UMMUL-QURAHIGH SCHOOL

Arowona Bus-Stop, Amuloko, Ibadan, Oyo State

JSS 3 MOCK Examination, 2020/2021 Academic Session.

Subject: Mathematics ***Class:*** JSS 3 ***Time:*** $2\frac{1}{2}$

Instructions: Answer ***all*** questions in *Section A* and ***three*** in *Section B*.

PAPER I & II [Objective and Theory]

SECTION A: OBJECTIVE (50 marks).

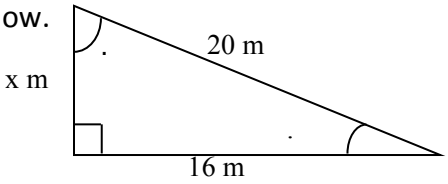
1. What is the place value of 6 in the number 526.97?
   A. 7 hundred
   B. 7 tens
   C. 7 units
   D. 7 tenth
2. Express 0.00001208 in standard form.
   A. 12.8×10^{-6}
   B. 1.208×10^{-6}
   C. 1.208×10^{-5}
   D. 1.208×10^{-4}
3. Approximate 0.007349 to 3 significant figures.
   A. 0.01
   B. 0.007
   C. 0.00735
   D. 0.734
4. Find the positive difference between -8 and -14.
   A. -22
   B. 6
   C. 11
   D. 36
5. Simplify -3 – (-21) – 18.
   A. 36
   B. 6
   C. 3
   D. 0
6. Evaluate: $\left(\frac{1}{2}\right)^{-2}$
   A. $\frac{1}{4}$
   B. $\frac{1}{2}$
   C. 4
   D. 2
7. Evaluate: $\sqrt{2\frac{7}{9}}$
   A. $\frac{2}{3}$
   B. $1\frac{2}{3}$
   C. $2\frac{1}{3}$
   D. $2\frac{2}{3}$
8. Simplify: $2\frac{1}{5} \div 2\frac{2}{3}$
   A. 11:8
   B. 14:11
   C. 33:40
   D. 55:24
9. Find the smallest number by which 60 must be multiplied to give a perfect square.
   A. 15
   B. 10
   C. 6
   D. 5
10. Find the ***LCM*** of 15, 25 and 35.
    A. 525

B. 875
C. 2,625
D. 13,125

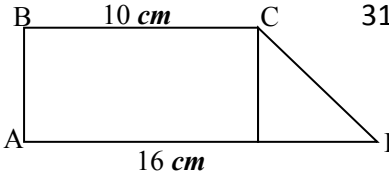
11. Find the ***HCF*** of 186, 310 and 434.
    A. 6
    B. 14
    C. 62
    D. 93
12. A man spends $\frac{1}{4}$ of his salary on the children school fees and $\frac{3}{5}$ on home affairs. What fraction of his income is left?
    A. $\frac{17}{20}$
    B. $\frac{3}{4}$
    C. $\frac{2}{5}$
    D. $\frac{3}{20}$
13. An article is sold for ₦ 315.00 and the profit is ₦ 65.00. Find the percentage profit.
    A. 36 %
    B. 30 %
    C. 27 %
    D. 26 %
14. If 35% discount is given on a trouser which cost ₦ 3000.00. How much will a buyer pay for the trouser?
    A. ₦1,050
    B. ₦1,950
    C. ₦2,250
    D. ₦1,005
15. Express 0.504 as a fraction in its lowest term.
    A. $\frac{63}{125}$
    B. $\frac{126}{250}$
    C. $\frac{31}{60}$
    D. $\frac{6}{25}$
16. Find the value of 16 x 2 – 3 + 14 ÷ 7.
    A. 15
    B. 20
    C. 31
    D. 28
17. If you collect a loan of ₦250,000.00 from a bank at the rate of 11 $\frac{1}{2}$ % interests, how much will she pay as interest at the end of the year?
    A. ₦27,500
    B. ₦28,750
    C. ₦55,000
    D. ₦57,500
18. Three brothers shared some oranges in the ratio 6:4:2. If the border with the largest share had 150 oranges, find the total number of oranges shared.
    A. 300
    B. 100
    C. 150
    D. 250
19. Chukwu, Adu and Kunle are to share ₦142, such that Adu get ₦11 less than Chukwu and ₦7 more than Kunle. How much is Chukwu's share?
    A. ₦57
    B. ₦46.33
    C. ₦46
    D. ₦42.33
20. Find the missing number in 1001011_2 - ***** = 110000_2.
    A. 11100_2

B. 11001_2
C. 10101_2
D. 11011_2

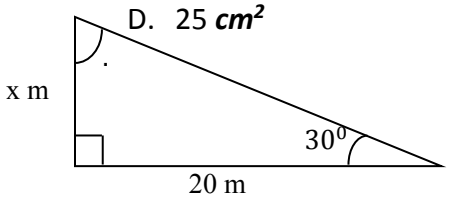
21. Convert 1101010_2 to denary.
    A. 210
    B. 106
    C. 53
    D. 43
22. If it costs ₦17,500 to lodge in a hotel for 7 days, what is the cost of lodging for 3 days in the same hotel?
    A. 17,500
    B. 10,000
    C. 5,830
    D. 7,500
23. Which of the following angles and ***cannot*** be constructed using a ruler and a pair of compass only?
    A. 15^0
    B. 30^0
    C. 45^0
    D. 70^0
24. Find the value of x in the figure below.



    A. 9 ***m***
    B. 12 ***m***
    C. 15 ***m***
    D. 25 ***m***
25. If the bearing of ***A*** from ***B*** is 135^0, what is the bearing of ***B*** from ***A***?
    A. 045^0
    B. 090^0
    C. 135^0
    D. 315^0



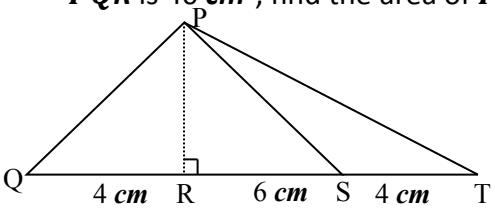
26. The sum of angles in a straight line is ----.
    A. 090^0
    B. 120^0
    C. 180^0
    D. 270^0
27. Each face of a cube is in the shape of a ----.
    A. circle
    B. hexagon
    C. rectangle
    D. square.
28. The perimeter of a square is 16 ***cm***. Find the area of the square.
    A. 12 ***cm²***
    B. 16 ***cm²***
    C. 24 ***cm²***
    D. 25 ***cm²***



29. Find the value of x in the figure above to the nearest whole number.
    A. 7 ***cm***
    B. 9 ***cm***
    C. 11 ***cm***
    D. 12 ***cm***
30. Find the perimeter of a circle whose circumference is 44 ***cm***.
    A. 44 ***cm***
    B. 28 ***cm***
    C. 22 ***cm***
    D. 14 ***cm***
31. Calculate the height of the trapezium below given that BC = 10 ***cm***, AD = 16 ***cm*** and its area is 104 ***cm***^{2}.

A. 4 ***cm***
B. 6 ***cm***
C. 8 ***cm***
D. 10 ***cm***

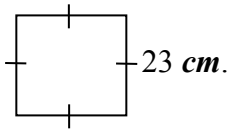
32. In the diagram below, if the area of $\widehat{PQR}$ is 40 ***cm²***, find the area of $\widehat{PQT}$.



A. 140 ***cm²***
B. 120 ***cm²***
C. 150 ***cm²***
D. 300 ***cm²***

33. Calculate the area of a semi-circle of radius 14 ***cm***. Take $\pi = \frac{22}{7}$
A. 22 ***cm²***
B. 196 ***cm²***
C. 308 ***cm²***
D. 616 ***cm²***

34. Find the area of the diagram below.
A. 46 ***cm²***
B. 69 ***cm²***
C. 484 ***cm²***
D. 529 ***cm²***



35. What is the third angle of a triangle if the other two are $(3x - 20)^0$ and $(4x + 10)^0$?
A. $(210 + 7x)^0$
B. $(190 - 7x)^0$
C. $(210 - 7x)^0$
D. $(190 + x)^0$

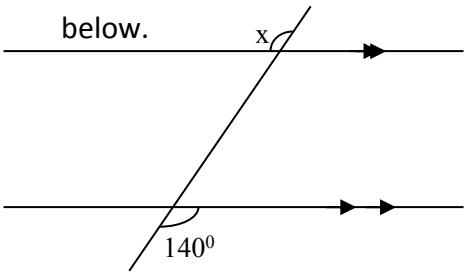
36. A football field is drawn to a scale of 1 ***cm*** to represent 5 ***m***. If the field is 70 ***m*** by 50 ***m***, I find the length and breadth of the drawing.
A. 10 ***cm*** is and 8 ***cm***
B. 12 ***cm*** and 10 ***cm***
C. 14 ***cm*** by 10 ***cm***
D. 16 ***cm*** by 14 ***cm***

37. Which of the following is ***not*** a material needed for the construction of an angle?
A. Pair of compasses
B. Plain paper
C. Protractor
D. Scale pan

38. On a scale drawing, the length of a farm land is 20 ***cm***. What is the actual if the scale is 1 ***cm*** represents 50 ***m***?
A. 100 ***m***
B. 200 ***m***
C. 500 ***m***
D. 5000 ***m***

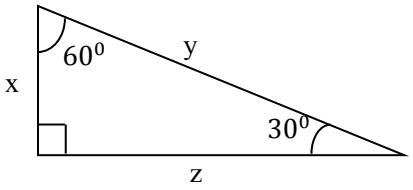
39. The bearing of ***A*** from ***B*** is 030^0. What is the bearing of ***B*** from ***A***?
A. 030^0
B. 060^0
C. 150^0
D. 210^0

40. Find the value of x in the figure below.



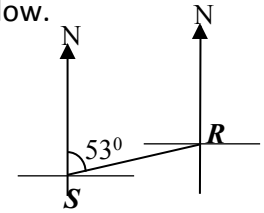
A. 40^0
B. 80^0
C. 120^0
D. 140^0

41. Which of the following options is true about the diagram below?



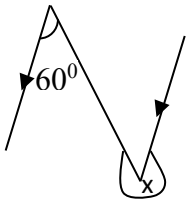
A. $y^2 = x^2 + z^2$
B. $z^2 = x^2 + y^2$
C. $x^2 = y^2 + z^2$
D. $z^2 = y^2 - x^2$

42. Calculate the bearing of ***S*** from ***R*** in the diagram below.



A. 027^0
B. 053^0
C. 143^0
D. 233^0

43. Find the value of x in the figure below.



A. 030^0
B. 060^0
C. 300^0
D. 180^0

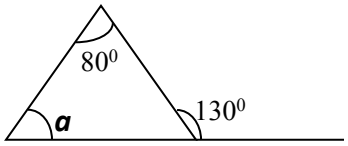
44. The sum of the interior angles of a regular polygon is 1440^0. Find the number of its sides
A. 12
B. 10
C. 9
D. 8

45. The angles of an equilateral triangle are 2a, 4c, 3b.
Find the value of a + b + c.
A. 20
B. 60
C. 65
D. 75

46. Which of the following statement(s) is/are incorrect? ***I***: all squares are rhombuses ***II***: all rhombuses are kites ***III***: all kites are rhombuses.
A. ***I*** only
B. ***I*** and ***II*** only
C. ***I*** and ***III*** only
D. ***III*** only

47. The angle of elevation of a top of a tree from certain point on the ground is 45^0. If the tree is 15 ***m*** high, how far is the point from the bottom of the tree?
A. 10 ***m***
B. 18 ***m***
C. 20 ***m***
D. 12 ***m***

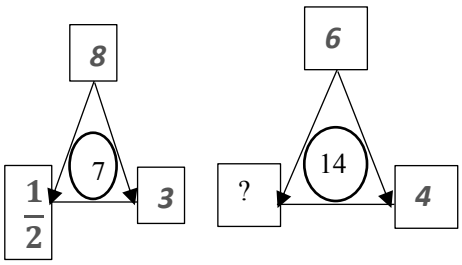
48. What is the value of ***a*** in the figure below?



A. 40
B. 50
C. 69
D. 80

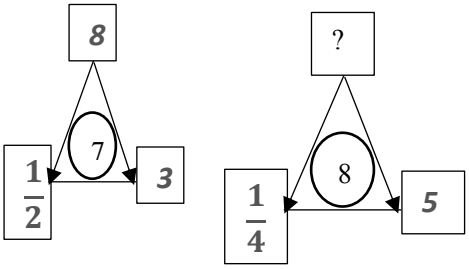
Use the sample below to answer questions 49 - 50

49. .



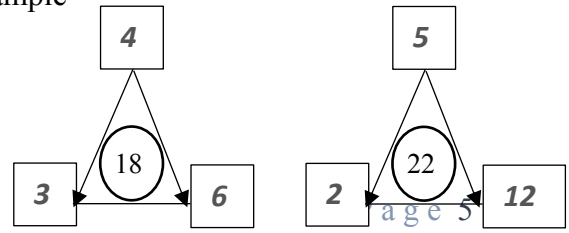
A. $\frac{5}{3}$
B. 0
C. 9
D. 13

50. .



A. 1
B. 12
C. -1
D. 8

Sample



SECTION B: THEORY (40 marks).

Instructions: Answer ***four*** questions from all.

1. (a) If a = 2, b = -3 and c = 4; evaluate:

   i. $\sqrt{a^2\ (b^2 + c^2)}$

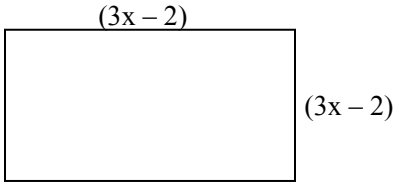
   ii. $\frac{c}{a} - \frac{b}{c} + \frac{2\ (b + c)}{a}$

   (b) Remove the brackets and simply each of the following;

   i. y (-2) + 4 (y – 2) + y (5) -15

   ii. 3 (m – 2) – (m – 2)

   (c) What is the area of the diagram below if its perimeter is 52?



20 marks

2. (a) Simply each of the following algebraic expressions

   i. $\frac{3a+5b}{3} + \frac{a-3b}{a}$

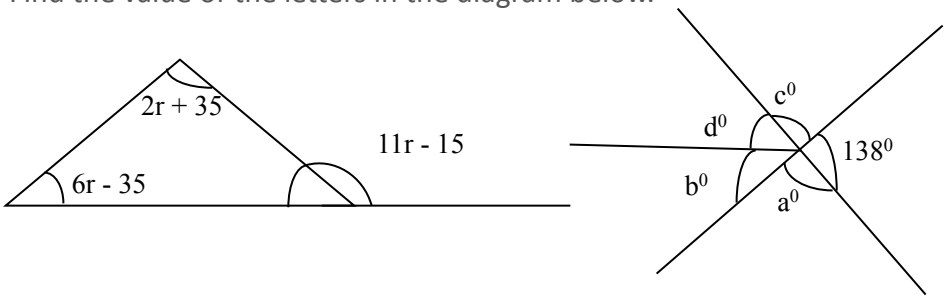
   ii. $\frac{5x+3}{5} + 3x = \frac{x}{5} - \frac{1}{5}$

   (b) Solve the linear inequalities in one variable and show the solution set on the number line;

   i. 10 < 2x – 1 < x + 5

   ii. 2(x – 1) < 3(1 – x)

   (c) Find the value of the letters in the diagram below.



   (d) The interior angle of a regular polygon is 144^0 each. How many sides has the polygon?

20 marks

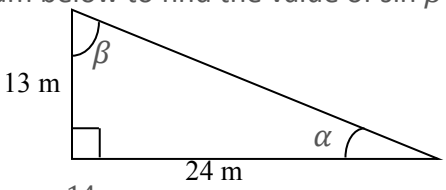
3. (a-i) I think of a number, add 7 multipurpose 3, subtract 3, divide by 4 then multiply by 12. If the result is 72, what is that number?

   (a-ii) Copy and complete the table below by showing your workings.

	Position	Compass bearing	Three digits bearing
1	A		324
2	B	N 85^0 E	
3	C	S 27^0 E	

(b) A ladder inclined at an angle of 36^0 to the horizontal lines against a vertical pole. If the ladder is 7 ***m*** away from the foot of the pole. Calculate the length of the ladder and height the pole.

(c-i) use the diagram below to find the value of sin β + cos α.

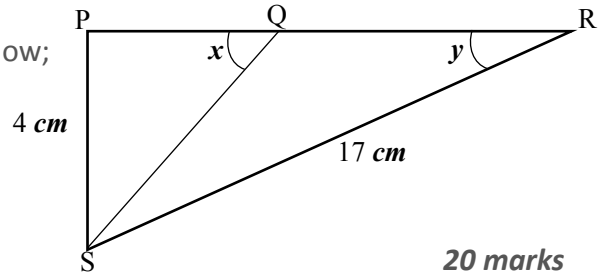


(c-ii) Given that sin $\theta = \frac{14}{30}$ where $0 < \theta < 90^0$. Calculate the value of cos θ. ***20 marks***

4. (a) Draw the graph of y = 2x – 3 for values of x from -2 to +3.

   (b) In a triangle ***ABC***, $\widehat{ABC}$ = 900, $\overline{AB}$ = x cm, $\widehat{C}$ = 21 and $\overline{AC}$ = 16 ***cm***. What is the value of x?

   (c) Find $\widehat{PQS}$ and $\widehat{PRS}$ in the diagram below;



20 marks

5. (a) The interior angles of a pentagon are (y + 8), (y + 15), (y + 28), (y + 29) and (y + 40). Find the value of;
   i. y
   ii. each interior angle

   (b) A carpenter 1.6 ***m*** tall stood 10 ***m*** away from a build. Find the angles of elevation of the top of the building from the carpenter, if the building is 24 ***m*** high.

   (c) Using a pair of compass and ruler only, construct the following angles;
   a) 135
   b) 45
   c) 60
   d) 165
   e) 120
   f) 75

20 marks.