KCPE 2009

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:

9. What is the next number in the pattern:

1.2, 2.4, 4.8 ____, ...?

A. 6·0
B. 7·2
C. 8·4
D. 9·6

The correct answer is D (9·6).

On the answer sheet:

9 (A) (B) (C) ➡ **19** (A) (B) (C) (D) **29** (A) (B) (C) (D) **39** (A) (B) (C) (D) **49** (A) (B) (C) (D)

In the set of boxes numbered 9, 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. Which one of the following numbers is twenty-six million, four hundred and thirty thousand, two hundred and nine in symbols?

A. 26432009
B. 2643209
C. 26430209
D. 264302009

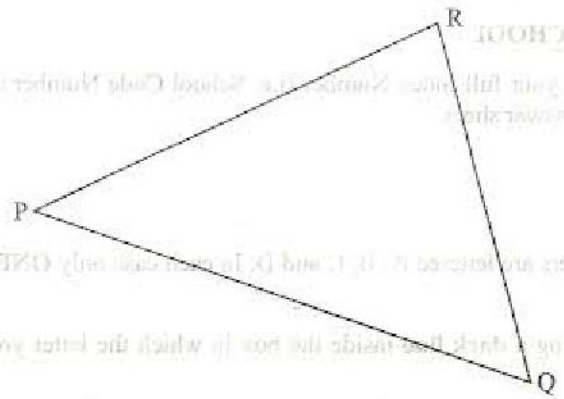
2. Which one of the following statements is correct?

A. $\frac{3}{4} > 0{\cdot}75$
B. $\frac{1}{9} < 0{\cdot}1$
C. $\frac{4}{3} < 1{\cdot}3$
D. $\frac{2}{5} < 0{\cdot}5$

3. A storekeeper donated 5 tonnes of sugar to families in a village. Each family received 2.5 kg of sugar.
How many families benefited?

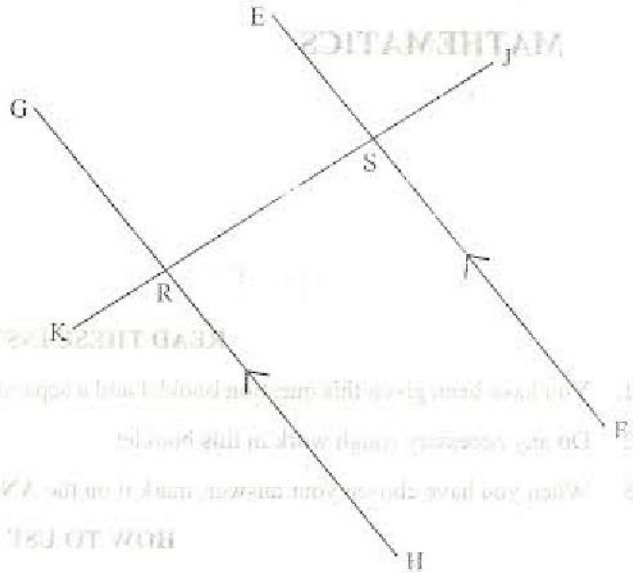
A. 20 000
B. 2 000
C. 200
D. 20

4. On the diagram below construct a perpendicular from R to cut PQ at S. What is the length of RS?



A. 4.9 cm
B. 4.1 cm
C. 5.2 cm
D. 5.8 cm

5. On the diagram below EF is parallel to GH and JK is a transversal. Which one of the angles is equal to KRH?



A. SRH
B. GRK
C. ESJ
D. JSF

6. Mwende had mangoes. She ate 5 and shared the remaining among her 6 friends. She however found that she needed 2 more mangoes if each of the friends was to get 4 mangoes. How many mangoes had she at the beginning?

A. 22
B. 27
C. 29
D. 31

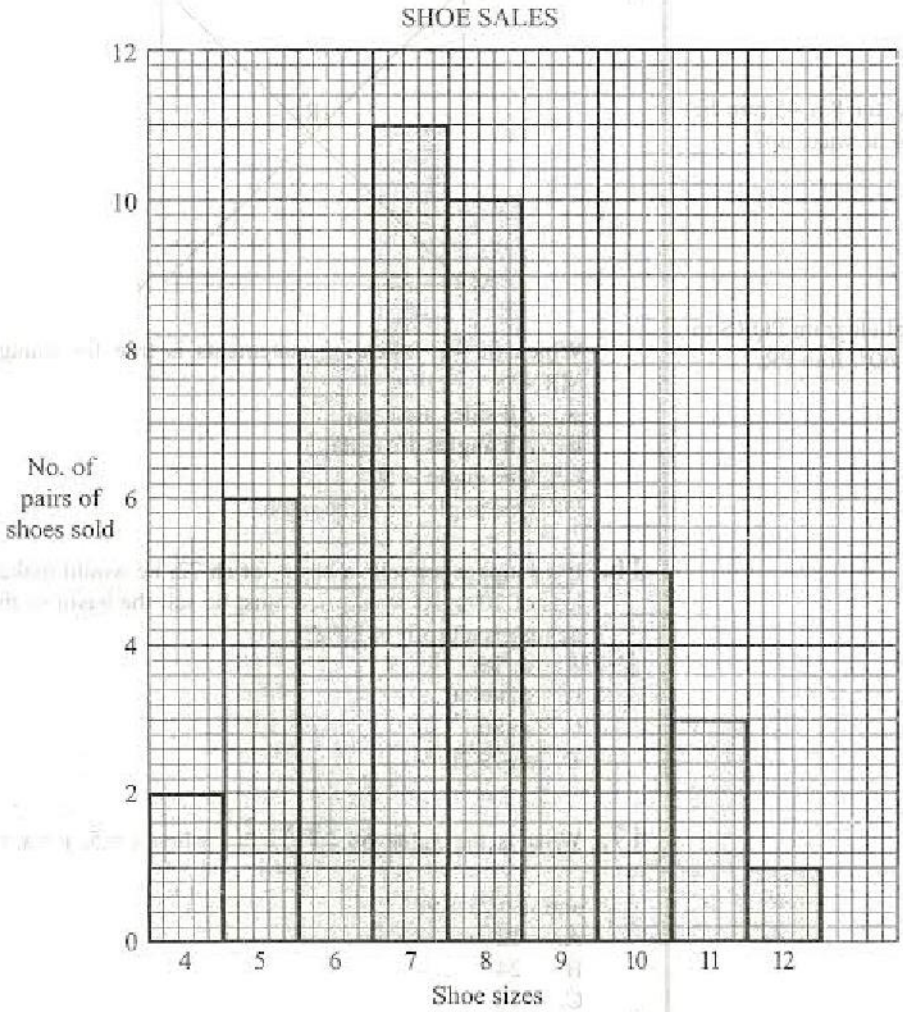
7. Maloba deposited sh 8 000 in a financial institution that paid simple interest. At the end of 3 years this money had amounted to sh 9 200. At what rate per annum was the simple interest awarded?

A. 5%
B. 15%
C. $38\frac{1}{2}$%
D. $4\frac{8}{23}$%

8. Adhiambo left home and cycled for $1\frac{1}{2}$ hours at an average speed of 8 km/h. She rested for 30 minutes and continued with the journey for 2 hours at an average speed of $7\frac{1}{2}$ km/h.
What was the average speed for the whole journey?

A. 7 km/h
B. $7\frac{2}{9}$ km/h
C. $7\frac{3}{4}$ km/h
D. $6\frac{3}{4}$ km/h

9. The bar graph below shows the number and sizes of pairs of shoes sold in one week.



Which size of shoe was bought most?

A. 12
B. 11
C. 8
D. 7

10. What is the difference between the total value of digit 3 and digit 9 in the number 6803901?

A. 6
B. 2 100
C. 3 000
D. 3 900

11. What is the value of $\frac{6(24-18)+6\times 4}{6}$?

A. 30
B. 25
C. 10
D. 28

Working Space

12. What is the area of a square garden whose perimeter is 116 metres?

A. 29 m^2
B. 58 m^2
C. 841 m^2
D. 3 364 m^2

13. Juma slept at 2130 h. After sleeping for 8 h 45 min he woke up. At what time, in am/pm, did he wake up?

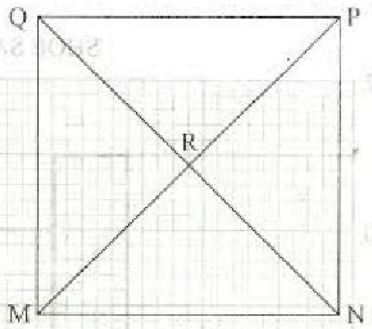
A. 6.15 am
B. 12.15 pm
C. 12.15 am
D. 6.15 pm

14. Using line PQ below, construct a parallelogram PQRS in which QR = 7·5 cm and angle SPQ = 60°. Join PR.

What is the size of angle PRS?

A. 120°
B. 40°
C. 30°
D. 20°

15. The figure below is a square in which the diagonals intersect at R.



Which of the following statements is true for triangle MRN?

A. All sides are equal.
B. All angles are equal.
C. One angle is 60°.
D. One angle is a right angle.

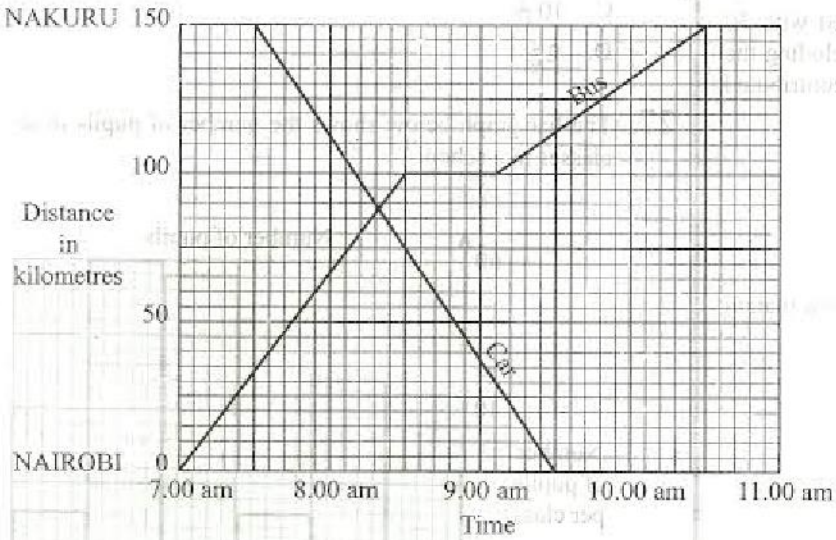
16. If a shopkeeper sells a basin for sh 72, he would make a loss of 10%. At what price must he sell the basin so that he makes a profit of 20%?

A. sh 96
B. sh 86·40
C. sh 80
D. sh 79·20

17. What is the value of $\frac{2w(x-2)^2}{y+1}$ when $x = 5$, $y = x + 3$ and $w = 2x + y$?

A. 12
B. 24
C. 36
D. 144

18. Below are two graphs. One graph shows the journey by a bus from Nairobi to Nakuru. The other shows the journey by a car from Nakuru to Nairobi.



How far from Nakuru was the bus when the car reached Nairobi?

A. 115 km
B. 90 km
C. 60 km
D. 35 km.

19. In a meeting $\frac{3}{5}$ of the attendants were women, $\frac{1}{4}$ of the remainder were men and the rest were children. There were 80 men in that meeting. How many children were there?

A. 120
B. 240
C. 480
D. 800

20. What is the number 15·76 rounded off to the nearest tenth?

A. 15·7
B. 15·8
C. 16
D. 20

21. What is the value of $\frac{4}{5}+\frac{3}{5}$ *of* $(\frac{2}{3}-\frac{1}{5})+\frac{3}{4}\times\frac{2}{5}$?

A. $1\frac{19}{50}$
B. $1\frac{143}{150}$
C. $1\frac{3}{10}$
D. $1\frac{23}{250}$

22. A school contributed money for a project as follows:

Pupils in class 1-4 contributed sh 10 each
Pupils in class 5-8 contributed sh 20 each
Teachers contributed sh 200 each
The Headteacher contributed sh 500

Each class in the school was double streamed with 30 pupils per stream. The number of teachers including the headteacher was 26. How much money was contributed altogether?

A. sh 12 700
B. sh 15 100
C. sh 19 900
D. sh 20 100

23. The table below shows the fare in shillings for a matatu travelling from Nairobi to Nakuru.

NAIROBI			
150	NAIVASHA		
200	50	GILGIL	
250	150	100	NAKURU

Fourteen passengers boarded the matatu at Nairobi. Seven of the passengers alighted at Gilgil while five others boarded at Gilgil for Nakuru.
How much money altogether did the driver collect?

A. sh 3 650
B. sh 3 500
C. sh 3 150
D. sh 1 900

24. The table below shows the number of pupils who were in standards 1 to 4 in a certain school from 2001 to 2004.

	Std 1	Std 2	Std 3	Std 4
2001	79	73	59	55
2002	83	77	71	57
2003	86	80	74	68
2004	89	83	77	71

How many pupils of the class which was in Std 1 in 2001 had dropped out of that class by 2004?

A. 24
B. 16
C. 10
D. 8

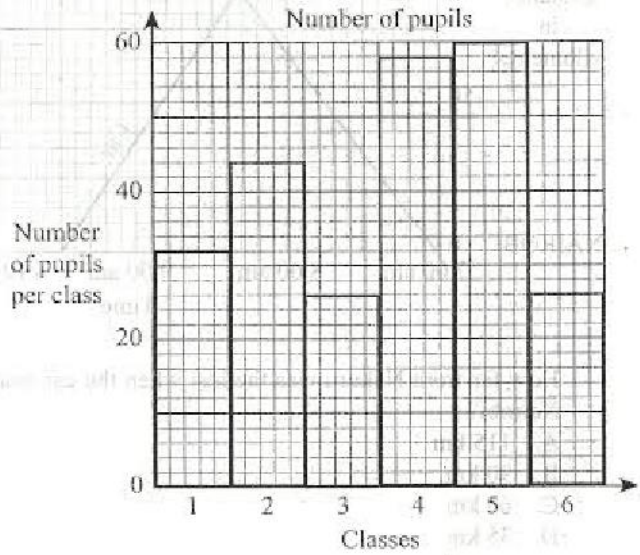
25. Matu paid sh 7 600 for a radio after getting a 5% discount on the marked price. How much would he have paid if he had been given a 15% discount?

A. sh 8 000
B. sh 6 800
C. sh 6 840
D. sh 6 460

26. What is the value of s in the equation $\frac{s}{4}+\frac{2}{3}(s+5)=6$?

A. $2\frac{10}{11}$
B. $1\frac{1}{11}$
C. $10\frac{2}{11}$
D. $2\frac{4}{9}$

27. The bar graph below shows the number of pupils in six classes in a school.



What is the mean number of pupils per class?

A. 26
B. 38
C. 41
D. 246

28. What is the next number in the sequence 6, 13, 24, 37, ____?

A. 58
B. 56
C. 54
D. 52

29. A rectangular container is 80 cm long, 50 cm wide and 40 cm high. The container is filled with water to a level 30 cm high. What is the volume of the empty space in the container?

A. 180 000 cm^3
B. 160 000 cm^3
C. 120 000 cm^3
D. 40 000 cm^3

30. A team of eleven players took lunch in a hotel, which offered food prices as shown in the table below.

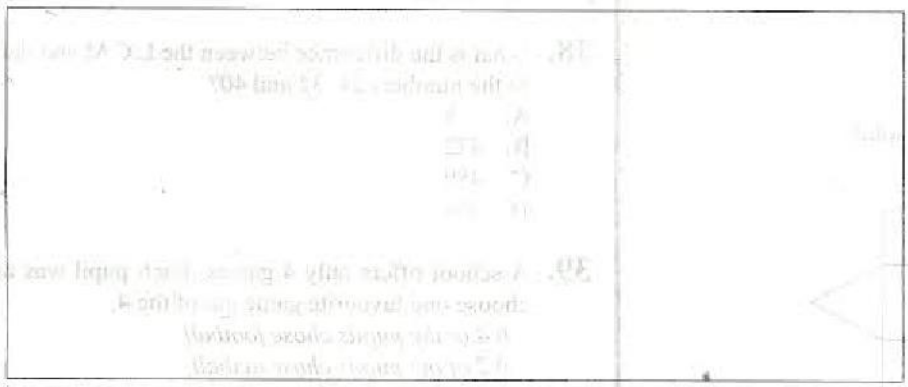
	Ugali	Rice	Chips
Beef	sh 60	sh 65	sh 75
Chicken	sh 75	sh 70	sh 100
Fish	sh 75	sh 80	sh 105

5 players each took ugali with chicken
3 players each took chips with fish
The remaining players each took rice with beef

Musa gave a one-thousand shilling note to pay for the lunch of all the players.
What balance did he get?

A. sh 55
B. sh 115
C. sh 310
D. sh 885

31. The diagram below is a scale drawing of a plot of land drawn to the scale 1 : 1 500.



What is the actual area of the plot, in m^2?

A. 600 000
B. 90 000
C. 13 500
D. 510

32. What is the value of $\frac{2{\cdot}8 - 0{\cdot}5 \times 3{\cdot}2 + 3}{0{\cdot}4}$?

A. 4·2
B. 1·8
C. 10·5
D. 25·9

Working Space

33. Sera sells goods for a company. She is paid a salary of sh 84 000 per month plus a commission of 20% for the sale of goods worth above sh 10 000. In one month her total earnings were sh 150 000. What was the value of the goods she sold?

A. sh 760 000
B. sh 340 000
C. sh 330 000
D. sh 244 000

34. A father shared money among his three children Mulwa, Wangare and Achesa. Wangare received sh 10 more than Achesa, while Mulwa got twice the amount Wangare got. If Achesa received sh x, which one of the following expressions represents the total amount of money given to the three children?

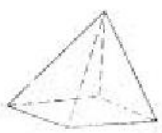
A. $4x + 30$
B. $4x + 10$
C. $2x + 20$
D. $3x + 30$

35. In a class the ratio of the number of boys to girls is 2:3. What is the percentage of the number of boys in the class?

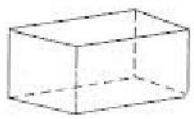
A. $33\frac{1}{3}\%$
B. 40%
C. 60%
D. $66\frac{2}{3}\%$

36. The diagram below is a net of a solid.

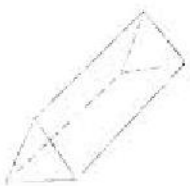
If the net is folded, which one of the following diagrams represents the solid formed?



A



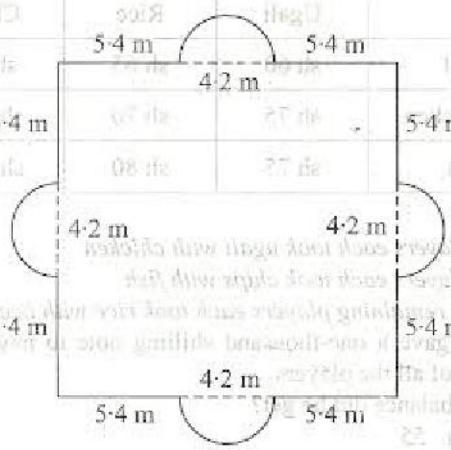
B



C

D

37. The figure below represents a vegetable garden consisting of a square and four semicircles each of diameter 4·2 m.



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

A. 69·6
B. 225
C. 252·72
D. 335·88

38. What is the difference between the L.C.M and the G.C.D of the numbers 24, 32 and 40?

A. 8
B. 472
C. 480
D. 488

39. A school offers only 4 games. Each pupil was asked to choose one favourite game out of the 4.

0·4 of the pupils chose football
0·2 of the pupils chose netball
0·3 of the remaining pupils chose basketball
The rest, who were 112 pupils, chose hockey

What was the total number of pupils who chose football and netball?

A. 240
B. 160
C. 400
D. 80

40. A saleslady had 2 240 litres of juice which she packed in 500 ml and 250 ml packets. Three-quarters of the juice was packed in 500 ml packets and the rest in 250 ml packets.

What was the total number of packets used?

A. 56
B. 560
C. 5 600
D. 56 000

41. A rectangular plot of land has a perimeter of 35 m. The longer side is 10 m. A wall is to be constructed along one of the diagonals of the plot. What would be the length of the wall?

A. $78\frac{1}{8}$ m

B. $17\frac{1}{2}$ m

C. $7\frac{1}{2}$ m

D. $12\frac{1}{2}$ m

42. Mary bought a T.V set on hire purchase terms. She paid a deposit of sh 800 and 15 equal monthly instalments of sh 700 each. The hire purchase price was 25% higher than the cash price. Amina bought the same type of T.V set on cash. How much more than Amina did Mary pay for the T.V set?

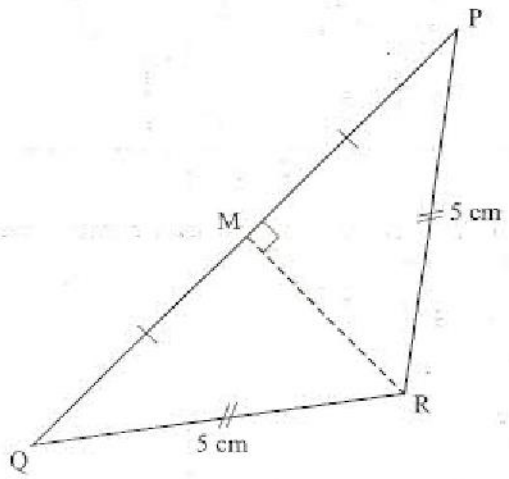
A. sh 2 260

B. sh 2 825

C. sh 9 040

D. sh 11 300

43. In triangle PQR below, PQ = 8 cm, PM = MQ and PR = RQ = 5 cm.



What is the area of the triangle PQR?

A. $7\frac{1}{2}$ cm^2

B. 6 cm^2

C. $12\frac{1}{2}$ cm^2

D. 12 cm^2

44. Eighteen people can take 72 days to complete a piece of work. If 2 of the people did not turn up for the work, how many more days would the remaining number of people, working at the same rate, take to complete the work?

A. 9

B. 81

C. 153

D. 575

45. Pupils in classes 5, 6, 7 and 8 were to raise funds for a party. Class 7 raised sh x while class 5 raised $\frac{1}{3}$ of what class 7 raised. Class 6 raised sh 100 less than the total amount raised by both classes 5 and 7. Class 8 raised sh 200 more than class 7. If the total amount raised was sh 6 900, which one of the following equations can be used to find the amount raised by each class?

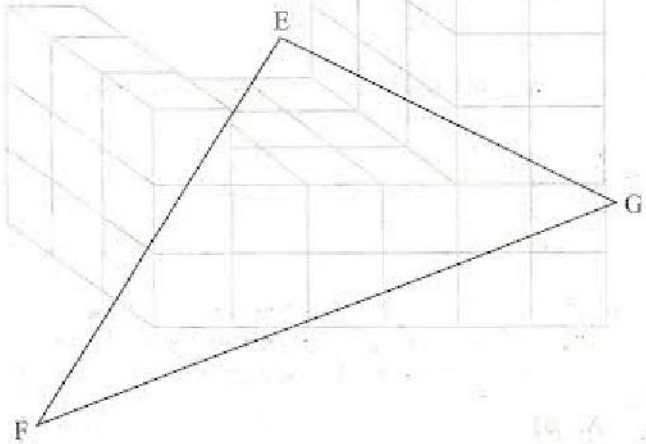
A. $x + \frac{2}{3}x + 100 = 6\,900$

B. $3x + \frac{2}{3}x - 300 = 6\,900$

C. $3x + \frac{2}{3}x + 300 = 6\,900$

D. $3x + \frac{2}{3}x + 100 = 6\,900$

46. On the triangle EFG below, construct the bisector of angle EFG to meet the line EG at M. Construct the bisector of angle FEG to meet the line FG at N. Mark P at the point where the two bisectors intersect.



What is the size of angle EPF?

A. 113°

B. 67°

C. 48°

D. 20°

47. What is the value of $\sqrt{2\frac{1}{4} + 2\frac{7}{9}} \times (\frac{2}{3})^2$?

A. $\frac{6}{25}$

B. $1\frac{1}{9}$

C. $1\frac{1}{5}$

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

48. In year 2005, enrolment in a school was 450. In the year 2006, the enrolment decreased by 10% from that of year 2005. The enrolment increased by 20% in year 2007. What was the enrolment in year 2007?

A. 396

B. 486

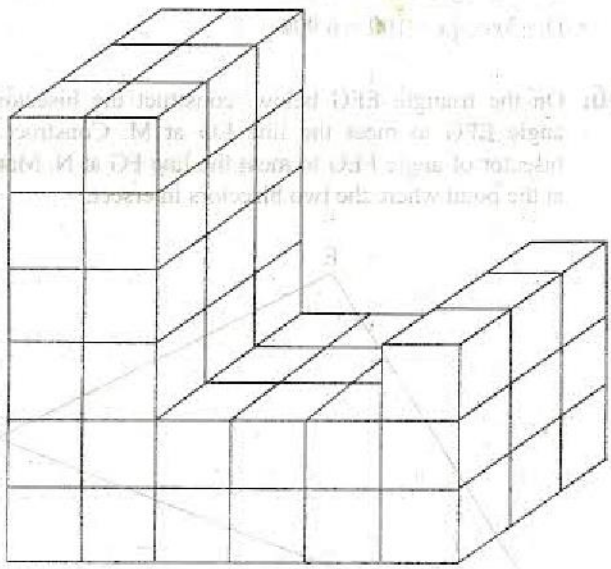
C. 495

D. 584

49. A cylindrical tank of diameter 105 cm contains 485.1 litres of water. What is the height of the water in the tank?
(Take $\pi = \frac{22}{7}$)

A. 5.6 cm
B. 56 cm
C. 224 cm
D. 1 470 cm.

50. How many blocks can be used to make the pile shown in the diagram below?



A. 63
B. 60
C. 54
D. 36

Working Space