**DISCOVERY NATIONAL EXAMINATIONS
KCPE COMPLIANCE 2019**

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 mark outside the boxes.
8. Keep the answer sheet as clean as possible and **DO NOT FOLD IT**.
9. For each of the questions 1-50, 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:
8. A plane was flying at a speed of 288km/hr. Calculate the average speed in m/s.
   A. 120 m/s
   B. 80m/s
   C. 144m/s
   D. 48m/s
   The correct answer is **B** on the answer sheet:

   7 [A] [B] [C] [D]   8   [A] [B] [C] [D]   9 [A] [B] [C] [D]   10 [A] [B] [C] [D]   11 [A] [B] [C] [D]

11. Your **dark line MUST** be written in the box
12. For each question **ONLY ONE** box is to be marked in each set of four boxes.

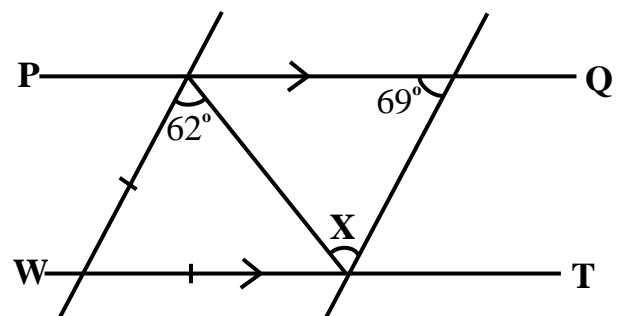**This question paper consist of 8 printed pages**

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Discovery National Examinations 2019   **TURN OVER**

1. Write seventy million, seventy thousand and twenty in symbols?
   A. 7070007
   B. 700070007
   C. 7007007
   D. 70070007

2. What is the sum of the largest and smallest number formed by the digits 837562 and 1 if each digit is used once?
   A. 9000999
   B. 1000999
   C. 10000999
   D. 9000999

3. How many times is the value of digit 3 more than the value of digit 6 in 34569805?
   A. 500
   B. 5000
   C. 50000
   D. 200

4. Find the value of: $\dfrac{0.7 \times 18.6}{0.042 \times 2.5}$
   A. 12.4
   B. 1.24
   C. 124
   D. 0.124

5. In a meeting, the number of children was four times that of women . The number of men was half the number of children and women together. If there were 32000 children in the meeting, how many people were there altogether?
   A. 44000
   B. 48000
   C. 56000
   D. 60000

6. Express 0.0064 m^3 in cm^3
   A. 640
   B. 6400
   C. 64
   D. 6.4

7. Omondi sold a transistor radio for sh. 9600 and made a profit of 20% . Calculate his profit?
   A. sh. 200
   B. sh. 1600
   C. sh. 8000
   D. sh. 1920

8. A school starts at 8.00 a.m and closes at 4.30 p.m. There is a break from 10.30 a.m to 11a.m and a lunch break from 12.40 p.m to 1.40 p.m. How many teaching hours are there?
   A. 7 hrs
   B. 7 hrs 30 min
   C. 8 hrs 30 min
   D. 9 hrs

9. In the figure below line **PQ** is parallel to line **WT**. What is the size of angle marked **X**?

   A. 59º
   B. 62º
   C. 69º
   D. 49º

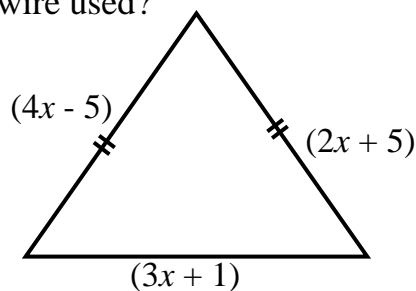**10.** Solve:- $\sqrt{7\frac{1}{9} \div 1\frac{7}{9}} \ \times (\frac{2}{5})^2$

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

B. $\frac{4}{25}$

C. $\frac{8}{25}$

D. ½

11. What is the smallest number that can be added to 181197 to make it divisible by 11?

A. 6

B. 5

C. 3

D. 4

12. The plot of land below was fenced using 20 strands of wire. Find the total length of wire used?

A. 5 m

B. 46 m

C. 66 m

D. 920 m

13. A number of cattle was increased from 240 to 360. What was the percentage increase in the number of cattle?

A. $33\frac{1}{3}$%

B. 25%

C. 50%

D. 80%

14. Solve the following equation

$$\frac{2x - 5}{5} + \frac{2x}{7} = 5$$

A. $8\frac{3}{4}$

B. $1\frac{3}{4}$

C. $1\frac{2}{3}$

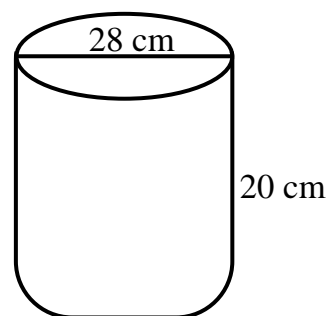D. $7\frac{2}{5}$

15. What is the next number in the pattern?

7, 16, 32, 57, _____

A. 89

B. 63

C. 93

D. 82

16. What is 845543 rounded off to the nearest thousands?

A. 840000

B. 850000

C. 845000

D. 846000

17. A closed cylinder has a diameter of 28cm and a height of 20cm as shown below
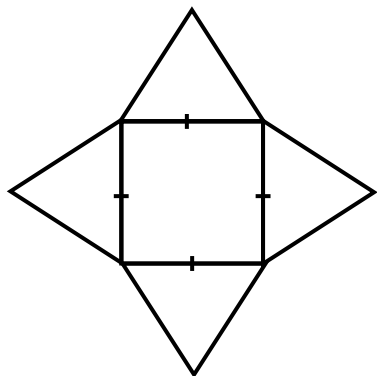

What is its volume?

A. 1232 cm³

B. 12320 cm³

C. 2376 cm³

D. 2992 cm³

18. Three bells ring at intervals of 5 sec, 8 sec and 12 sec respectively. If they ring together at 11.48 a.m, what time will they ring together again?

A. 11.50 a.m

B. 11.46 a.m

C. 11.50 p.m

D. 11.52 a.m

19. The diagram below is a net of a solid

Which one of the following solids will be formed when the net is folded?

A. Square based prism

B. Square based pyramid

C. A cube

D. Triangular pyramid

20. 5 cm was drawn on a map using a scale of 1:12500 to represent a certain distance. What distance was being represented?

A. 0.125 km

B. 0.625 km

C. 62.5 km

D. 6.25 km

21. What is the value of:- $1\frac{1}{8} \times \frac{3}{7} \div \frac{6}{7} \times \frac{1}{3}$?

A. $\frac{5}{56}$

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

C. $\frac{3}{16}$

D. $\frac{7}{24}$

22. Mutua paid sh. 8550 for a television after getting a 10% discount on the marked price. How much more would he have paid if he had been given a 5% discount?

A. sh. 855

B. sh. 475

C. sh. 7695

D. sh. 12825

23. A factor packed 50 tonnes of sugar in 2 kg-packets. How many packets were obtained ?

A. 25

B. 25000

C. 2500

D. 250

24. Joseph slept at 2215 hrs and woke up at 5.30 a.m. For how long did he sleep?

A. $5\frac{1}{3}$ hrs

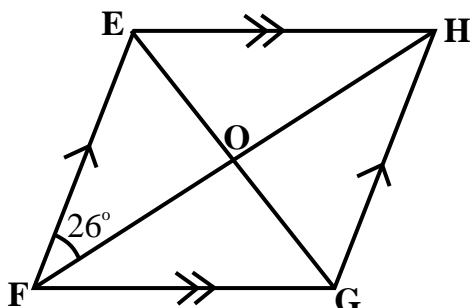B. $8\frac{1}{4}$ hrs

C. $7\frac{3}{4}$ hrs

D. $7\frac{1}{4}$ km/hr

25. A sales girl is paid a basic salary of sh. 2500 a month. She is also paid a commission of 8% on goods sold above sh. 7000. In one month, she sold good worth sh. 91,500 . What did she earn that month?

A. sh. 7320

B. sh. 9820

C. sh. 9260

D. sh. 10000

26. The table below shows how a patient attended a certain dispensary in a week.

Mon	Tue	Wed	Thu	Fri	Sat	Sun
52	55	53	—	57	58	58

If the mean number of days attended by the patient in the week was 54, what is the mean number of the patient on Tuesday, Wednesday, Thursday and Friday?

A. 45

B. 53

C. 55

D. 52.5

27. In the figure **EFGH** is a rhombus. Angle **EFO** = 26°

What is the size of angle **OGH**?

A. 64°

B. 128°

C. 52°

D. 36°

28. What is the value of; $\dfrac{8^2(9^2 - 3^2)}{4^2 \times 6^2}$

A. 4

B. 8

C. 2

D. $^2/_3$

29. In a certain school $^3/_5$ of the pupils are girls. One day when $^3/_{20}$ of the girls were absent, 153 girls were present. How many boys are there in the school?

A. 120   B. 180

C. 102   D. 300

30. The length of a rectangle is $(2x + 8)$ cm and the width is $(x -2)$ cm. If the perimeter is 84 cm. What is the value of the length?
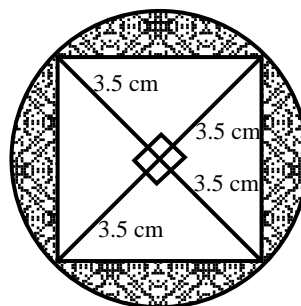
A. 12 cm

B. 32 cm

C. 40 cm

D. 60 cm

31. A wheel covers a distance of 44 meters after making 10 revolutions. What is the radius of the wheel in meters?

(Take $\rho= {}^{22}/_7$)

A. 0.7 m

B. 1.4 m

C. 2.2 m

D. 7.0 m

32. The figure below shows a square **WXYZ** drawn inside a circle **O**. The radius of the circle is 3.5 cm. What is the area of the shaded part.
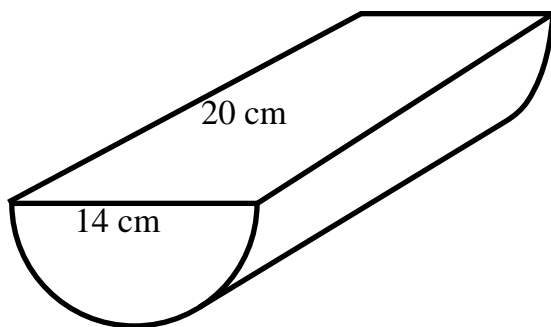
(Take $\rho={}^{22}/_7$)

A. 38.5 cm²   B. 26.25 cm²

C. 24.5 cm²   D. 14.0 cm²

33. How many posts spaced 5m apart are required to fence a rectangular plot measuring 745m by 230m?

A. 391
B. 390
C. 195
D. 196

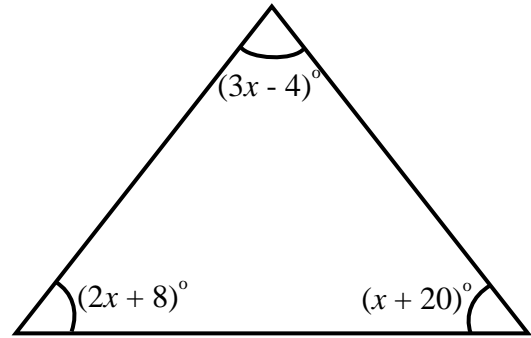**34.** The figure below represents a half cylindrical solid whose dimensions are as shown.

What is the surface area of the solid in cm^2?

A 440
B. 594
C. 797
D. 874

35. A rectangular water tank measures 60 cm by 50 cm by 80 cm. How many deciliters of water does it hold when full?

A. 240
B. 2400
C. 24000
D. 240000

36. What is the value of the largest angle in the figure?

A. 74°
B. 80°
C. 60°
D. 46°

37. The number of women passengers in a bus is x, children are three times that of men but 6 more than that of women. How many passengers were on the bus?

A. $5x + 24$
B. $2\frac{1}{3}x + 12$
C. $2\frac{1}{3}x + 8$
D. $7x + 24$

38. Twelve workers take 30 days to finish a certain job. How long will 18 workers take to finish the same job?

A. $7\frac{1}{5}$ days
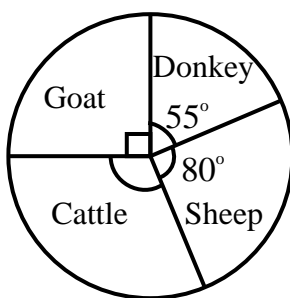B. 45 days
C. 20 days
D. 35 hrs

39. The temperature of frozen water was -15°C. It was warmed to 72°C. What is the rise in temperature?

A. 72°C
B. 87°C
C. 57°C
D. -57°C

40. The ratio cows to goats is 5:12 respectively. If there are 85 cows, how many goats does he have?

A. 17

B. 204

C. 289

D. 84

41. The pie chart below shows the number of animals on Ole Kippur's farm. If there are 25 more goats than sheep.

How many animals are there in the farm?

A. 960

B. 1200

C. 1000

D. 900

42. The hire purchase of a TV set is 20% more than the marked price. Faith paid sh. 12000 as deposit and the balance in equal monthly instalment of sh. 1800 each. How long did he take to pay if the marked price was sh. 40000?

A. 18 months

B. 20 months

C. 22 months

D. 15 months

43. Kiprop covered $^2/_5$ of his journey on cycling, $^3/_4$ of the remainder by matatu. He walked the remaining distance which was 15 km. How long was his journey?

A. 100 km

B. 75 km

C. 80 km

D. 120 km

44. Benta travelled 3 hrs at 80 km/h and another 2 hours at 90 km/hr. What was his average speed for the whole journey

A. 85 km/hr

B. 84 km/hr

C. 170 km/hr

D. 90 km/hr

45. A bank charged interest at the rate of 10% per year. Omolo borrowed sh. 2400 from this bank and repaid the loan at end of 9 months. How much did he pay?

A. sh. 2400

B. sh. 2580

C. sh. 2640

D. sh. 4560

46. Kamita bought the following items from a kiosk.

2 kg of sugar for sh. 152

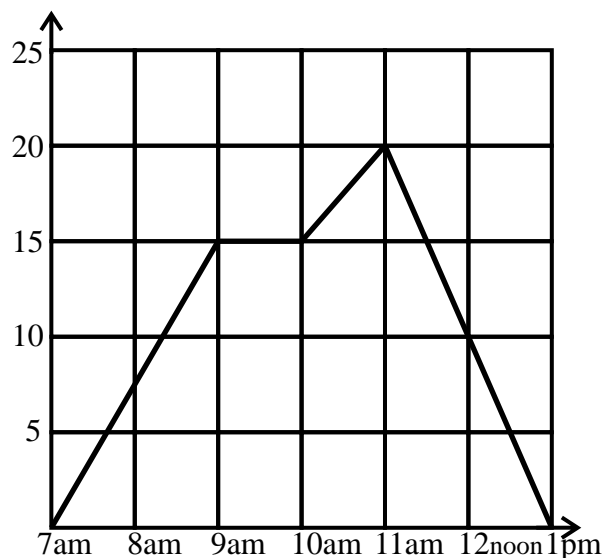*1½ kg of rice at sh. 160 per kg*

2 loaves of bread @ sh. 23

What balance did he receive if he paid for the items using a sh. 1000 note?

A. sh. 438

B. sh. 562

C. sh. 410

D. sh. 665

47. Construct triangle **PQR** such that **PQ** = 6 cm **PR** = 5 cm and angle **QPR** = 45°. What is the length of **QR**?
A. 4.3 cm
B. 5 cm
C. 6 cm
D. 3.5 cm

48. Calculate the perimeter of a square whose area is $18\frac{1}{16}$ m^2?
A. 20.4 m
B. 8.5 m
C. 17 m
D. 20 m

49. Draw a triangle **FGH** where **FG** = 7.2 cm **HFG** = 70° and **FHG** = 65°. Drop a perpendicular from G to meet **FH** at **D**. What is **DH**?
A. 2.5 cm
B. 3.1 cm
C. 2.9 cm
D. 2.3 cm

50. Komu travelled to the market and back as shown in the diagram below.

What was the average speed for the return journey?
A. 5 km/hr
B. 10 km/hr
C. $6\frac{2}{3}$ km/hr
D. 20 km/hr