



Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2009

mathematics

Time allowed: 2 hours 15 minutes

Index No:

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Candidate's Name.....

Candidate's signature.....

District Name.....

Read the following instructions carefully

1. This paper has two sections **A** and **B**. Section **A** has 50 questions and section **B** has 5 questions. The paper has 15 pages following altogether.
2. Answer all questions. All answers to both sections A and B must be **written** in the spaces provided.
3. All answers must be written using a blue or black ball-point pen or ink. **Any** work written in pencil other than graphs, pictures and diagrams will **not** be marked.
4. Unnecessary change of work may lead to loss of marks.
5. Any handwriting that cannot easily be read may lead to loss to marks.
6. Do not fill anything in the boxes indicated:
7. "For examiners'. Use only and inside the question paper

FOR EXAMINERS USE ONLY		
Qn.No	MARKS	EXR'S NO.
1-10		
11-20		
21-30		
31-40		
51		
52		
53		
54		
55		
Total		

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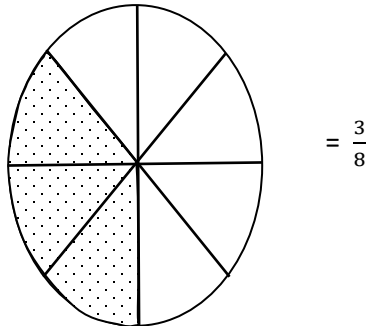
SECTION A :(30 Marks)

Question 1 to 30 one mark each.

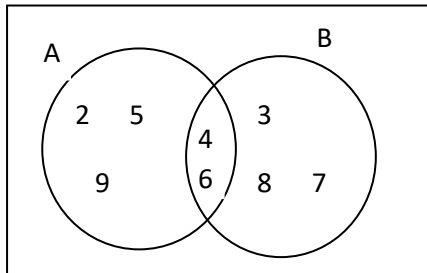
1. Work out

$$\begin{array}{r} 13 \\ +43 \\ \hline 56 \end{array}$$

2. What fraction of the circle is shaded



3. In the Venn diagram below, find $n(A \cap B)$



$$n(A \cap B) = 2$$

4. Write 24 in Roman numerals

$$\begin{aligned} 24 &= XX + IV \\ &= XXIV \end{aligned}$$

5. Simplify: $6y+4y-5y$.

$$\begin{aligned} &= 10y - 5y \\ &= 5y \end{aligned}$$

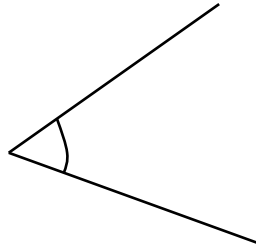
$$42000$$

6. Write in figures: Forty two thousand eight.

$$+ \quad 8$$

$$42008$$

7. Using a protractor, measure the angle below.



The angle = 55°

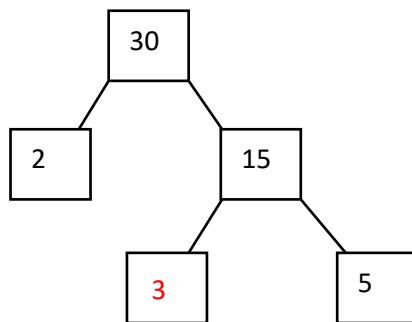
8. Round off 9.46 to the nearest tenth.

$$9.46 = 9.5 \text{ (to the nearest tenth)}$$

9. Work out : $\frac{4}{7} \div \frac{8}{21}$

$$\frac{4}{7} \div \frac{8}{21} = \frac{4}{7} \times \frac{21}{8} = \frac{3}{2}$$

10. Fill in the missing number in the factors tree below



11. Change $3\frac{1}{2}$ kg into grams.

$$3\frac{1}{2} = \frac{7}{2}$$

$$1\text{kg} = 1000\text{g}$$

$$\frac{7}{2}\text{kg} = \frac{7}{2} \times 1000 = 3500\text{kg}$$

12. Work out:

$$\begin{array}{r} 200 \\ -112 \\ \hline 88 \end{array}$$

13. A primary seven pupils got the following marks in daily mental work exercises for a week: 7, 6, 6, 7, 2, 6, 8.

What was the pupils modal mark?

Arrange the numbers from the smallest: 2, 6, 6, 6, 7, 7, 8

The modal mark that appear most often = 6

14. Arrange the following fraction in order beginning with the biggest.:

$$\frac{1}{4}, \frac{2}{3}, \frac{3}{5}$$

Solution

Find LCM for denominators = $4 \times 3 \times 5 = 60$

Then, multiply the LCM through

$$\frac{1 \times 60}{4}, \frac{2 \times 60}{3}, \frac{3 \times 60}{5}$$

15, 40, 36

Hence the order of the fraction starting from the biggest is

$$\frac{2}{3}, \frac{3}{5}, \frac{1}{4}$$

15. Give that set $M\{1,2,4\}$. How many subsets are in set M

The number of subsets is equal to 2^n . where n = to the number of members.

$$= 2^3$$

$$= 8$$

16. Workout: $+7 - -4$

$$= 7 + 4 = 11$$

17. Work out: $2\frac{1}{2} - \frac{1}{4}$
- $$= \frac{5}{2} - \frac{1}{4} = \frac{5 \times 2 - 1}{4} = \frac{9}{4} = 2\frac{1}{4}$$

18. David got a loan of shs. 500,000 from the bank at a simple interest rate of 20% per annum. What was the interest on the loan after a period of 9 months?

$$I = P \times R \times T$$

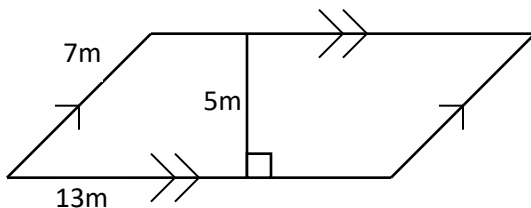
$$P = 500000$$

$$R = 20\%$$

$$T = 9\text{months} = \frac{9}{12}\text{year}$$

$$I = 500000 \times \frac{9}{12} \times \frac{20}{100} = 75,000$$

19. Find the area of the figure below.



The figure is a parallelogram

$$\begin{aligned} \text{Area of parallel gram} &= \text{base} \times \text{perpendicular height} \\ &= 13 \times 5 \\ &= 65\text{m}^2 \end{aligned}$$

20. Primary seven pupils will have a party next week. Find the probability that the party will take place on a day that starts with letter 'T'.

Days of the week

Mon (M), Tue (T), Wed (W), Thu (T), Fri (F), Sat (S), Sunday (S)

Sample space = 7

Days starting with T = 2

$$\text{Probability that a day starts with T} = \frac{2}{7}$$

21. Work out:

$$\begin{array}{r} 101_{\text{two}} \\ +111_{\text{two}} \\ \hline 1100_{\text{two}} \end{array}$$

22. The cost of 5 bars of soap is shs 5,400. Find the cost of 3 similar bars soap.

5bars cost 5400

$$1\text{bars cost } \frac{5400}{5} = 1080$$

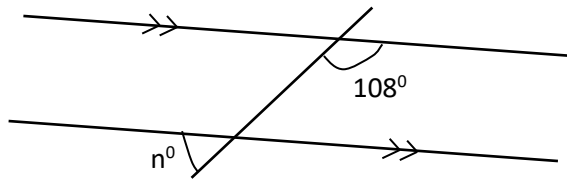
3bars cost $1080 \times 3 = 3240$

23. Write the next number in the sequence 1, 4, 9, 16,

1, 4, 9, 16, **25**

$1^2, 2^2, 3^2, 4^2, 5^2$

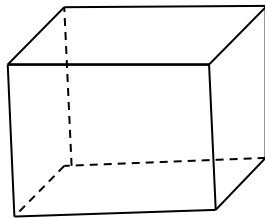
24. In the figure below, find the value of n in degrees.



$$108 + n = 180$$

$$n = 72^\circ$$

25. How many vertices does the figure below have?



The figure has **8** vertices

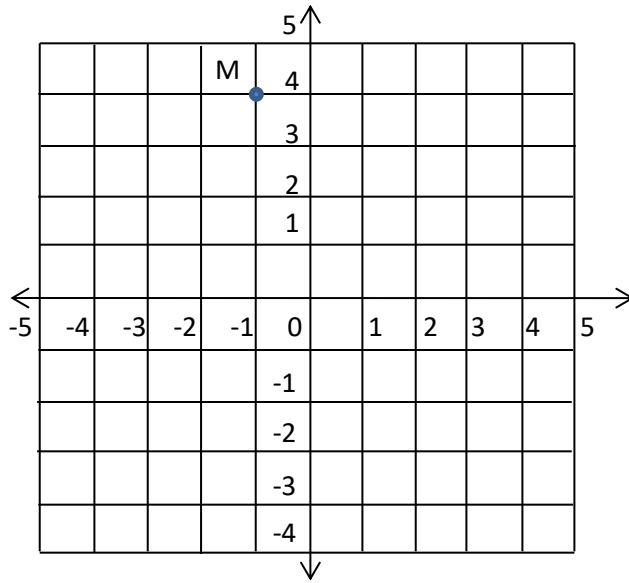
26. A mathematics test was given to a class of 50 pupils and 45 of them passed the test. What percentage of the pupils failed the test?

The number of pupils who failed = $50 - 45 = 5$

$$\text{Percentage} = \frac{\text{number of students that failed}}{\text{total number of pupils}} \times 100$$

$$\text{Percentage} = \frac{5}{50} \times 100 = 10\%$$

27. On the graph below, mark point M (-1, 4).



28. Solve $3x - (x + 3) = 3$

$$3x - x - 3 = 3$$

$$2x = 6$$

$$x = \frac{6}{2} = 3$$

29. Solve for X: $3 + 4 = X$ (finite 5)

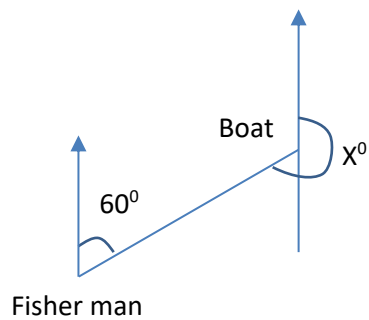
$$3 + 4 = 7$$

$$7 \div 5 = 1r2$$

$$X = 2$$

30. A fisherman saw a boat on water on a bearing of 060° . What was the bearing of the fisherman from the boat?

Let the bearing be X



$$\text{Bearing of fisherman} = 180^\circ + 60^\circ$$

$$= 240^\circ$$

SECTION B(70MARKS)

Marks for each part of the question are indicated in the brackets.

31. A man sells mangoes in heaps of five and eight. A heap of five mangoes costs shs 500 and a heap of eight mangoes cost shs. 1,000. He had 12 heaps of five and 14 heaps of eight mangoes.

(a) How many mangoes did he have altogether? (03 marks)

Mangoes in heaps of five = $5 \times 12 = 60$ mangoes

Mangoes in heaps of 8 = $8 \times 12 = 112$

Total number of mangoes = $112 + 60 = 172$ mangoes

(b) How much did he get after selling all the mangoes? (03 marks)

1heap of 5mangoes cost 500

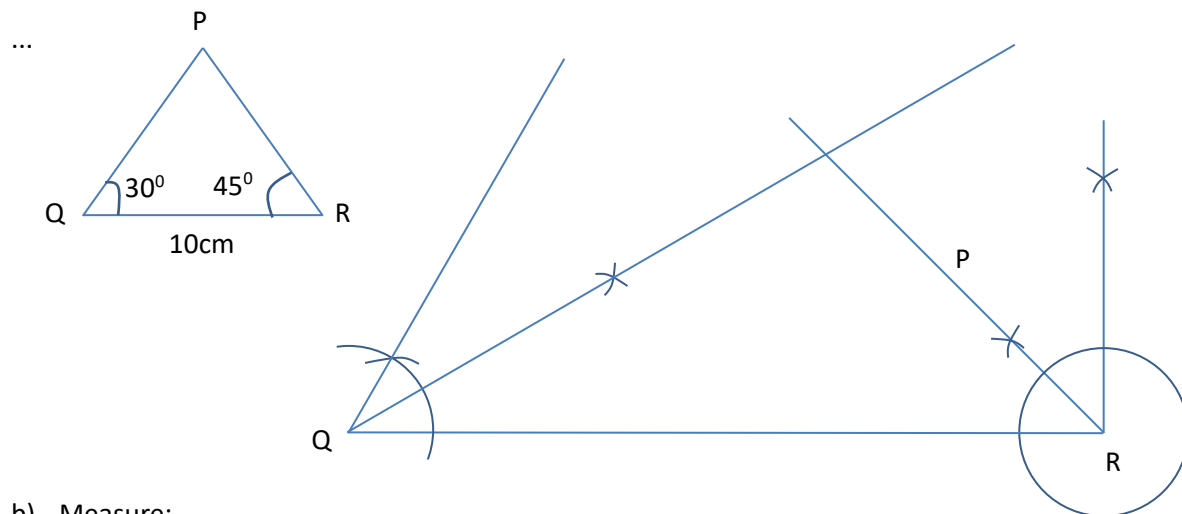
12 heaps of 5 mangoes cost $12 \times 500 = 6000$

1heap of 8 mangoes cost 1000marks

14 heaps of 8 mangoes cost $14 \times 1000 = 14000$

Total money = $6000 + 14000 = \text{shs. } 20,000.$

32a) Using a ruler, pencils and a pair of compasses only, construct a triangle in which angle PQR = 30° and PRQ = 45° and line QR = 10cm, the base of the triangle. (03 marks)



b) Measure:

i. PQ = 7.3cm

ii. PR = 5.2cm (01 mark)

(01 mark)

c) Find the perimeter of triangle PQR.

Perimeter = $10 + 7.3 + 5.2 = 22.5\text{cm}$

(01 mark)

33.a) Solve for x: $2(x+1)-3(2x-1) = -3$

(03 marks)

$$= 2x + 2 - 6x + 3 = -3$$

$$= -4x = -3-5 = -8$$

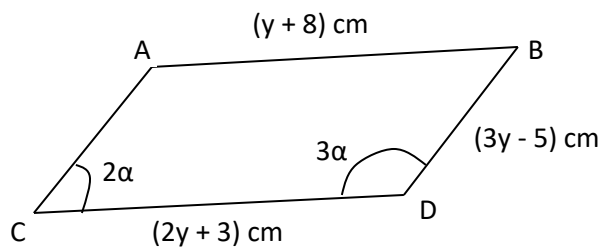
$$x = 2$$

b) Find the value of $a^r \div a^x$. given that $a=2, r=5$ and $x=3$

(03 marks)

$$2^5 \div 2^3 = 2^{(5-3)} = 2^2 = 2 \times 2 = 4$$

34. Use the figure below to answer question that follow.



a) Find the value of a.

(02 marks)

$$2\alpha + 3\alpha = 180^\circ$$

$$5\alpha = 180^\circ$$

$$\alpha = 36^\circ$$

b) Find the size of angle BAC in degrees.

(01 marks)

$$\text{BAC} = 3\alpha = 3 \times 36 = 108^\circ$$

c) Work out the value Y.

(02 marks)

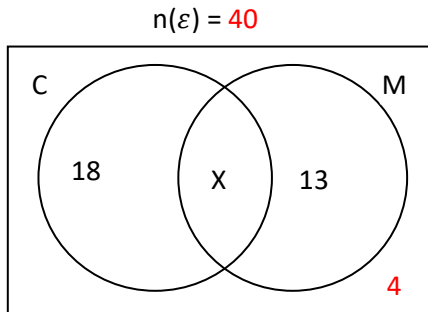
$$2y + 3 = y + 8$$

Correct like terms

$$y = 5$$

35. At a birthday party attended by 40 guest ,18 ate chicken (c) only ,13 ate meat (M) only, x guest ate both chicken and meat and 4 did not eat any of the two dishes.

a) Use the information given above to complete the Venn diagram below.



b) Find the value of x.

(02 marks)

$$18 + x + 13 + 4 = 40$$

$$25 + x = 40$$

$$x = 5 \text{gest}$$

c) How many guests did not eat meat at all?

(02 marks)

$$= 18 + 4 = 22 \text{ guests}$$

36. A business man has 200 bags of maize flour each weight 50kg.

a) Find the total weight of the bags in tones.

(02 marks)

$$\text{weight of } 200\text{kg} = 200 \times 50 = 10000\text{kg}$$

$$\text{but } 1000\text{kg} = 1\text{tonne}$$

$$\text{therefore, } 10000\text{kg} = \frac{10000 \times 1}{1000} = 10 \text{ tonnes}$$

b) If a pick up carries 2 tones per trip, work out the number of bags the pick –up will carry in one trip.

(03 marks)

$$10\text{tonnes} = 200\text{bags}$$

$$2\text{tonnes} = \frac{2 \times 200}{10} = 40\text{bags}$$

c) Find the number of trips the pickup will make to transport the whole flour from the milling machine to his shop. (03 marks)

40bags are carried in 1 trip

$$200\text{bags are carried in } \frac{1 \times 200}{40} = 5 \text{ trips}$$

37. On a mixed farm $\frac{1}{3}$ of the land is used for growing food crops while $\frac{1}{4}$ of the remaining lands is for cash crops, the rest of the land is for cattle grazing.

a) What fraction of the land is used for cattle grazing? (02 marks)

$$\text{Land for growing of food crops} = \frac{1}{3}$$

$$\text{Land for growing of cash crop} = \frac{1}{4} \text{ of the remaining land}$$

$$= \frac{1}{4} \left(1 - \frac{1}{3}\right)$$

$$= \frac{1}{4} \times \frac{2}{3}$$

$$= \frac{1}{6}$$

b) If 15 hectares are used for cash crops, what is the total area of the farm? (03 marks)

Let the total be X

$$\frac{1}{6}X = 15$$

$$X = 15 \times 6$$

$$X = 90 \text{ hectares}$$

38. In a primary school, each pupil plays only one game. The pupils who play each game are given below.

Use the information to answer the questions that that follow.

Foot ball	-	55
Volley ball	-	45
Netball	-	40
Basketball	-	40
Tennis	-	20

- a) What percentage of the pupils play netball? (02 marks)

$$\begin{aligned} \text{Total number of students} &= 55 + 45 + 40 + 20 \\ &= 200 \end{aligned}$$

$$\text{Percentage of pupils who play netball} = \frac{40}{200} \times 100 = 20\%$$

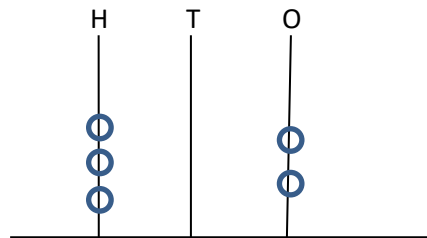
- b) If a pupil is picked at random, what is the probability that the pupils plays volleyball? (02 mark)

$$\begin{aligned} \text{Probability that a pupil plays volley ball} &= \frac{\text{number of student that play voleball}}{\text{total number of student}} \\ &= \frac{45}{200} \\ &= \frac{9}{40} \end{aligned}$$

- c) Find the mean number of pupils who plays games in the schools. (02 marks)

$$\text{Mean number} = \frac{55+45+40+40+20}{5} = 40 \text{pupils}$$

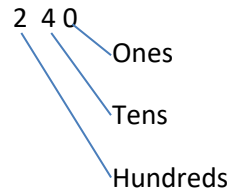
39. a) Draw beads to shows the numbers 302 on the abacus below.



- b) Write 3409 in standard form. (02 marks)

$$3.409 \times 10^3$$

- c) What is the place value of 4 in the number 240? (01 marks)



the place value of 4 is tens

40. Square tiles of sides 20cm each were laid on the floor of a room measuring 600cm by 400cm.

a) Find the number of tiles needed to cover the floor. (03 marks)

$$\text{Area of the floor} = 600 \times 400 = 240000\text{cm}^2$$

$$\text{Area of a single tile} = 20 \times 20\text{cm}^2 = 400\text{cm}^2$$

400cm² are covered by 1tile

$$240000\text{cm}^2 \text{ are covered by } \frac{1 \times 240000}{400} = 600\text{tile}$$

b) If a box containing 25 tiles costs 30,000, find the total cost of tiles needed to cover the whole floor.

Required to find the cost per tile then find the cost of 600tile

25 tile cost 30000

$$1\text{tile costs } \frac{30000}{25} = 1200$$

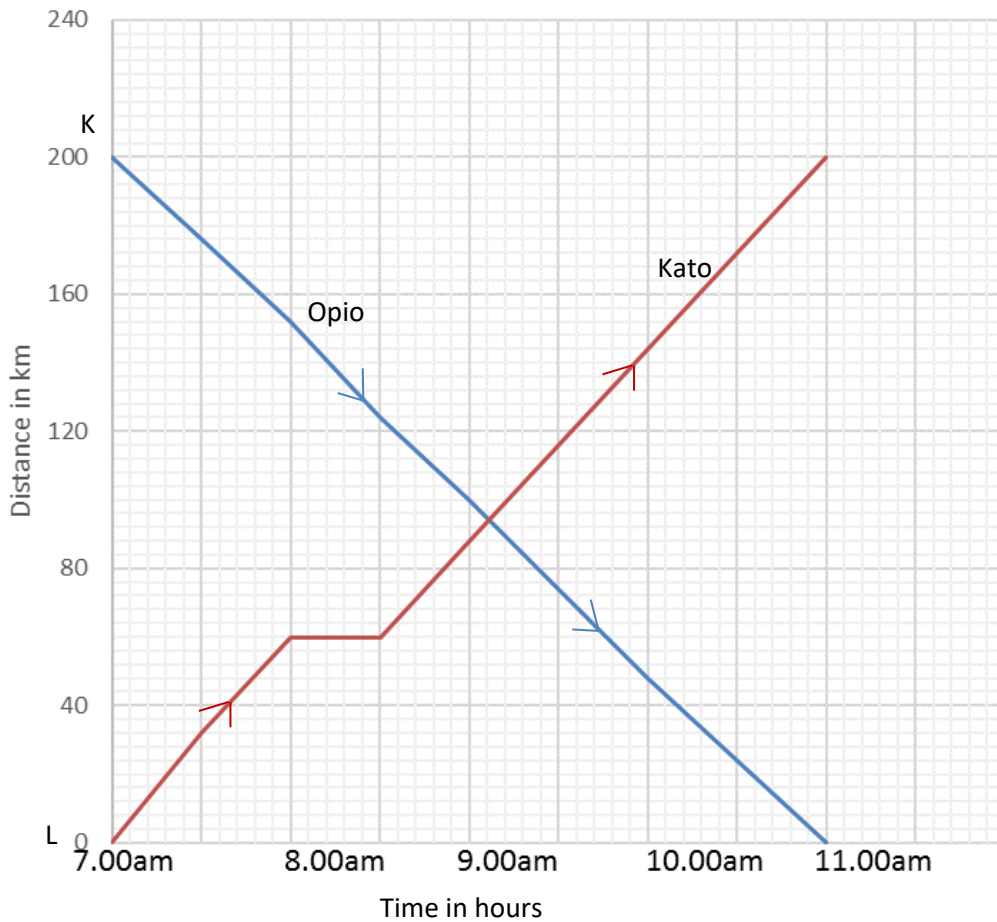
$$600 \text{ tiles cost } 1200 \times 600 = \text{shs. } 720000$$

Hence, 600 tiles cost shs. 720000

41. The graph below shows the journey made by Opio and Kato between towns K and L which are 2000 km apart.

Opio left town K at 7:00am and drove at steady speed of 50km/h to town L. Kato left town L at the same time and covered a distance of 60km at a steady speed in a hour. He then rested for an hour after which he drove for hours to town K

Use the graph to answer the question that follow.



a) At what time did Opio and Kato meet? (01 marks)

At 9:06am

b) What distance had Opio covered by 9:00am? (01 marks)

Vertical scale each small square represent $\frac{40km}{10} = 4km$

Opio by 9.00am had covered $27 \times 4 = 108$ km

Alternatively opio by 9.00am had covered $200 - 92 = 108km$

c) How far from town L was Opio at 10:00a.m?

By 10.00am Opio was $12 \times 4 = 48km$ from L

- d) Work out Kato's average speed for the journey he covered after resting. (01 marks)

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time taken}}$$

$$\text{Distance covered after resting} = 200 - 60\text{km} = 140\text{km}$$

$$\text{Time taken after resting} = 11.00 - 8.30\text{am} = 2\text{hour } 30\text{minutes} = 2\frac{1}{2}\text{ hours}$$

$$\therefore \text{Average speed} = \frac{140}{2\frac{1}{2}} = 56\text{kmhr}^{-1}$$

- e) Find Kato's average speed for his whole journey. (01 marks)

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time taken}} = \frac{200}{(11.00\text{am} - 7.00\text{am})} = \frac{200}{4} = 50\text{kmhr}^{-1}$$

- 42.a) solve the inequality: $3(x+4) < 5x-2$. (03 marks)

Remove the brackets

$$= 3x + 12 < 5x - 2$$

Collect like terms

$$12 + 2 < 5x - 3x$$

$$14 < 2x$$

$$7 < x$$

- b) Solve the equation: $2x - 2 = \frac{1}{4}x + 5$ (03 marks)

multiply by 4 through to remove the fractions

$$4(2x - 2) = 4\left(\frac{1}{4}x + 5\right)$$

$$8x - 8 = x + 20$$

Collect like terms

$$8x - x = 20 + 8$$

$$7x = 28$$

$$x = 4$$

END