

SIGNAL EXAMS 2021
EIGHTH K.C.P.E SIGNAL
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 the 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 number, 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 your answer 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 square root of $\sqrt{0.1296}$?

- A. 0.36
- B. 0.06
- C. 0.6
- D. 0.036

The correct answer is C (0.6)

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 8 printed pages

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1. What is the sum of six hundred and six thousand six hundred and six and four hundred and forty four thousand four hundred and forty four written in symbols?

- A. 1111110
- B. 110110
- C. 1051050
- D. 1150150

2. What is the value of;

$$\frac{2}{3} \text{ of } 36 \times 2 - 4 \times 6 + 12 \div 3?$$

- A. 20
- B. 24
- C. 92
- D. 28

3. Which of the following numbers increases by hundredths?

- A. 1422.3321, 1422.4321, 1422.5321, 1422.6321
- B. 1422.3321, 1422.3421, 1422.3521, 1422.3621
- C. 1422.3321, 1422.3431, 1422.3441, 1422.3451
- D. 1422.3321, 1522.3321, 1622.3321, 1722.3321

4. What is the product of the GCD of 9 and 15 and the LCM of 6, 15 and 20?

- A. 120
- B. 63
- C. 150
- D. 180

5. A charcoal dealer had 4 sacks of charcoal each weighing 90kgs. He packed them into 2kgs and 3kgs tins. If the number of 3kgs tins was twice the number of 2 kg tins, how many tins did he obtain altogether?

- A. 45
- B. 90
- C. 135
- D. 180

6. Calculate the area of the piece of cloth below.



- A. 240cm^2
- B. 480cm^2
- C. 360cm^2
- D. 720cm^2

7. What is the value of;

$$\frac{2.08 + 6.4}{1.8 + 0.09} ?$$

- A. 0.424
- B. 4.24
- C. 42.4
- D. 424

8. A box packed with 64 similar dictionaries has a mass of 50.5kgs. If the average mass of each dictionary is 750g, what is the mass of the empty box?

- A. 500g
- B. 250g
- C. 2.5kg
- D. 3.25kg

9. What is the sixth number in the sequence below?

$$2, 5, 11, 23, \underline{\hspace{2cm}}$$

- A. 95
- B. 47
- C. 63
- D. 81

10. In a class, there are 50 pupils. b of the pupils are boys. What percentage of the class are girls?

- A. $(50 - b)\%$
- B. $(100 - 2b)\%$
- C. $(b - 50)\%$
- D. $(2b - 100)\%$

11. A tank is $\frac{1}{4}$ full of water. When 15 litres are added, it becomes $\frac{1}{3}$ full. What is the capacity of the tank when full?

A. 360L
 B. 200L
 C. 240L
 D. 180L

12. What is the value of P in the equation below?

$$3p - 1\frac{1}{4}p - 3 = 11?$$

A. 12
 B. 16
 C. 8
 D. 24

13. A salesman earns a basic salary of sh.6000 and a commission of 15% of his sales. What value must his sales amount to for him to get a total earning of sh.18000?

A. Sh. 120000
 B. Sh. 80000
 C. Sh. 150000
 D. Sh. 90000

14. Which of the following numbers is not divisible by 11?

A. 15675
 B. 28193
 C. 12221
 D. 18684

15. A builder hired 12 men to dig a trench in 12 days. After working for 4 days, he added 4 more men. How long did the trench take to be dug?

A. 8 days
 B. 10 days
 C. 16 days
 D. 6 days.

16. The prices of times in a kiosk were as follows:

- 1 kg sugar sh.80
 - 1 bar of soap sh.110
 - 1 loaf of bread sh. 50
 - A packet of tea leaves sh. 75
 - 500ml packet of milk sh. 45

Tonny bought $1\frac{1}{2}$ bar of soap, $\frac{1}{2}$ kg of sugar, 2 packets of milk and a loaf of bread. How much balance did he get from sh.500?

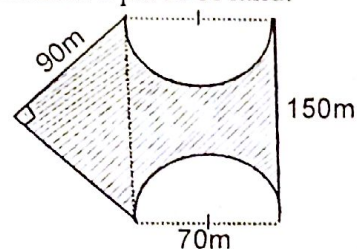
A. Sh. 345
 B. Sh. 175
 C. Sh. 125
 D. Sh. 155

17. On a map, a square whose area is 4cm^2 represents a ranch of area 16 hectares.

What is the scale used on the map?

A. 1:20000
 B. 1: 200000
 C. 1:50000
 D. 1:500000

18. The diagram below represents Mukulima's piece of land.



What is the total distance round the piece of land?

A. 440m
 B. 460m
 C. 580m
 D. 640m

26. Chege sold a pair of trousers for sh.720 making a profit of 25%. How much had he paid for the pair of trousers?

- A. Sh. 600
- B. Sh. 576
- C. Sh. 900
- D. Sh. 960

27. What is the value of;

$$\frac{4a(b - c)}{b + c}$$

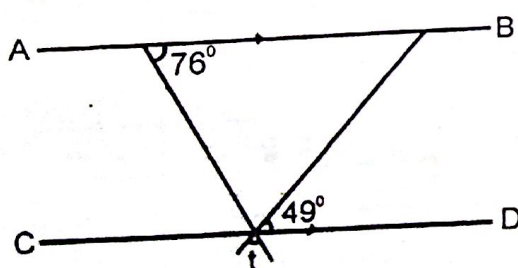
If $a = 10$, $b = a + 4$ and $c = \frac{1}{2}b + 4$?

- A. $4\frac{4}{5}$
- B. $5\frac{1}{4}$
- C. $1\frac{5}{6}$
- D. $4\frac{1}{5}$

28. A worker walked along the road replacing 61 bulbs at regular intervals of 50 metres. If he replaced the bulbs and went back to where started, what distance did he cover in kilometers?

- A. 6.1km
- B. 6km
- C. 3.05km
- D. 3km

29. In the figure below, line AB is parallel to CD.



What is the value of angle marked t?

- A. 125°
- B. 104°
- C. 65°
- D. 55°

30. Construct $\triangle ABC$ where line $AB = 8\text{cm}$, $BC = 7\text{cm}$ and $AC = 9\text{cm}$. Draw a circle that touches point A, B and C. What is the diameter of the circle?

- A. 4.6cm
- B. 9.2cm
- C. 10.4cm
- D. 5.2cm

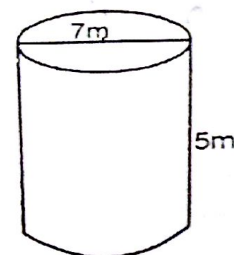
31. Msengi had 250 heads of cattle. During an outbreak of the East coast fever, 150 heads of cattle died. What was the ratio decrease in the number animals?

- A. 2:5
- B. 5:2
- C. 3:5
- D. 5:3

32. Mukulima sold $\frac{1}{3}$ of his bags of wheat and 1400 bags of maize. 1200 bags of wheat and $\frac{1}{3}$ of the bags of maize remained. How many bags did he have altogether at the beginning?

- A. 4200
- B. 3600
- C. 3900
- D. 4800

33. How many litres of water can the tank below hold when full?



- A. 192.5
- B. 1925
- C. 19250
- D. 192500

34. Kata took 12 seconds to cross a bridge on his horse. What was his average speed in km/hr if the bridge is 100 metres long?
- A. 36km/hr
 B. 30km/hr
 C. 18km/hr
 D. 54km/hr

35. Mwaniki deposited some money in a bank. After 6 months, the money earned a simple interest of sh.2400. If the bank gave 15% p.a as interest, how much had he deposited?
- A. Sh. 32000
 B. Sh. 28000
 C. Sh. 44000
 D. Sh. 64000

36. What is the simplified form of the expression;
 $4(3x - 2y + 2) + 2(2y - 2x + 5)$?
- A. $8x - 4y + 18$
 B. $8x + 12y + 18$
 C. $8x - 12y + 18$
 D. $8x - 18 + 12y$

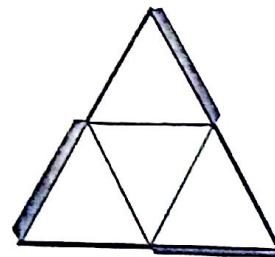
37. What is the value of;
 $\frac{3}{4}(18 - 6) + 12 \div \frac{1}{3}$ of $(6 \times \frac{2}{3})$
- A. 24
 B. 36
 C. 12
 D. 18

38. The area of a trapezium whose parallel lines are 12cm and 16cm is 84cm^2 . Find the perpendicular distance between the parallel sides.
- A. 6cm
 B. 12cm
 C. 18cm
 D. 9cm

39. The marked price of a watch was sh.2790. Njeri bought it after being allowed a discount of 20%. How much balance did she get if she gave the cashier 5 five hundred shilling notes?
- A. Sh 290
 B. Sh. 2222
 C. Sh. 568
 D. Sh. 268

40. A bicycle wheel has a radius of 35cm. During a race, the wheel turns 5 times every second. What distance in km does it cover from 7.00am to 12:00pm?
- A. 19.8km
 B. 198km
 C. 90km
 D. 180km

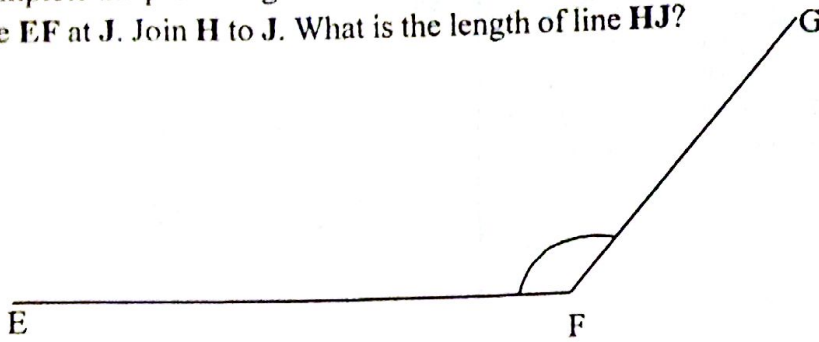
41. The net below was folded to form a solid.



Which of the following represents the number of faces, edges and vertices of the solid formed?

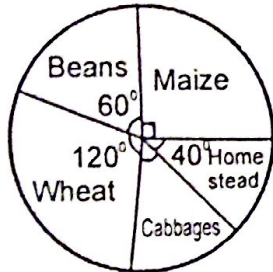
| | Faces | Edges | Vertices |
|----|-------|-------|----------|
| A. | 4 | 6 | 6 |
| B. | 6 | 4 | 6 |
| C. | 4 | 6 | 4 |
| D. | 6 | 6 | 4 |

42. Complete the parallelogram EFGH below. Drop a perpendicular from point H to meet line EF at J. Join H to J. What is the length of line HJ?



- A. 3.6cm
B. 2.4cm
C. 7.4cm
D. 6.7cm

43. The circle graph below shows how Makima uses his piece of land.



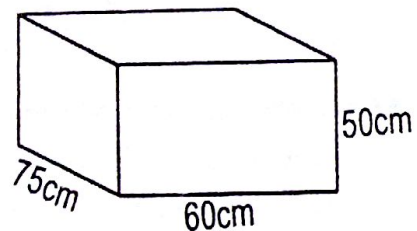
If 4.5 hectares are under maize, how many more hectares are under wheat than cabbages?

- A. 2.5ha
B. 3.5ha
C. 1.5ha
D. 2ha
44. A train reached Nakuru from Kitale at 6.15am. It had taken 8 hours 40 minutes to travel to Nakuru. At what time had it left Kitale in am/pm?
- A. 9.35pm
B. 9.35am
C. 9.45pm
D. 9.54am
45. In 5 years time the sum of Hamisi's age and Njoroge's age will be 75 years. What was the sum of their ages 5 years ago?
- A. 60 years
B. 65years
C. 55 years
D. 70 years.

46. In a test marked out of 60, Omondi got 70%. What was Omondi's raw mark?

- A. $\frac{35}{50}$
B. $\frac{42}{100}$
C. $\frac{35}{60}$
D. $\frac{42}{60}$

47. The open tank below was painted inside except the bottom. What was the total surface area painted?

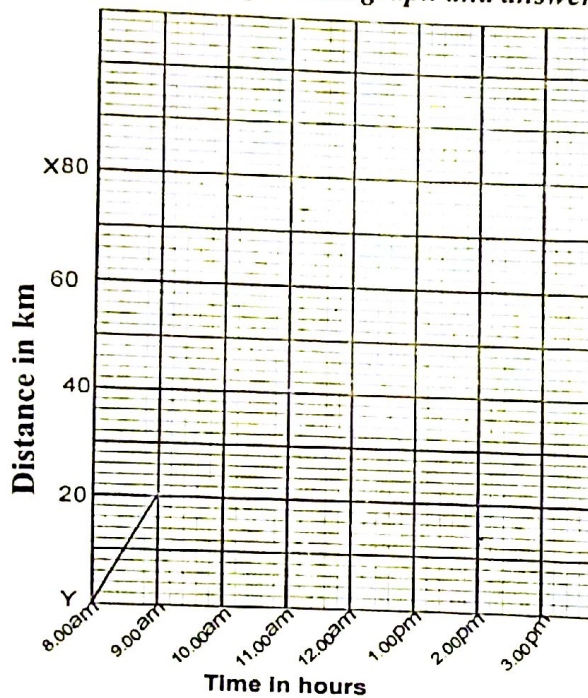


- A. 12000cm²
B. 22500cm²
C. 13500cm²
D. 18000cm²

48. The average mass of 5 boys is 44kg. Three of the boys weigh 48kg, 39kg and 41kg. The other two have equal masses. What is the sum of the modal and the median mass of the five boys?
- A. 92kg
 B. 90kg
 C. 46kg
 D. 44kg

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

50. The graph below shows part of Musafiri's journey from town Y to town X and back. Use the information given to complete the graph and answer question 50.



After covering 20km, Musafiri rested for 30 minutes and then continued with his journey at a speed of 120km/hr. He rested for 30 minutes at town X and travelled back to town Y at a speed of 80km/hr. At what time did he reach town Y?

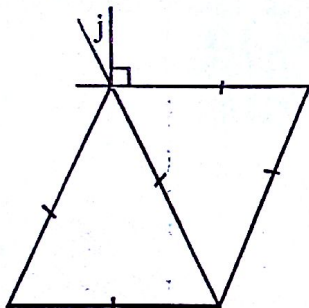
- A. 10.30am
 B. 12.00am
 C. 11.30am
 D. 11.00am

NB: For a comprehensive revision in Mathematics get yourself a copy of 'SIGNAL K.C.P.E REVISION MATHEMATICS' from Signal Publishers. AVAILABLE AT BOOKSHOPS COUNTRYWIDE.

19. A bus left Meru on Tuesday at 1625 hours. After stopping at Nairobi for 30 minutes, it left for Mombasa and reached Mombasa at 0435hrs on Wednesday. If its average speed for the whole journey was 60km/hr, how far is Meru from Mombasa?
- A. 850km
B. 1200km
C. 1500km
D. 730km

20. The floor of a room measures 12m by 10m. A carpet is laid leaving a space 2m round the carpet. If the cost of the carpet is sh.50 per square metre, what is the total cost of the carpet used?
- A. Sh. 6000
B. Sh. 4800
C. Sh. 3600
D. Sh. 2400

21. What is the value of the angle marked j in the figure below?



- A. 45°
B. 30°
C. 60°
D. 15°
22. Kamau buys $4\frac{1}{2}$ litre packets of milk everyday. How many litres did he buy from 4th January to 4th April 2020?
- A. 91L
B. 92L
C. 184L
D. 183L

23. The hire purchase price of a sewing machine is 20% more than the cash price. Mbatio bought the machine by paying a deposit of sh.14400 and 12 equal monthly installments of sh.800 each. How much more is the hire purchase price than the cash price?
- A. Sh. 4000
B. Sh. 20000
C. Sh. 4800
D. Sh. 19200

24. A family uses $\frac{5}{6}$ of a bag of maize for 30 days. How many less days will $\frac{2}{3}$ of the bag of maize last the family?
- A. 9 days
B. 8 days
C. 12days
D. 6 days.

25. The table below shows the number of crates of loaves of bread a kiosk owner sold in a week.

| Days of the week | Mon | Tue | Wed | Thur | Fri | Sat | Sun |
|--------------------|-----|-----|-----|------|-----|-----|-----|
| No. of crates sold | 9 | 3 | — | 2 | 6 | 5 | 7 |

- Each crate hold 20 loaves of bread. If the total number of loaves of bread sold were 720 during that week, how many crates were sold on Tuesday and Wednesday altogether?
- A. 7
B. 4
C. 11
D. 12