

# **FESBETH ACADEMY**

## **MATHEMATICS BLUE PRINT**

**2020**

**TIME: 2 HOURS**

### **INSTRUCTIONS TO CANDIDATES**

a) Write your details in the table provided below.

<b><i>NAME</i></b>	
<b><i>INDEX NUMBER</i></b>	
<b><i>NAME OF YOUR SCHOOL</i></b>	
<b><i>DATE</i></b>	

- b) For each question 1 – 50 you have been provided with four answers. The answers are marked A, B, C and D. Only one answer is correct. Choose the correct answer
- c) On the answer sheet record only one answer represented by letter provided.
- d) Answers all questions.

1. Which number comes after 6,190,499 in words?
- A. Six million, one hundred and ninety thousand, four hundred and ninety nine.
- B. Six million, one hundred and ninety thousand and five hundred.
- C. Six million, one hundred and ninety thousand, four hundred and ninety eight.
- D. Six hundred and nine million and five hundred.

- A. 2800000
- B. 2819990
- C. 2810000
- D. 2819000

2. What is the value of:

$$120 \div (60 \times 2) + 11 \times 4 - 120 \div 30$$

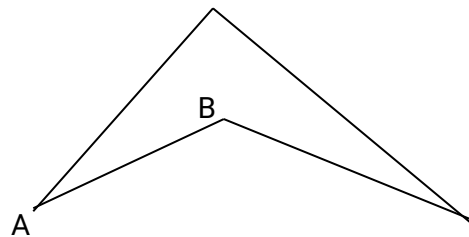
- A. 7677.4
- B. 41
- C. 45
- D. 5

3. What is the value of:  $\frac{1}{3} \div \frac{1}{2} (\frac{1}{2} + \frac{1}{3}) \div 1\frac{2}{3}$

- A.  $\frac{1}{3}$
- B.  $\frac{12}{25}$
- C.  $\frac{1}{6}$
- D.  $1\frac{1}{3}$

4. Round off 2,809,998 to the nearest hundreds

5. D



C

Measure the size of interior angle

ABC

- A.  $50^\circ$
- B.  $230^\circ$
- C.  $130^\circ$
- D.  $100^\circ$

6. What is:  $\frac{\sqrt{64 + 36} + (\frac{1}{2})^2}{4}$

- A.  $5\frac{1}{4}$
- B. 3
- C.  $2\frac{3}{4}$
- D.  $3\frac{3}{4}$

7. Find the value of:

$$1.3 \times 0.13 + (1.24 + 0.102 \div 0.06)$$

- A. 3109
- B. 0.3109
- C. 3.109
- D. 31.09

8. The table below shows how three pupils performed for their schools in a sport competition and the number of times each pupil was placed in their 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> position.

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
BASIL	2	3	1
IVY	2	2	2
VIVIAN	2	1	3

If 5 points were awarded for the first, 3 points for the second and 1 point for the third position, what was the total number of points scored by the three pupils for their school?

- A. 54
  - B. 90
  - C. 30
  - D. 20
9. Simplify the expression below to its simplest form

$$\frac{1/3 (18x + 12y) - (4x + 2y)}{2}$$

- A.  $x + y$
- B.  $\frac{2(x+y)}{2}$
- C.  $\frac{2x+2y}{2}$

D.  $x+3y$

10. Which of the following is arranged in order from the largest to the smallest?

- A.  $\frac{17}{48}, \frac{13}{32}, \frac{5}{16}, \frac{5}{8}$
- B.  $\frac{5}{8}, \frac{5}{16}, \frac{13}{32}, \frac{17}{48}$
- C.  $\frac{17}{48}, \frac{5}{16}, \frac{13}{32}, \frac{5}{8}$
- D.  $\frac{5}{8}, \frac{13}{32}, \frac{17}{48}, \frac{5}{16}$

11. Njoki planted trees at intervals of 22m apart on the diagonal of a rectangular plot of land that measures 48m by 20m. How many trees were planted?

- A. 68
- B. 26
- C. 27
- D. 69

12. The marked price of a shirt was sh. 400. Juma bought it after being given a discount of 20%. He sold it making a profit of 20%. How much profit did he make?

- A. Sh. 160
- B. Sh. 64
- C. Sh. 384
- D. Sh. 80

13. What is the sum of the next two numbers in the pattern below

$$1, 1, 2, 8, 3, 27, 4, \_, \_$$

- A. 64
- B. 69
- C. 59
- D. 189

14. What is the value of:

$$\frac{1}{2}f(c-d) + k-d$$

Where  $f = 5$ ,  $d = \frac{1}{4}c$ ,  $k = f - 2$  and  $c = 8$

- A. 23
- B. 14
- C. 16
- D. 9

15. Construct a parallelogram KLMN in which  $KL = MN = 8\text{cm}$ ,  $LM = KN = 6\text{cm}$ , angle  $KLM = 120^\circ$ . What is half the shorter diagonal?

- A. 7.2cm
- B. 12cm
- C. 6cm
- D. 3.6cm

16. Hire purchase price of a bed includes a deposit of sh. 2500 and thereafter 10 monthly installments each of sh. 750. The cost price is sh. 2000 less than the hire purchase price. By what percentage is the hire purchase price more than the cost price?

- A. 120%
- B. 20%
- C. 25%
- D. 125%

17. STD eight pupils of Fesbeth Academy observed that their Mathematics Teacher put on a suit after every 3 days. Their teacher of English wore suits after every 4 days while their teacher of science wore suits after every 5 days. They were seen in suits on 12<sup>th</sup> March

2016. When had they been seen in the suits before?

- A. 12<sup>th</sup> January.
- B. 13<sup>th</sup> January.
- C. 10<sup>th</sup> May.
- D. 11<sup>th</sup> May.

18. A charity group donated flour and sugar to the widows in Shitungu village. There were 200 beneficiaries of the donation. Flour was in 2kg packets while sugar in half kilogram packets. The distribution showed that 32 widows received sugar only. What was the total weight of sugar and flour donated?

- A. 436kg
- B. 368kg
- C. 352kg
- D. 500kg

19. Khachiti earns a basic salary of sh. 4000 monthly. She is also given a 6.5% commission on the sales above sh. 15000. In the month of April she earned sh. 6925 after selling radios at sh. 2500. What was the number of radios sold by Khachiti in that month?

- A. 18
- B. 240
- C. 24
- D. 40

20. The table below shows a truck route from Mombasa to Malaba border.

STATION	DISTANCE (KM)
MOMBASA	480
VOI	350
NAIROBI	230

NAKURU	150
KISUMU	---
MASENGO	40
KAKAMEGA	60
KABURENGU	75
BUNOMA	120
BUSIA	150
MALABA	270

The truck left Mombasa on Tuesday at 7.15 pm. After travelling for 5 hours 30 minutes, the truck driver took a rest of 30 minutes at Kisumu. What was the average speed of the truck if it reached Malaba at 0540h?

- A.  $920\frac{4}{5}$  km/hr
- B. 80km/hr
- C. 46km/hr
- D. 72km/hr

21. A metallic cube has a volume of  $1331\text{cm}^3$ . What is the perimeter of its edges?

- A. 121
- B. 726
- C. 132
- D. 55

22. Construct a triangle WMN in which  $WM = WN = 6\text{cm}$  and angle  $MWN = 60^\circ$ . Draw the bisectors of line MN and angle WMN. Let the bisectors meet at point O. What is the measure of angle WOM?

- A.  $60^\circ$
- B.  $120^\circ$

- C.  $30^\circ$
- D.  $150^\circ$

23. Ten children have a mean age of 7 years. The first six have a mean age of 6 years. What is the total age of the last four children?

- A. 34
- B. 36
- C. 8.5
- D. 13

24. The price of an item was sh. 300 after a decrease of sh. 150. What was the decrease as a percentage?

- A. 50%
- B. 25%
- C. 150%
- D.  $33\frac{1}{3}\%$

25. Larissa had mangoes, apples, oranges and passion fruits in a bag. In total she had 180 fruits in equal measure. The table below shows the number of fruits that remained after some went bad.

FRUITS	APPLES	MANGOES	ORANGES	PASSION
NO.	25	15	10	---

If the information above was represented on a pie chart, what angle would represent the fruits that went bad?

- A.  $260^\circ$
- B.  $25^\circ$
- C.  $100^\circ$
- D.  $335^\circ$

26. The radius and the height of a cylindrical tin are the same. The tin has a volume of  $3.14\text{m}^3$ . What is the diameter of the tin in centimeters? (Take  $\pi = 3.14$ )

- A. 1
- B. 100
- C. 2
- D. 200

27. What is half the value of  $m$  in the inequality?

$$9 - 14m > 6m - 41$$

- A.  $m > 2\frac{1}{2}$
- B.  $m < 1\frac{1}{4}$
- C.  $m < 2\frac{1}{2}$
- D.  $m > 1\frac{1}{4}$

28. In a certain week the number of people who attended a special clinic according to gender and age was as seen in the table below

GENDER	TOTAL
MEN	240
BOYS	---
WOMEN	360
GIRLS	---

The information above was represented as a percentage and men were 30%. If the number of boys were 20 more than girls, how many girls attended the clinic?

- A. 200
- B. 90
- C. 800

D. 450

29. The digits 3, 0, 1, 2, 4 were arranged to form the smallest and greatest numbers possible. What is the sum of the two numbers formed?

- A. 32976
- B. 44435
- C. 54443
- D. 53444

30. Leah and Milkah shared some money in the ratio 60% respectively. If Milkah received sh. 1200 less than Leah, how much had they to share?

- A. Sh. 3000
- B. Sh. 6000
- C. Sh. 3600
- D. Sh. 2000

31. A father distributed sweets to his three children: Lorna, Joyce and Edgar. Lorna got  $\frac{2}{5}$  of the sweets while Joyce got a sixth of the remainder. Edgar was given half of what was left. What was the share of Joyce as a ratio of Edgar's?

- A. 2:3
- B. 4:1
- C. 2:5
- D. 5:2

32. Mrembo is one metre high. The length that connects her head and the head of her shadow is  $1\frac{1}{4}$  long. If her shadow is perpendicularly lying to her height, how long is her shadow in centimeters?

- A. 0.75
- B.  $\frac{3}{4}$
- C. 75

D. 7.5

33. Five hundred and four cubes of side 5cm were arranged in a rectangular box. The box is 35cm wide and 45cm long. What is its height?

- A. 38cm
- B. 40cm
- C. 200cm
- D. 35cm

34. A long distance bus left Nairobi for Kampala. The journey took  $1\frac{2}{3}$  days. The bus reached Kampala on a Tuesday at 4.20a.m. On what day and time had the bus started off from Nairobi?

- A. Monday 8.20 p.m
- B. Sunday 8.20 am
- C. Monday 8.20 am
- D. Sunday 8.20 p.m

35. The temperature of a liquid was  $25^{\circ}\text{C}$  before it was warmed at a rate of  $10^{\circ}\text{C}$  per minute for 5min. It was then cooled at  $3.5^{\circ}\text{C}$  per minute for 6 min. What was the temperature of the liquid after cooling?

- A.  $71^{\circ}\text{C}$
- B.  $35.5^{\circ}\text{C}$
- C.  $54^{\circ}\text{C}$
- D.  $60^{\circ}\text{C}$

36. In the figure below, lines WX and YZ are parallel. Lines AB and CD are transversals which intersect at P. Angle  $\text{CRX} = 45^{\circ}$  and angle  $\text{BTZ} = 65^{\circ}$

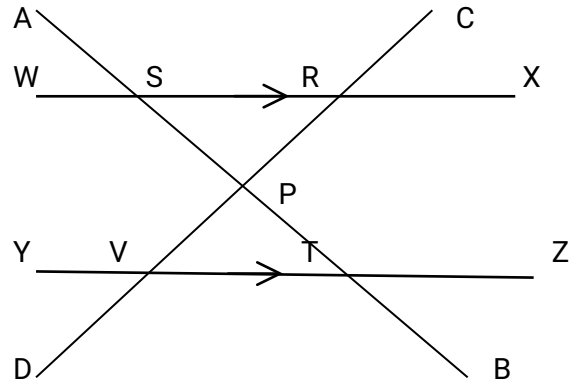
What is the size of angle RPT?

- A.  $45^{\circ}$

B.  $70^{\circ}$

C.  $65^{\circ}$

D.  $110^{\circ}$



37. One hundred and sixty crates of loaves of bread were delivered for a party. Each crate contained 20 loaves of bread. Each loaf of bread was divided into 5 pieces. If breads in 59 crates remained, how many pieces of bread were eaten?

- A. 21900
- B. 5900
- C. 16000
- D. 10,100

38. The table below shows inland postal charges for sending parcels.

ARTICLE	MASS	CHARGES
(limit of mass 30kg)	Upto 5kg	Sh. 70
	Upto 10kg	Sh. 120
	Upto 20kg	Sh. 240
	Each additional 1kg or part there of upto 30kg	Sh. 20

Weche sent two parcels weighing 8kg and 22kg and another one weighing 25kg. How much did he pay for the postage?

- A. Sh. 400
- B. Sh. 1080
- C. Sh. 740
- D. Sh. 600

39. 12 painters were expected to finish a job in 14 days. After working for 4 days, 3 more painters were hired. How many less days did they take to complete the job?

- A. 2
- B. 6
- C. 8
- D. 10

40. Which pair of solids below has the number of their faces equal to the number of vertices?

- A. Triangular prism and square prism
- B. Triangular pyramid and square pyramid
- C. Triangular pyramid and cuboid
- D. Open cuboid and closed cube

41. Chepkwony had a sh. 100 note. He bought two 250g packets of tea, two  $\frac{1}{2}$  litre packets of milk, two loaves of bread and one kilogram of sugar. The prices of the item were as follows:

*One kg of sugar sh. 9.50*

*One loaf of bread sh. 4.60*

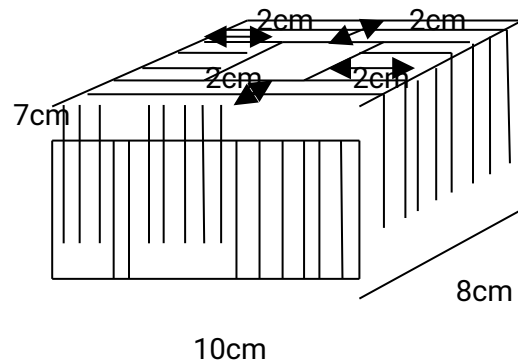
*One  $\frac{1}{2}$  litre packet of milk sh. 3.45*

*One 250g packet of tea sh. 9.15*

How much balance did he get?

- A. Sh. 43.90
- B. Sh. 46.60
- C. Sh. 56.10
- D. Sh. 73.30

42. The following is a wooden rectangular container. Find the volume of the wood used to make the container.



- A.  $168\text{cm}^3$
- B.  $392\text{cm}^3$
- C.  $560\text{cm}^3$
- D.  $440\text{cm}^3$

43. The diagonals of a rhombus are 100cm and 240cm. What is the perimeter of the rhombus?

- A. 520cm
- B. 340cm
- C. 1040cm
- D. 12000cm

44. The cost of an English book was sh. X while that of Kiswahili was sh. 5 less. A mathematics book cost a quarter of the total cost of an English and Kiswahili books. Peter spent sh. 300 to buy the three books. Which one of the following



equations can represent the information given?

A.  $2x + 5 + \frac{2x}{4} - 5 = 300$

4

B.  $2x - 5 + \frac{2x}{4} - 5 = 300$

4

C.  $2x + 5 + \frac{2x + 5}{4} = 300$

4

D.  $2x - 5 + \frac{2x + 5}{4} = 300$

4

**45.** In one season, Mbaya hired land for sh. 5000. He sowed 3 bags of wheat he had bought for sh. 1200 each. He also spent sh. 2000 for ploughing, sh. 1000 for sowing, sh. 3400 for fertilizers and sh. 2000 for harvesting. He harvested 60 bags of wheat which he sold for sh. 900 per bag. What profit did he make from cultivation?

A. Sh. 37000

B. Sh. 39400

C. Sh. 54000

D. Sh. 17000

**46.** A trader made a loss of 25% after selling a bag of onions for sh. 3000. How much should she have sold the onions in order to make a profit of 10%?

A. Sh. 3300

B. Sh. 440

C. Sh. 4000

D. Sh. 4400

**47.** Ahmed deposited sh. 3000 in a bank which paid compound interest of 20% for 3 years. At the beginning of the 2<sup>nd</sup> year, he deposited a further sh. 1240 in

the same account. What was his total interest at the end of the third year?

A. Sh. 2536

B. Sh. 2729.60

C. Sh. 3776

D. Sh. 3969.60

**48.** Boke left town X at 6 am and travelled to town Y a distance of 280km through town W. She took 1<sup>1/2</sup> hours to travel from town X to town W at a speed of 80km/h. She rested for 30 min and continued the rest of the journey at a speed of 64km/h. At what time did she arrive at town Y?

A. 10.30 am

B. 10.00 am

C. 8.00 am

D. 11.00 am

**49.** Construct triangle EFG such that EF = FG = 6.5cm and line EG = 7.5cm. Draw the perpendicular bisector of FG to cut FG at D and EG at C. Which of the following statements is true about triangle CDG?

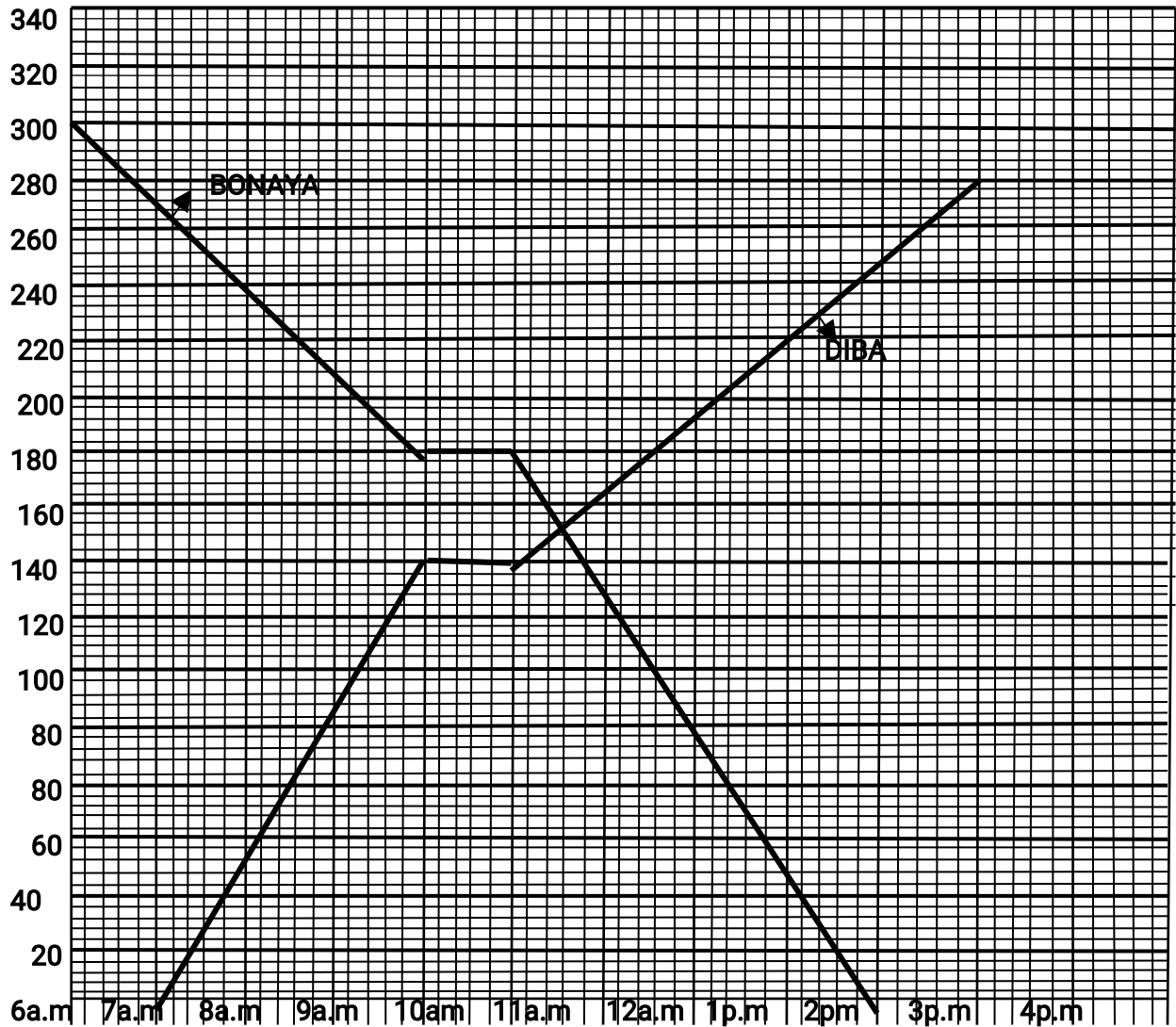
A. It is a right – angled triangle.

B. It is an isosceles triangle.

D. Angle DCG is  $45^\circ$ .

C. Line DC is shorter than line CG.

50. The graph below shows the journeys made by Diba and Bonaya



How many more kilometers were Bonaya left with than Diba when they met?

A. 153km

B. 147km

C. 6km

D. 300km

