g	50	00
Over 250 g up to 500 g	85	00
Over 500 g up to 1 kg	135	00
Over 1 kg up to 2 kg	190	00

Wamu posted two letters each weighing 95 g and another one weighing 450 g.
How much money did he pay at the post office?
A. sh 120
B. sh 135
C. sh 155
D. sh 240

28. A trader deposited sh 300 000 at a bank that paid compound interest at the rate of 5% p.a.
How much money was in her account in the bank, at the end of two years?
A. sh 330 750
B. sh 330 000
C. sh 315 000
D. sh 30 750

29. On a map of scale 1 : 100 000 a rectangular plot of land measures 7 cm by 4 cm.
What are the actual lengths of the plot in kilometres?

A. 70 000 by 40 000
B. 700 by 400
C. 70 by 40
D. 7 by 4

30. The number of tree seedlings planted in a certain season increased by 20%. If there were 24 000 seedlings planted in that season, how many seedlings were there before the increase?
A. 19 200
B. 20 000
C. 28 800
D. 30 000

31. Which quadrilateral has all the properties listed below?

All sides are equal
All angles are right angles
Diagonals are equal
Diagonals bisect each other at right angles

A. Square
B. Trapezium
C. Rectangle
D. Rhombus

32. Kioko bought the following items to donate to a charitable organization:

2 bags of cabbage @ sh 2 500
4 bags of potatoes @ sh 2 000
*20 kg of cooking oil for sh 2 000*
100 kg of sugar @ sh 96
50 loaves of bread @ sh 35

He was given a 10% discount for all his purchases. How much did he pay for the items?

A. sh 23 715
B. sh 26 350
C. sh 57 915
D. sh 28 985

33. Musa and Kayai left town P for town Q at the same time. Musa drove at an average speed of 80 km/h and reached town Q after 3 hours. Kayai drove at an average speed of 50 km/h for $1\frac{1}{2}$ h and then continued with the journey at an average speed of 70 km/h. How many kilometres had Kayai to cover at the time Musa reached town Q?

A. 240
B. 180
C. 165
D. 60

34. A plot of land is in the shape of a semicircle of diameter 28 metres as shown below.

28 m
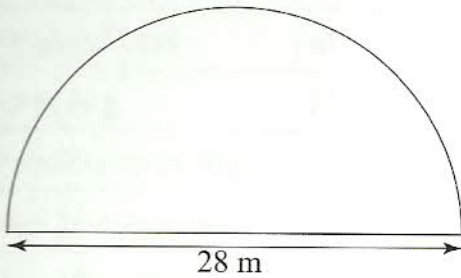
The plot was fenced by erecting posts 4 metres apart. How many posts were used? (Take $\pi = \frac{22}{7}$)

A. 12
B. 17
C. 18
D. 19

35. Fifteen painters can paint a number of houses in 12 days. If the number of painters is increased by 5, how many days less would it take the painters working at the same rate to paint the houses?

A. 24
B. 9
C. 4
D. 3

36. Construct triangle PQR in which PQ = 5 cm, PR = 7 cm and QR = 6.5 cm. Bisect angle PRQ and let the bisector meet the line PQ at M.

What is the size of angle PRM?

A. 22°
B. 44°
C. 63°
D. 95°

37. A cylindrical water tank has a diameter of 1.4 m and a height of 3 m. What is the volume of the tank in m³? (Take $\pi = \frac{22}{7}$)

   A. 4.62
   B. 13.2
   C. 16.28
   D. 18.48

38. A baby woke up at 5.30 a.m. after sleeping for 7 hours 45 minutes. At what time in a.m./p.m. did the baby sleep?

   A. 9.45 a.m
   B. 1.15 a.m
   C. 9.45 p.m
   D. 2.15 p.m

39. The diagram below represents a metal solid made up of a cylindrical bar fixed onto a cube. The cylindrical bar is 20 cm long and has a diameter of 7 cm. Each side of the cube is 9 cm long.
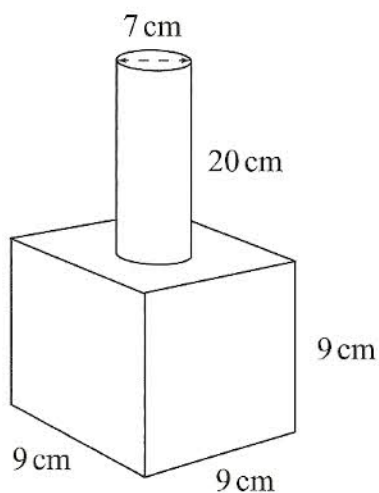
The surface of the solid was painted. What area in cm² was painted? (Take $\pi = \frac{22}{7}$)

   A. 1499
   B.   964.5
   C.   926
   D.   845

40. The table below shows the distance in kilometres from Avedi's Home to School, Health Centre and Market.

Home

3	School		
4	5	Health Centre	
7	6	4	Market

One day Avedi left Home for the Market but passed through the Health Centre. Later, Avedi left the Market and went Home directly. How many kilometres did Avedi travel that day?

A. 14
B. 19
C. 18
D. 15

41. The perimeter of the isosceles triangle QRS shown below is 48 cm. The base of the triangle is 18 cm.
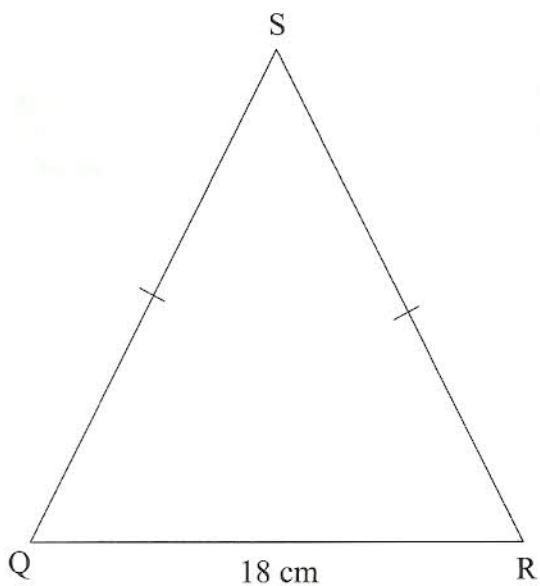

What is the area of the triangle?

A.　54 cm²
B. 108 cm²
C. 135 cm²
D. 435 cm²

42. A factory packs water in half litre, one litre, two litre and five litre bottles. On a certain day, the factory packed 20 840 bottles of water. Out of these, 8 120 were half litre bottles and 3 960 were two litre bottles. One litre bottles were 2 000 more than the two litre bottles. The rest were five litre bottles. How many five litre bottles were there?

    A. 2 800
    B. 6 760
    C. 6 800
    D. 18 040

43. Which one of the expressions below is the simplest form of $\dfrac{6(x+2y)+3x}{2(x+2y)-2y}$?

    A. $\dfrac{9x+12y}{2x+2y}$

    B. $\dfrac{6x+6y}{x}$

    C. $\dfrac{3+3x}{1-2y}$

    D. $\dfrac{9x+2y}{2x}$

44. At a school prize giving day the number of men was half that of women. The number of children was three times that of women. The number of women who attended was $3x$. What was the sum of men and children?

    A. $10\frac{1}{2}x$
    B. $2\frac{1}{2}x$
    C. $13\frac{1}{2}x$
    D. $21x$

45. The cash price of a radio is sh 8 000. The hire purchase price is 50% more than the cash price. Amina bought a radio on hire purchase by paying a deposit of sh 2 400 and equal monthly instalments of sh 800. In how many months did she pay the instalments?

    A. 18
    B. 15
    C. 12
    D. 10

46. Mumbi paid sh 1 800 for a chair after 10% discount was allowed. How much would she have paid for the chair had she been allowed a 12% discount?

    A. sh 2 000
    B. sh 1 760
    C. sh 1 584
    D. sh 240

13

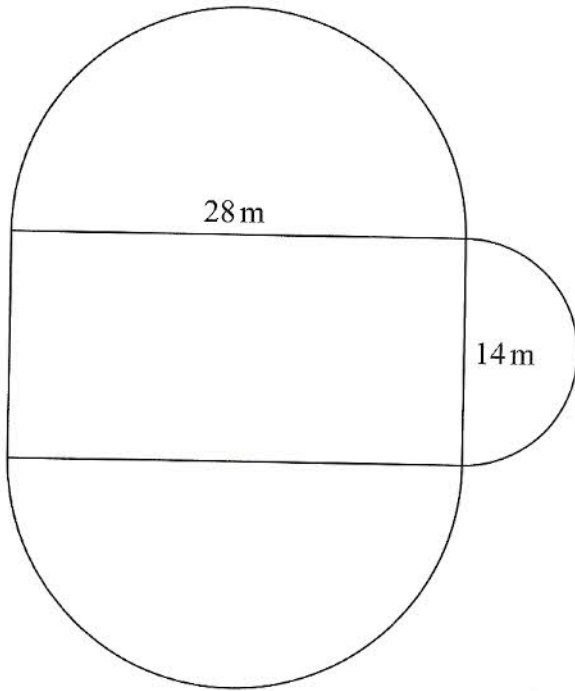**47.** The graph below shows John's journey from Kericho to Mombasa. On his way he stopped in two places.
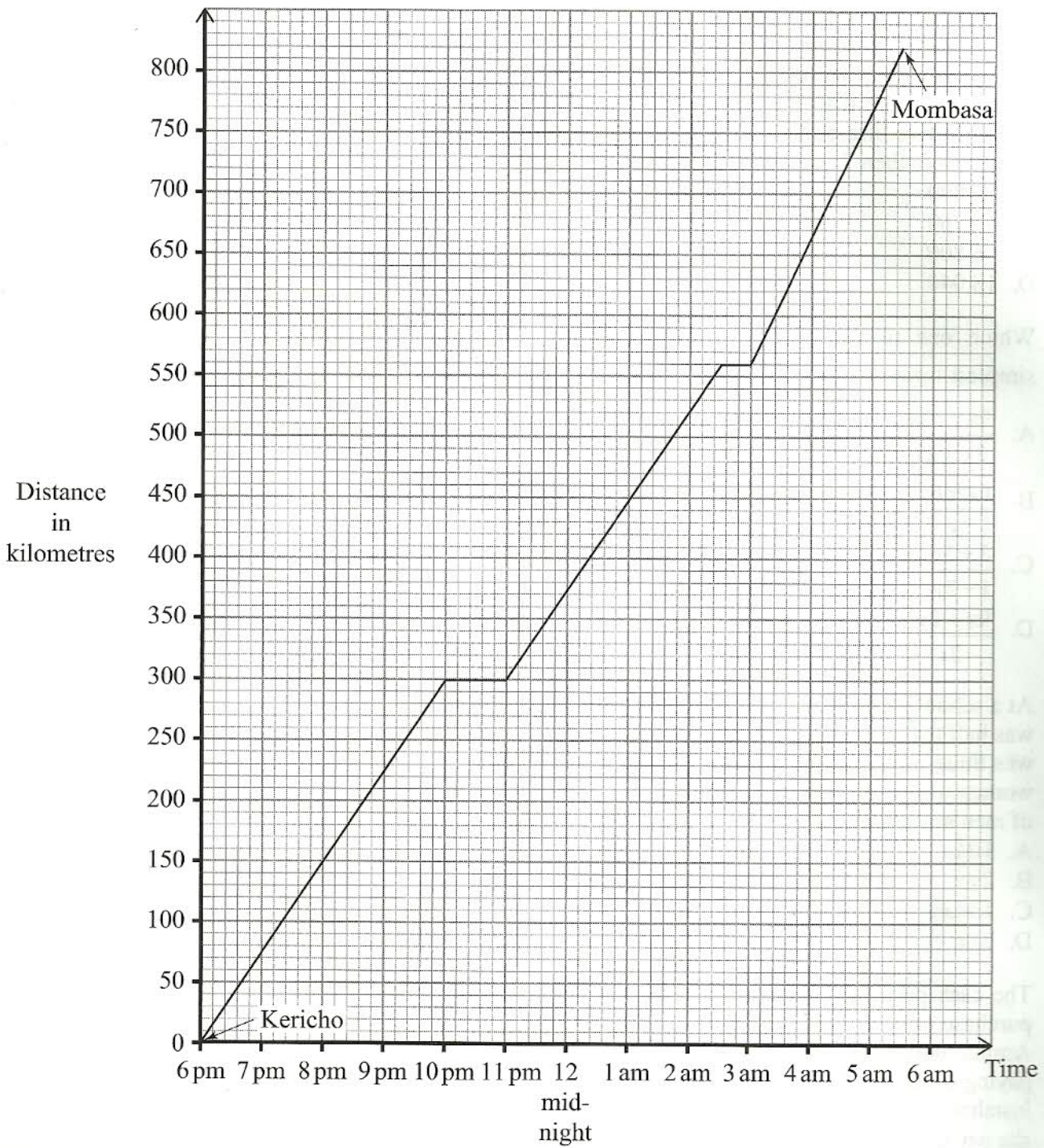
What was John's average speed in km/h between the time he left the first stop and the time he arrived at the second stop?

A. 75

B. $74\frac{2}{7}$

C. $71\frac{7}{23}$

D. 52

Working Space

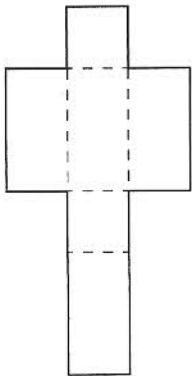**48.** The diagram below represents a vegetable garden which is in the shape of a rectangle and semi-circles.

28 m

14 m

What is the area of the garden in square metres?
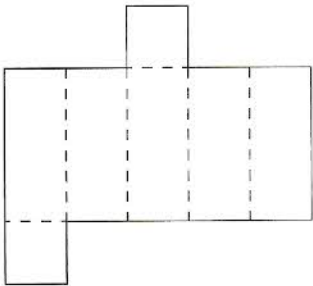(Take $\pi = \frac{22}{7}$)

A. 693
B. 1008
C. 1085
D. 1162

49. Safi packed 15 cartons each containing 20 bottles of juice. The amount of juice in each bottle was 500 ml. What was the total amount of the juice, in litres, packed by Safi?

A.   150
B.   1 500
C.   15 000
D. 150 000

A
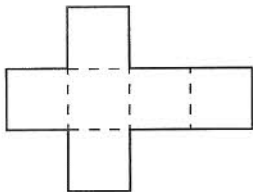
B

C

D