KCPE 2002

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:

24. Which one of the following is six million, eighty five thousand, three hundred and seven?

A. 6 085 037
B. 6 805 037
C. 6 085 307
D. 6 850 307

The correct answer is C (6 085 307).

On the answer sheet:

In the third set, 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 15 printed pages and 1 blank page.

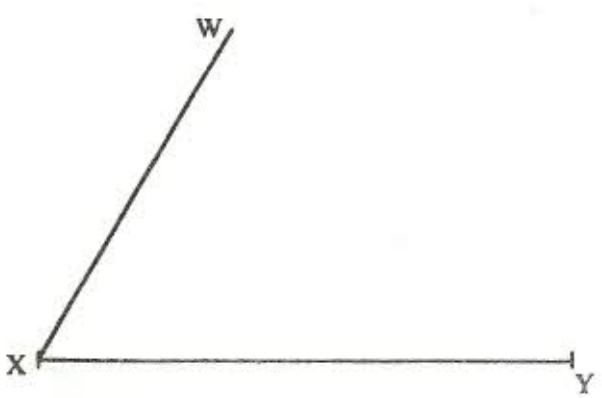
1. Which of the following is 5505055 in words?
A. Five million, fifty five thousand and fifty five
B. Five million, five hundred thousand, five hundred and fifty five
C. Five million, five hundred and five thousand and fifty five
D. Five million, five hundred and fifty thousand and fifty five.

2. The fractions $\frac{2}{3}$, $\frac{5}{6}$, $\frac{3}{4}$ and $\frac{7}{12}$ are to be arranged from the largest to the smallest. Which of the following is in the correct order?
A. $\frac{7}{12}, \frac{5}{6}, \frac{3}{4}, \frac{2}{3}$
B. $\frac{5}{6}, \frac{3}{4}, \frac{2}{3}, \frac{7}{12}$
C. $\frac{7}{12}, \frac{3}{4}, \frac{5}{6}, \frac{2}{3}$
D. $\frac{7}{12}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$

3. A rectangular plot measuring 46 m by 38 m is to be fenced all round. If three strands of wire are to be used, what would be the total length of wire required in metres?
A. 168
B. 252
C. 504
D. 5 244

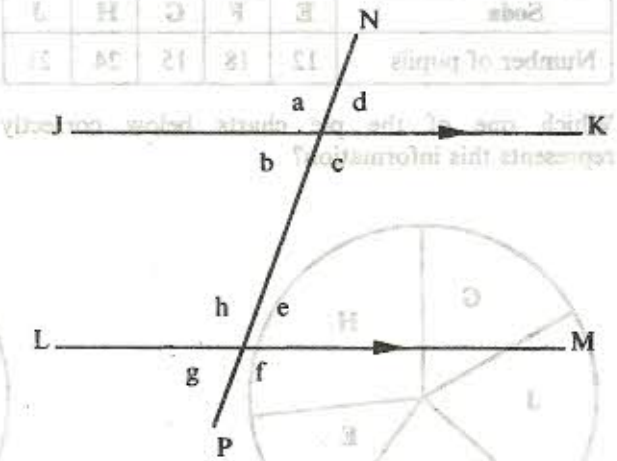
4. An empty box weighed 2·5 kg. Kombe packed books in the box until the total weight was 9·5 kg. If each book weighed 250 g, how many books were packed?
A. 10
B. 28
C. 38
D. 280

5. The diagram below represents two sides of a parallelogram WXYZ. Complete the parallelogram.



What is the length of the diagonal XZ?
A. 5 cm
B. 6·3 cm
C. 7 cm
D. 10·5 cm

6. In the figure below lines JK and LM are parallel. Line NP is a transversal.



Which of the statements below is NOT always true?
A. $g + e = a + d$
B. $e + f = c + d$
C. $a + e = 180°$
D. $b = g$

7. Peter bought the following items from a shop:

3 rolls of toilet paper @ sh 17
$\frac{3}{4}$ kg of salt @ sh 30 per kg
2 kg packet of rice for sh 70
2 bottles of juice @ sh 70

What balance did he receive if he paid for the items using a sh 500 note?
A. sh 313.00
B. sh 283.50
C. sh 216.50
D. sh 146.50

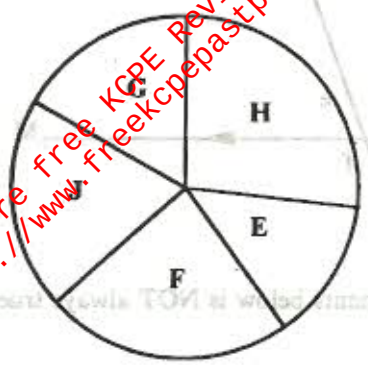
8. Maria agreed to loan Luvisia sh 10 000 at a compound interest of 15% per annum. How much money altogether did Luvisia pay Maria after two years?
A. sh 13 225
B. sh 13 000
C. sh 11 500
D. sh 3 225

9. A motorist covers 3 km in every $1\frac{3}{4}$ minutes. How many kilometres will he have covered from 8.19 am to 9.08 am?
A. 28
B. 84
C. 147
D. $257\frac{1}{4}$

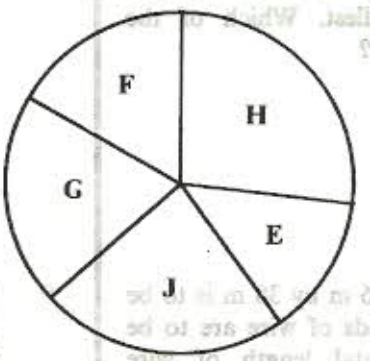
10. The table below shows brands of soda and the number of pupils who like each brand.

Soda	E	F	G	H	J
Number of pupils	12	18	15	24	21

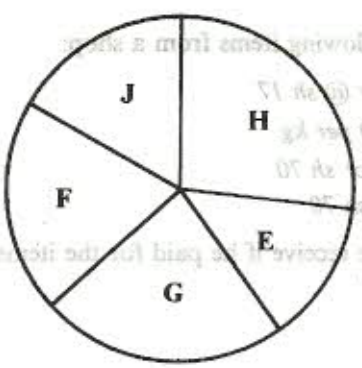
Which one of the pie charts below correctly represents this information?



A



B



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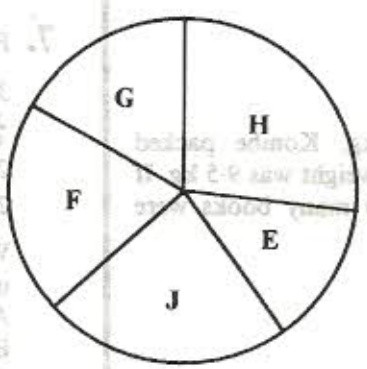


D

11. What is the value of $5{\cdot}0 - 2{\cdot}65 \times 0{\cdot}001$?

A. 4·999735
B. 4·99735
C. 4·9735
D. 0·00235

Working Space

12. Three clocks were set to ring at intervals as follows:

the first after every 6 minutes
the second after every 15 minutes
the third after every 24 minutes

If the clocks were set at the same time, after how many minutes did they ring together?

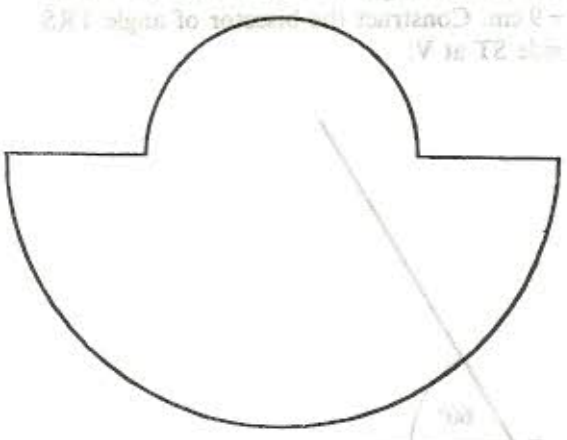
A. 30
B. 45
C. 120
D. 2 160

13. Twenty-four 75-decilitre packets of milk were emptied into a 50-litre container.

How many more such packets of milk were needed to fill the container?

A. 100
B. 76
C. 52
D. 38

14. The diagram below shows a plot of land made up of two semi-circles with same centre. The diameters of the semi-circles are 28 metres and 56 metres.



If pegs were put at intervals of two metres all the way round, how many pegs were used?

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

A. 78
B. 66
C. 80
D. 144

15. The top of a 25 m ladder leans on a vertical wall with its lower end touching the ground.

Which one of the following sets of measurements represents the height of the wall and the horizontal distance of the ladder from the wall?

A. 12 m and 13 m
B. 3 m and 4 m
C. 5 m and 12 m
D. 7 m and 24 m

16. Kazungu bought a radio on hire purchase terms. He paid a deposit of sh 900 and 9 equal monthly instalments of sh 300. The hire purchase price was 20% more than the marked price.

What was the marked price of the radio?

A. sh 720
B. sh 2 880
C. sh 3 000
D. sh 3 600

17. The length of a rectangle is represented by the expression $(2x + 8)$ cm and its width by the expression $(x - 6)$ cm.

If the perimeter is 58 cm, what is the actual length of the rectangle?

A. 3 cm
B. 9 cm
C. 26 cm
D. $45\frac{1}{3}$ cm

18. Cheptoo was hired for 8 hours a day from Monday to Friday and 5 hours on Saturday. She was paid sh 5 850 per week. Cheptoo now works 10 hours a day from Monday to Friday and is free on Saturday.

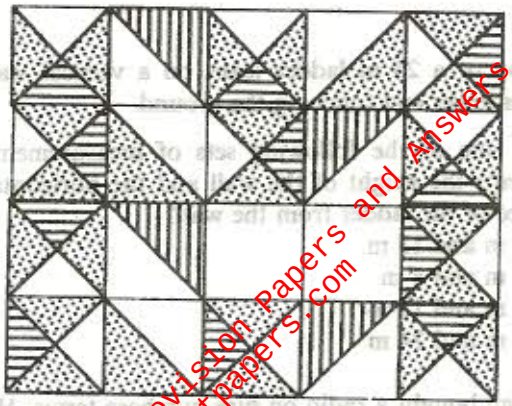
What is her weekly pay if she is paid at the same rate per hour as before?

A. sh 4 500
B. sh 5 265
C. sh 5 300
D. sh 6 500

19. What is the value of $21 \div 8$ correct to two decimal places?

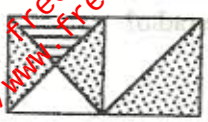
A. 2·6
B. 2·62
C. 2·625
D. 2·63

20.

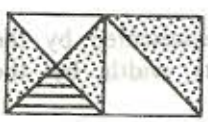


Which one of the patterns below would complete the design above?

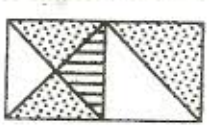
A



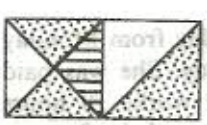
B



C



D



21. A cylinder has a volume of 550 cm^3. If the height of the cylinder is 7 cm, what is its diameter?

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

A. 50 cm
B. 25 cm
C. 10 cm
D. 5 cm

22. A vendor kept money in a box and in a tin. In the box there were:

15 ten-shilling coins
23 twenty-shilling coins
36 five-shilling coins

In the tin there was an equal number of ten-shilling and five-shilling coins and no twenty-shilling coin. The total amount of money in both, the box and tin, was sh 1 000.

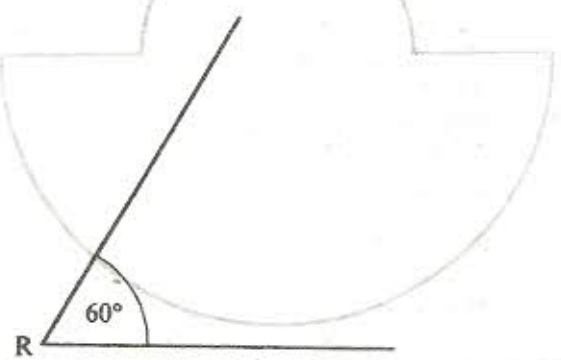
How many five-shilling coins were in the tin?

A. 14
B. 21
C. 28
D. 70

23. 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

24. The diagram below shows part of two sides of triangle RST. Angle SRT = 60°. Complete the diagram to form triangle RST such that RS = 8 cm and ST = 9 cm. Construct the bisector of angle TRS to meet side ST at V.



What is the size of angle RVS?

A. 100°
B. 80°
C. 70°
D. 30°

25. In one month an agent sold 5 plots at sh 250 000. She charged a 5% commission for the sale of plots and paid 15% of the commission to her workers.

How much money did she remain with?

A. sh 53 125
B. sh 9 375
C. sh 6 250
D. sh 10 625

26. Fundi, Halima and Gitonga are employed in a firm. Fundi's monthly salary is sh 30 more than that of Gitonga. Halima's monthly salary is sh 90 more than half of the total amount earned by Fundi and Gitonga.

If Fundi's salary is sh n, which one of the expressions below represents the total monthly income of the three employees?

A. sh $3n + 165$
B. sh $4n + 210$
C. sh $3n + 30$
D. sh $3n + 15$

27. Which one of the ratios below represents 0·75?

A. 3 : 40
B. 3 : 7
C. 4 : 3
D. 3 : 4

28. How many times is the value of the digit 8 more than the value of digit 2 in the number 850 265?

A. 799 800
B. 4 000
C. 1 000
D. 4

29. A factory produced 65 160 sweets. The sweets were packed in packets each holding 24 sweets. The cost of each packet was sh 72. All the packets were then equally put in 15 cartons. What was the cost of the sweets in each carton?

A. sh 181
B. sh 13 032
C. sh 195 480
D. sh 312 768

30. The length of one of the parallel sides of a trapezium is 6 cm and the perpendicular height is 4 cm. If the area of the trapezium is 72 cm^2, what is the length of the other parallel sides?

A. 30 cm
B. 16·4 cm
C. 12 cm
D. 3 cm

31. In a certain leap year, 16th February was Wednesday. What day was 1st May the same year?

A. Saturday
B. Sunday
C. Monday
D. Tuesday

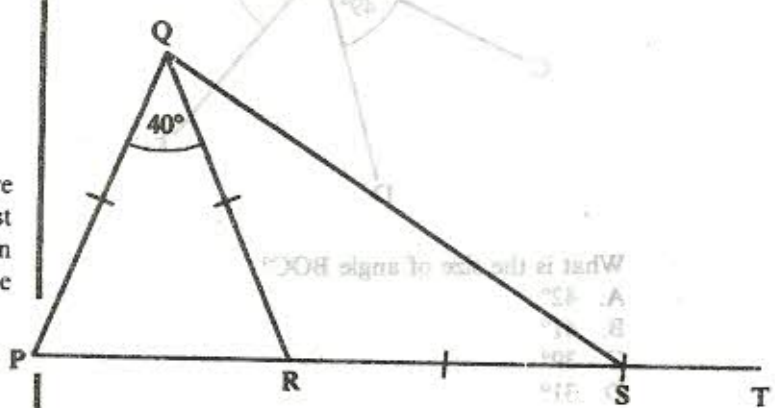
32. What is the value of the expression $\frac{p^2(n-r^2)}{nr}$, given that $p = 4$, $n = 6$, $r = 2$?

A. $2\frac{2}{3}$
B. $21\frac{1}{3}$
C. 32
D. $1\frac{1}{3}$

33. A family consumes 6 litres of milk every day. How many litres altogether did the family consume in the months of March, April and May?

A. 540 *l*
B. 546 *l*
C. 552 *l*
D. 558 *l*

34. In the figure below PQ = QR = RS. Angle PQR = 40°.



What is the size of angle QST?

A. 145°
B. 130°
C. 110°
D. 160°

35. What is 899 470 rounded off to the nearest ten thousand?

A. 890 000
B. 899 000
C. 900 000
D. 900 470

36. What is the value of $\frac{1\frac{1}{2} - \frac{1}{4} \times 1\frac{1}{3}}{1\frac{1}{3} + \frac{1}{6} \div \frac{1}{2}}$?

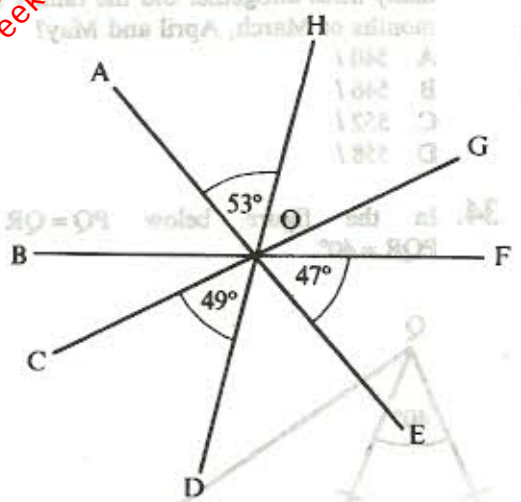
A. $1\frac{12}{18}$
B. $\frac{7}{18}$
C. 1
D. $\frac{7}{10}$

37. A closed cylindrical container has a radius of 1·4 cm and a height of 4 cm. What is its surface area in cm^2?

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

A. 47·52
B. 4 136
C. 24·64
D. 20·68

38. The figure below shows lines AE, BF, CG and DH which intersect at point O.



What is the size of angle BOC?
A. 42°
B. 41°
C. 39°
D. 31°

39. Olwena bought goods worth sh 450 from a shop. He gave the shopkeeper a sh 1 000 note and was given a balance of sh 600.

What percentage discount was he allowed for the goods bought?

A. $11\frac{1}{9}\%$
B. $12\frac{1}{2}\%$
C. 50%
D. $88\frac{8}{9}\%$

40. The mean of six numbers is $4\frac{2}{3}$. Five of these numbers are 5, 3, 7, 8 and 3. What is the median of the six numbers?

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

41. What is the next number in the pattern 84, 62, 43, 27, ____ . . . .?

A. 16
B. 14
C. 13
D. 11

42. A cylindrical tank of diameter 1·4 m and a height of 1·6 m is $\frac{3}{4}$ full of water. How many more litres are needed to fill it?

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

A. 2 464 *l*
B. 1 848 *l*
C. 1 760 *l*
D. 616 *l*

43. Water gained heat at the rate of 12° C per minute for 5 minutes. It was then allowed to lose heat at 4° C per minute. If the temperature before heating was 22° C, what was its temperature after $8\frac{1}{2}$ minutes?

A. 46° C
B. 48° C
C. 60° C
D. 68° C

44. The table below shows matatu fares to different towns in shillings.

E						
20	F					
40	25	G				
60	40	20	H			
90	80	55	40	J		
110	90	80	60	30	K	
150	140	120	90	50	30	L

A teacher and 2 pupils left town E for town L. They stopped at town G and then continued with the journey to town L in another matatu.

If the fare for children is half that of adults, how much did they pay altogether?

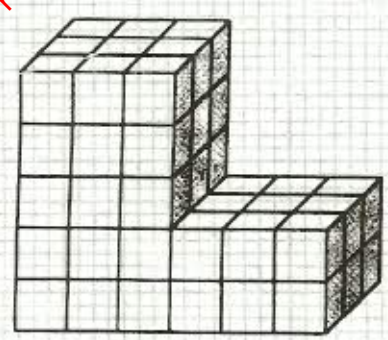
A. sh 480
B. sh 320
C. sh 300
D. sh 240

45. A motorist left town A at 8.15 am for town B, a distance of 330 km. He covered the first 112 km in $1\frac{1}{3}$ hours and stopped for 20 minutes to fuel. He continued with the journey arriving in town B at 11.55 am.

What was the average speed for the whole journey?

A. 109 km/h
B. 99 km/h
C. 90 km/h
D. 84 km/h

46. A stack of cubes as shown in the figure below was painted on all faces.

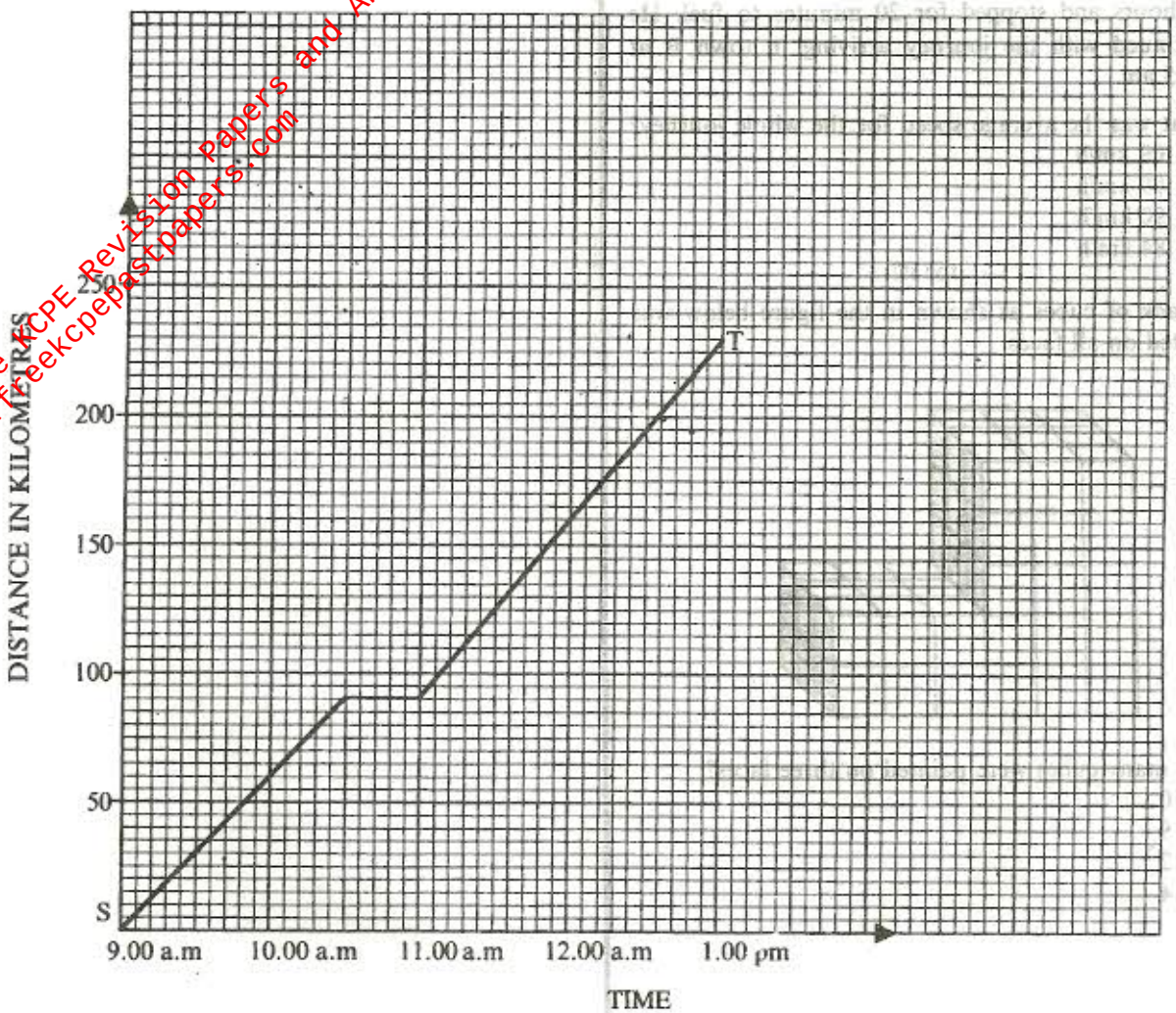


How many cubes were painted on three faces?

A. 10
B. 9
C. 12
D. 14

Working Space

47. The graph below represents the journey of a car travelling from town S to town T.



What was the average speed for the journey?

A. $56\frac{1}{4}$ km/h

B. $57\frac{1}{2}$ km/h

C. 65 km/h

D. $65\frac{5}{7}$ km/h

Working Space

48. The telegram charges were sh 13.50 for the first 10 words. Every additional word was charged sh 2.75. The total amount was then rounded up to the nearest fifty cents. Otieno sent the following telegram:

PAUL OCHIENG BOX 1200 OYUGIS
GO VISIT ATIENO BOARDING SCHOOL
KISII THIRD OCTOBER
OTIENO PETER

How much did he pay for it?

A. sh 14.00
B. sh 16.50
C. sh 27.00
D. sh 27.50

49. The bus fare from one town to another was decreased by 20% and later increased by 20%. If the original fare was sh. 50, what is the new fare?

A. sh 32
B. sh 40
C. sh 48
D. sh 50

50. A rectangular plot measures 64 m by 16 m. What would be the length of the side of a square plot with the same area?

A. 32 m
B. 40 m
C. 512 m
D. 1 024 m

Working Space