FORM 4 MATHEMATICS

NDIVAI SECONDARY SCHOOL

INTERCLASS CONTEST EXAM

TERM 2 2017

1. A line L1 passes through point B and is parallel to the line $2y = 5x – 16$. M is the mid-point of line AB. Given the coordinates of A and M are (2, 3) and (4, 2) respectively, find the equation of line L1 in the form $y = mx + c$. (3 marks)

2. From the information below, calculate the standard deviation of the data given. (4marks)

8, 12, 4, 1, 6, 5

3. Find the value of x in; (2 marks)

$\cos(2x – 10) = \sin(4x + 30)$

4. John bought 3 brands of tea A, B and C.The cost price of the brands were sh.20,sh.30 and sh.50 per kilogram respectively. He mixed the brands in the ratio of 3:2:1 respectively. After selling the mixture, he made a profit of 10%.

a) How much profit did he make per kilogram of the mixture? (4mks)

b) After one year, the cost price of each brand was increased by 15%.

i) For how much did he sell one kilogram of the mixture to make 25% profit. (3mks)

ii) What would have been his percentage profit if he sold one kilogram of the mixture at shs.30.25? (3mks)

5. The cash price of a laptop was Ksh. 30,000. On hire purchase terms, a deposit of Ksh 10000 was paid followed by 10 monthly installments of Ksh 6000 each.

a) Calculate:

i) the cost of a laptop on hire purchase terms; (2marks)

ii) the percentage increase of hire purchase price compared to the cash price. (2marks)

b) An institution was offered a 5% discount when purchasing 25 such laptops on cash terms. Calculate the amount paid the institution (2marks)

6. A shopkeeper bought 50 pangas and 30 jembes from a wholesaler A for sh. 4260. Had he bought half as many jembes and pangas less, he would have paid sh. 1290 less. Had the shopkeeper bought from

wholesaler B, he would have paid 10% more for a panga and 15% less for a jembe. How much would he have saved if he had bought the 50 pangas and the 30 jembes from wholesaler B. (6mks)

7. Two towns P and Q are 400 km apart. A bus left P for Q. It stopped at Q for one hour and then started the return journey to P. One hour after the departure of the bus from P, a trailer also heading for Q left P. The trailer met the returning bus ¾ of the way from P to Q. They met t hours after the departure of the bus from P.

(a) Express the average speed of the trailer in terms of t (3mks)

(b) Find the ration of the speed of the bus so that of the trailer.(3mks)

8. The vectors p, q and y are expressed in terms of the vectors t and s as follow:

p = 3t + 2s

q = 5t – s

y = ht + (h – k)s where h and k are constants. Given that y = 2p – 3q, find the values of and k. (4 marks)

9. Simplify as far as possible, leaving your answer in the form of surd

$$\frac{1}{\sqrt{14}-2\sqrt{3}} - \frac{1}{\sqrt{14}+2\sqrt{3}}$$ (3mks)

10. The mass of a certain metal rod varies jointly as its length and the square of its radius. A rod 40cm long and radius 5cm has a mass of 6kg.Find the mass of a similar rod of length 25cm and radius 8cm (4 marks)