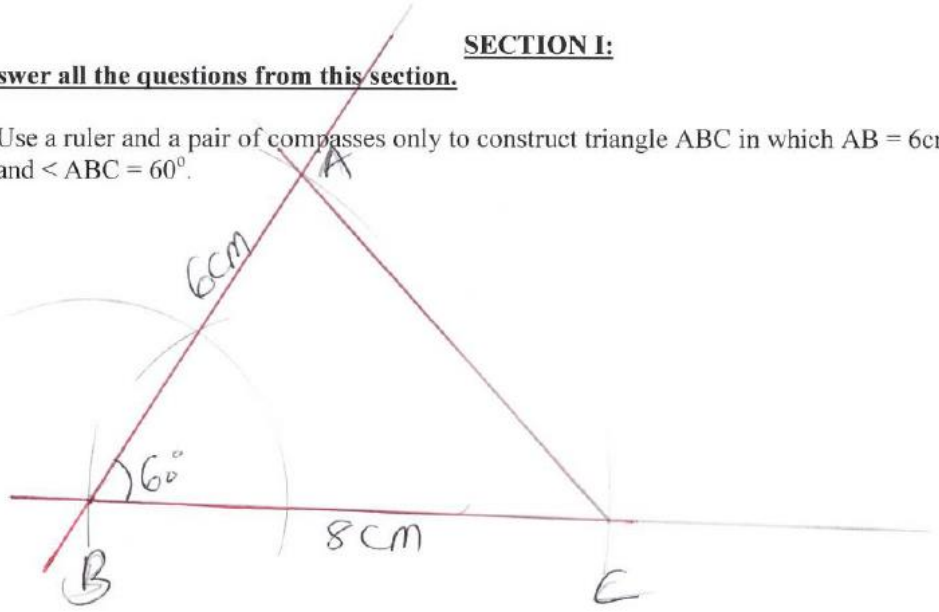
FORM 1 MATHEMATICS END TERM 3 2019

Attempt all the questions in the spaces provided.

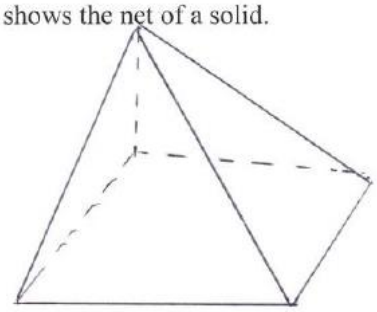
SECTION I:

Answer all the questions from this section.

1. Use a ruler and a pair of compasses only to construct triangle ABC in which AB = 6cm, BC = 8cr and < ABC = 60°. (2 mks)



2. The diagram below shows the net of a solid.



Sketch the solid. (2 mks)

3. Solve for x in the equation: (3 mks)

$\frac{x-2}{5} - \frac{2x-1}{6} = \frac{1-x}{3}$

$\frac{6(x-2)-5(2x-1)}{30} = \frac{1-x}{3}$

$\frac{6x-12-10x+5}{30} = \frac{1-x}{3}$

$\frac{-4x-7}{30} = \frac{1-x}{6}$

$30(1-x) = 6(-4x-7)$

$30-30x = -24x-42$

$\frac{-6x}{-6} = \frac{-72}{-6}$

$x = 12$

4. Without using a calculator, evaluate;

$$\frac{\frac{5}{8}-\frac{1}{3}\ \text{of}\ \frac{27}{20}\div 2}{1+(5\frac{2}{5}\div\frac{9}{25})}$$

leaving your answer as a mixed fraction. (3 mks)

Numerator

$\frac{5}{8}-\frac{1}{3}$ of $\frac{27}{20}\times\frac{1}{2}$

$=\frac{5}{8}-\frac{9}{40}=\frac{25-9}{40}$

$=\frac{16}{40}=\frac{2}{5}$ ①

Denominator

$1+\left(\frac{27}{5}\times\frac{5}{9}\right)$

$=1+(3\times 5)$

$=1+(15)$

$=16$ ①

combine

$\frac{2}{5}\div 16$

$=\frac{2}{5}\times\frac{1}{16}=\frac{1}{40}$ ①

5. Two alloys Y and Z are each made up of zinc, tin and copper. In alloy Y, the ratio of zinc to tin is 2:5 and the ratio of copper to tin is 4:3. Determine the ratio of Copper:Zinc:Tin in alloy Y.(2 mks)

Y ⟹ zinc : tin ; copper : tin

2 : 5 4 : 3

Z : T = (2 : 5) 3

C : T = (4 : 3) 5

Z : T = 6 : 15

C : T = 20 : 15

Z : T : C = 6 : 15 : 20

zinc : Tin : copper = 6 : 15 : 20

6. In an n-sided polygon, two angles are right angles and each of the remaining angles is 150°. Find the value of n. (3 mks)

$90+90+150(n-2)=(2n-4)90$

$180+150n-300=180n-360$

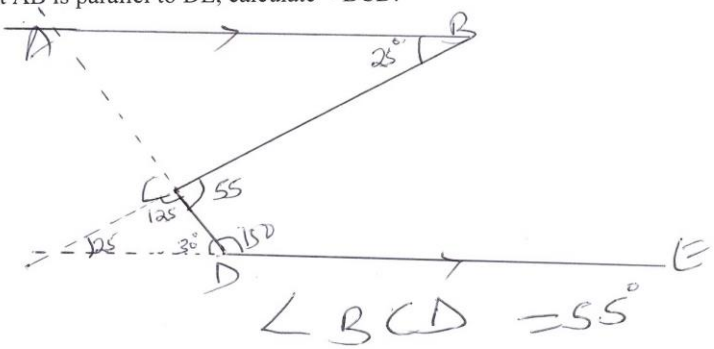
$180-300+360=180n-150n$

$\frac{240}{30}=\frac{30n}{30}$

$n=\frac{240}{30}$

$n=8$

7. Given that AB is parallel to DE, calculate < BCD. (3 mks)



$\angle BCD = 55°$

8. The marked price of a car in a dealers shop was 450,000. Wekesa bought the car at 7% discount. The dealer still made a profit of 13%. Calculate the amount of money the dealer had paid for the car. (3 mks)

$\frac{93}{100} \times 450{,}000 = 418500$

$113\% = 418500$

$100\% = \frac{100 \times 418500}{113}$

$= Sh\ 370353.98$

9. Food aid 369 880 French Franc was donated to the Turkana drought stricken area. The food was purchased from United states of America (USA) and paid for in US dollars. Calculate the exact value of the food and in dollar if: (1 French Franc = Ksh 12.80 and 1 US dollars = Ksh 84.50) (3mks)

$1 F.F = Ksh\ 12.70$

$369880\ FF = \frac{369880 \times 12.70}{1}$

$= Ksh\ 4,697,476$

$Ksh\ 84.50 = 1\ US\ dollar$

$Ksh\ 4697476 = \frac{4697476}{84.50}$

$= 55,591.432\ US\ dollar$

10. During a certain ceremony, goats and chicken were slaughtered. The number of heads (for both chicken and goats) was 45. The total number of legs was 100. Determine the exact number of goats and chicken slaughtered. (3 mks)

$x + y = 45$ - (i)

$2x + 4y = 180$ - (ii)

$x = 45 - y$

$2(45 - y) + 4y = 180$

$90 - 2y + 4y = 180$

$2y = 10$

$y = 5$

$x + 5 = 45$

$x = 40$

goats $= 5$

chicken $= 40$.

11. Using tables, find the square roots of each of the following numbers. (3 mks)

(a) 0.001952 $= \sqrt{19.52 \times 10^{-4}} = 4.4182 \times 10^{-2} = 0.044182$

(b) 952.695 $= \sqrt{9.527 \times 10^{2}} = 3.0865 \times 10^{1} = 30.865$

(c) 40 $= 6.3246$

12. Simplify the following expression (3 mks)

$\frac{ax-ay+bx-by}{a+b}$

$= \frac{a(x-y)+b(x-y)}{a+b}$

$= \frac{(a+b)(x-y)}{a+b}$

$= x-y$

13. Calculate the area of the shaded region. (4 mks)

$\left(\frac{120}{360} \times \frac{22}{7} \times 20 \times 20\right) - \left(\frac{120}{360} \times \frac{22}{7} \times 16 \times 16\right)$

$418.879 - 268.1757$

$= 150.82 cm^2$

14. Use divisibility test method to test whether the following numbers are divisible by 11.(3 mks)

(a) 2596 .

$2+9=11$, $5+6=11$ } Therefore it is divisible by 11

(b) 8151

$8+5=13$, $1+1=2$ } Not divisible by 11

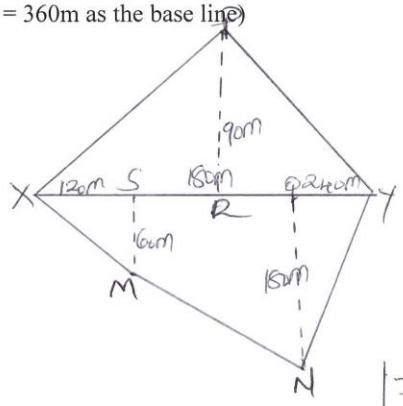
(c) 4132

$4+3=7$, $1+2=3$ } Not divisible by 11

SECTION B:

Answer all the questions.

15. Find the area in hectares of a coffee field whose measurements are entered in a field book as follows (Take XY = 360m as the base line) (10 mks)



Area of

ΔXPR is $\frac{1}{2} \times 180 \times 90 = 8100m^2$

ΔPRY is $\frac{1}{2} \times 180 \times 90 = 8100m^2$

ΔQNY is $\frac{1}{2} \times 120 \times 180 = 10800m^2$

ΔXSM is $\frac{1}{2} \times 120 \times 60 = 3600m^2$

Trapezium $SQNM = \frac{1}{2}(QN + SM) \times SQ$

$= \frac{1}{2}(180+60) \times 120$

$= 14400m^2$

Total area $= 45000m^2$

Area of the field is 4.5 ha.

16. Solve the following simultaneous equations using graphical method. (10 mks)

$2x + y = 7$

$2y + 3x = 12$

17. Chemilil Sugar Academy hall has 200 seats. During the District Drama Festival, tickets were sold

at sh 150 for adult and sh 75 for students.

(a) On day one of the festival, 80% of the seats in the hall were occupied and twenty of the seats were occupied by students. Calculate the total money collected from the sale of tickets this day.(3 mks)

No of seats $= \frac{80}{100} \times 200$

$= 160$

Total collection $= (140 \times 150) + (20 \times 75)$

$=$ Sh 22500

(b) On the last day of the festival X students occupied the seats and all seats were occupied. The money collected from the tickets sales was sh 25,350.

(i) Write down an equation of X. (2 mks)

Adults occupied $200 - x$

$75x + 150(200 - x) = 25350$

$30000 - 75x = 25350$

(ii) Calculate the value of X. (2 mks)

$75x = 4650$

$x = 62$

(c) The money collected from the sale of tickets during the festival was divided among cost of hosting, allowances for adjudicators and electricity bill in the ratio 7:3:2. If the allowances amounted to 126,000, calculate the;

(i) Amount collected during the festival. (3 mks)

$\frac{3}{12} = 126000$

$\frac{12}{12} \Rightarrow \frac{12}{12} \times 126000 \times \frac{12}{3}$

$=$ Sh 504,000

(ii) The cost of electricity bill during the festival. (1 mk)

$\frac{2}{12} \times 504000$

$=$ Sh 84000

Number 16

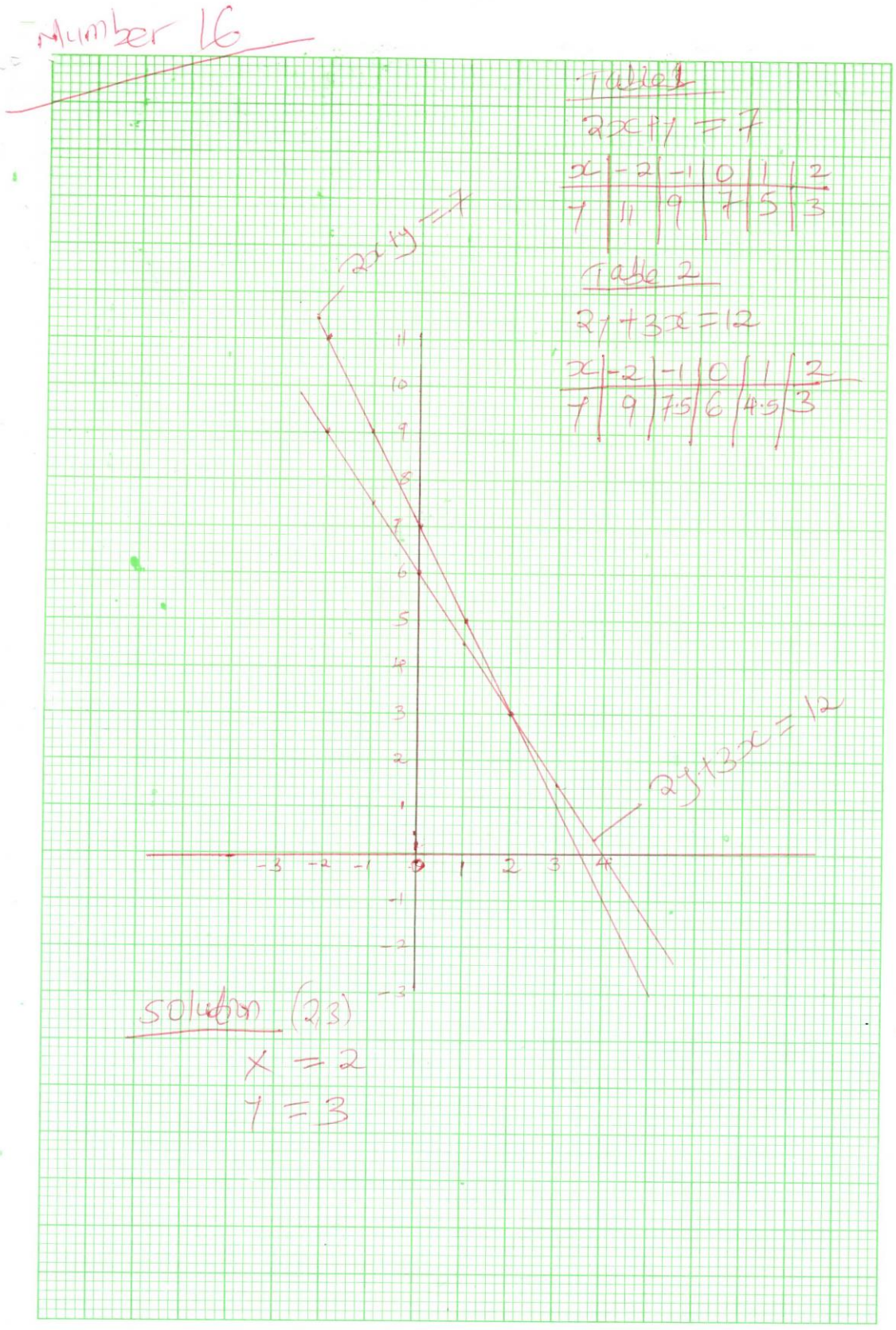


Table 1
2x+y=7
x | -2 | -1 | 0 | 1 | 2
y | 11 | 9 | 7 | 5 | 3
Table 2
2y+3x=12
x | -2 | -1 | 0 | 1 | 2
y | 9 | 7.5 | 6 | 4.5 | 3
2x+y=7
2y+3x=12
Solution (2,3)
x = 2
y = 3