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The Science Foundation College Kiwanga- Namanve
Uganda East Africa
Senior one to senior six
+256 778 633 682, 753 802709
Based on, best for sciences

Distance, speed and time

Distance is a numerical description of how far apart two objects are from each other.

Speed is distance over time taken to cover the distance.

Speed = $\frac{Distance}{time}$

Example 1

Musa walked for 1 ½ hours at an average speed of 4 km per hour. What distance did he cover?

Solution

Distance covered = Speed x time = 4x1½ = $4\ x\frac{3}{2}$ = 6 km

Example 2

Express 20 metres into kilometres.

1000m = 1km

∴ 20m = $\frac{20\ x\ 1}{1000} = 0.02km$

Hence 20m = 0.02km

Revision exercise

1. A taxi leaves Kampala at 9:15 a.m. and reaches Mbarara Taxi Park at I2:15p.m. The same taxi leaves Mbarara at 1:30 p.m. and arrives in Kampala at 5:00p.m.

   If the distance from Kampala to Mbarara is 270km. Calculate:

   a) The average speed of the taxi from Kampala to Mbarara.

   b) The total time taken by taxi to make the two trips.

   c) the average speed of the taxi for the two journeys

2. Cherop covers 80cm in each step he takes when walking. He takes 100 steps per minute.

   (a) How long does he take to walk a distance of 3.2 km?

(b) What is Cherop's average speed in km per hour?

3. Gateway bus travelling at 55 km per hour took 4 hours to cover part of its journey. The rest of the journey was covered in 2 hours at a speed of 40km per hour. Find the average speed of the bus over the whole journey.

4. A plane took $^1/_4$ of an hour to fly from A to B 30 km, apart. Find the speed of the plane in kilometres per hour.

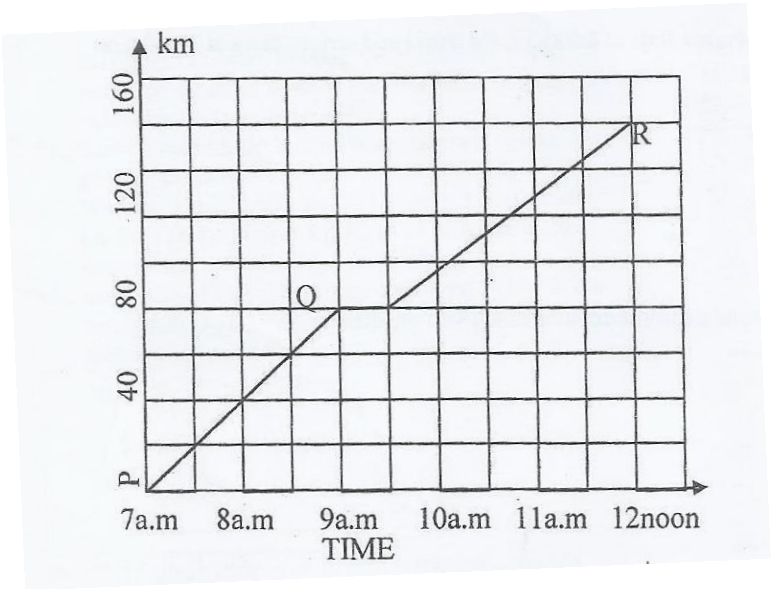
5. Kintu's speed is 90 km per hour. Express this in metres per second.

6. (a) A taxi with its 14 passengers and the driver all weigh 1700kg. If the weight of each person is 70kg, what is the weight of the vehicle?

(b) A bus moving at a speed of 80 km per hour leaves Jinja at 8:00 a.m. for Busia and arrives there at 11:00 a.m. How far is Busia from Jinja?

7. Isingoma drives at 120km per hour and okello drives at 100 km per hour. If they leave Town A at the same time to go to Town B 360km away, how far will Okello be from Town B when Isingoma arrives there?

8. A motorist drove from Town P to Town R via Q. study the graph below carefully and use it to answer the questions that EE follow:



b) How far is Town Q from P?

c) For how long did the motorist stay at Town Q?

d) At what time did the motorist reach town R?

e) What was the motorist's average speed on the whole journey?

9. The distance between Tororo and Mbale towns by road is 45Km. On the map of Uganda the distance between the two towns is 5cm. Find the scale of the map.

10. A bus broke down after covering $\frac{5}{7}$ of the journey. The remaining distance to complete the journey was 140km. How long was the whole journey?

11. A motor cyclist leaves his home at 9.00a.m. for Kisoro town which is 45Km away, riding at 16 km per hour. At 9.15a.m he gets a puncture and delays for 15minutes. At what speed must he cover the remaining journey in order to reach Kisoro town at 10.OOa.m? (Give your answer in kilometers per hour.)

12. John Akii-Bua ran 100 metres in 10 seconds. Express his speed in kilometres per hour.

13. A Gaso bus travelling from Kampala to Lyantonde at an average speed of 60 km per hour broke down after 2 ½ hours' drive. The repairs took 30 minutes. The bus continued with the journey at an average speed of 50 km per hour for an hour.

    a) Find the distance covered by the bus.

    b) Find the average speed of the bus over the whole journey.

14. Matembe drove at 60 km per hour for 2 ½ hrs from A to B.

a) If Matembe left town A at 1:50 p.m at what time did he reach town B?

b) If the cost of petrol was Shs. 1190 per litre and Matembe's car used one litre to cover 10 kilometres, find the cost of petrol for the journey.

15. Peter walked 0.15km. What distance did he cover in metres?

16. A driver covered a distance of 120km in $1^{1}/_{2}$ hours.

(a) What was his average speed?

(b) What distance would he cover if he travelled for 2 ¾ hours?

17. Okello had 30km still to cover after travelling $\frac{3}{5}$ of the journey. How long was the journey?

18. The diameter of a wheel of a motorcycle is 35cm. The motor-cycle covers 33 Km.

a) Find the number of revolutions the wheel makes to cover that journey.

b) If the motor-cycle covers 110 meters per minute, how long will the journey of 33 Km take? (Give your answer in hours).

19. A cyclist covers a distance of 21km in 45 minutes. How long will it take him to cover 84km?

20. Kamoga Devis can run t metres in 45 seconds.

    (a) Express his speed in kilometres per hour.

21. Mbabazi walked 3,600m in 36 minutes. Find his average speed in Km per hour.

22. A man left his home at 7.00a.m riding a bicycle and arrived at his place of work 25Km away at 9.30 am

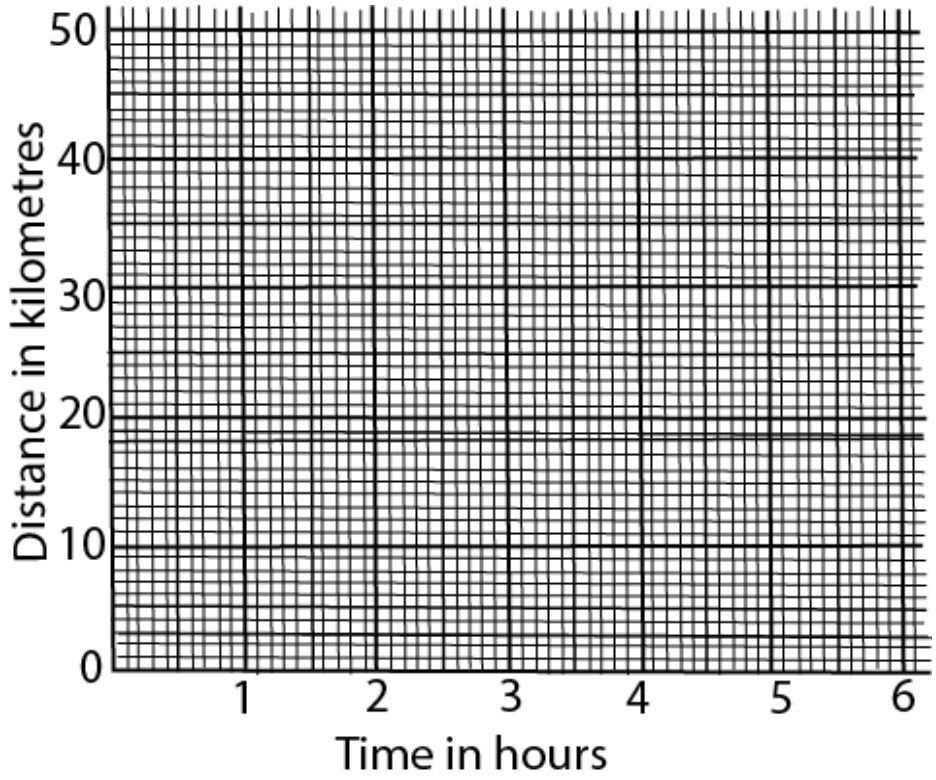
a) Find his average speed.

b) If he left his place of work for home at 5.00pm. Riding at an average speed of 15Km per hour, at what time did he get home?

23. Kiyemba rode a bicycle from town A to town C through town B as follows:

He rode from A to B a distance of 30km for 3 hours and then rested for ½ an hour. From B, he rode to C a distance of 20Km in $2^1/_2$ hours.

On the graph given below, draw a line to show Kiyemba's movement. Also show towns B and C.



24. Mukasa's bicycle got spoilt after he had covered a distance of 20 km which was $\frac{1}{4}$ of his journey. How long was the journey?

25. John and Mary set out for a journey of 180km. John's car consumes one litre of petrol every ten kilometres while Mary's consumes one litre every nine kilometres. If one litre of petrol costs sh 1,500, how much more money did Mary spend?

26. a) Express 36km/h in metres per second.

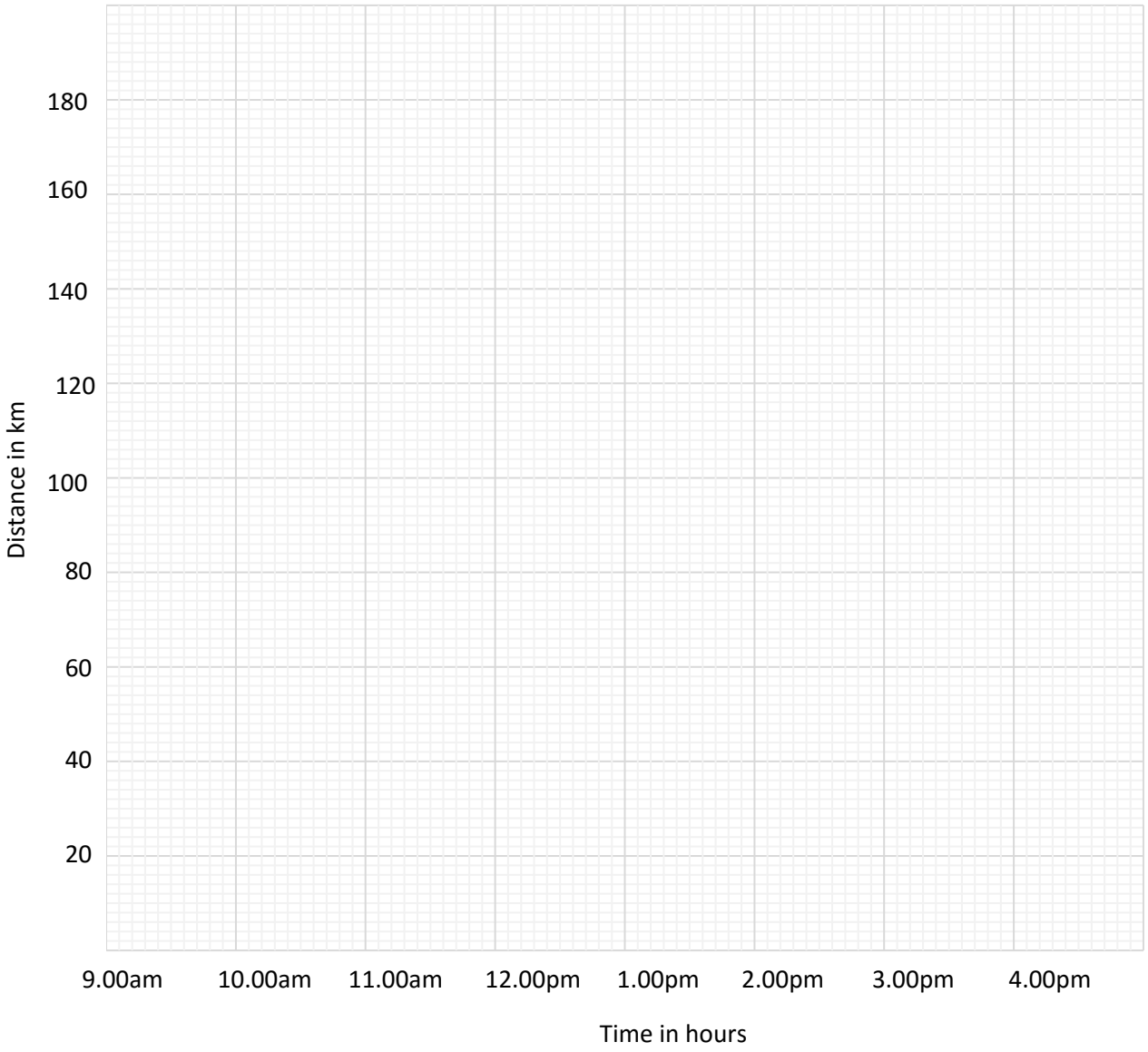
(b) A motorist covered 200km from 9.00am to 11.00am. Calculate his average speed.

27. Joy drove from town A to town B a distance of 120km in 2 hours. If it took her $1\frac{1}{2}$ hours

to drive from B to the next town C at the same speed, how far is town C from town A?

28. Change 30cm to metres

29. Bbosa left town P at 9.00am and drove at 55km per hour for 2 hours to town Q he rested for half an hour at town Q he left town Q and drove for $1\frac{1}{2}$ hours at 40km per hour to town R; he rested for half an hour at town R. He then left town R and drove back to town P 75 km per hour
    (a) Draw Bbosa`s journey on the graph provided



(b) Find the average speed for the whole journey.

30. The head teacher drove from the school to town P for 3 hours at a steady speed of 60 km per hour. He left town P at 11 am and drove back to the school on the same road at a steady speed of 90 km per town hour.

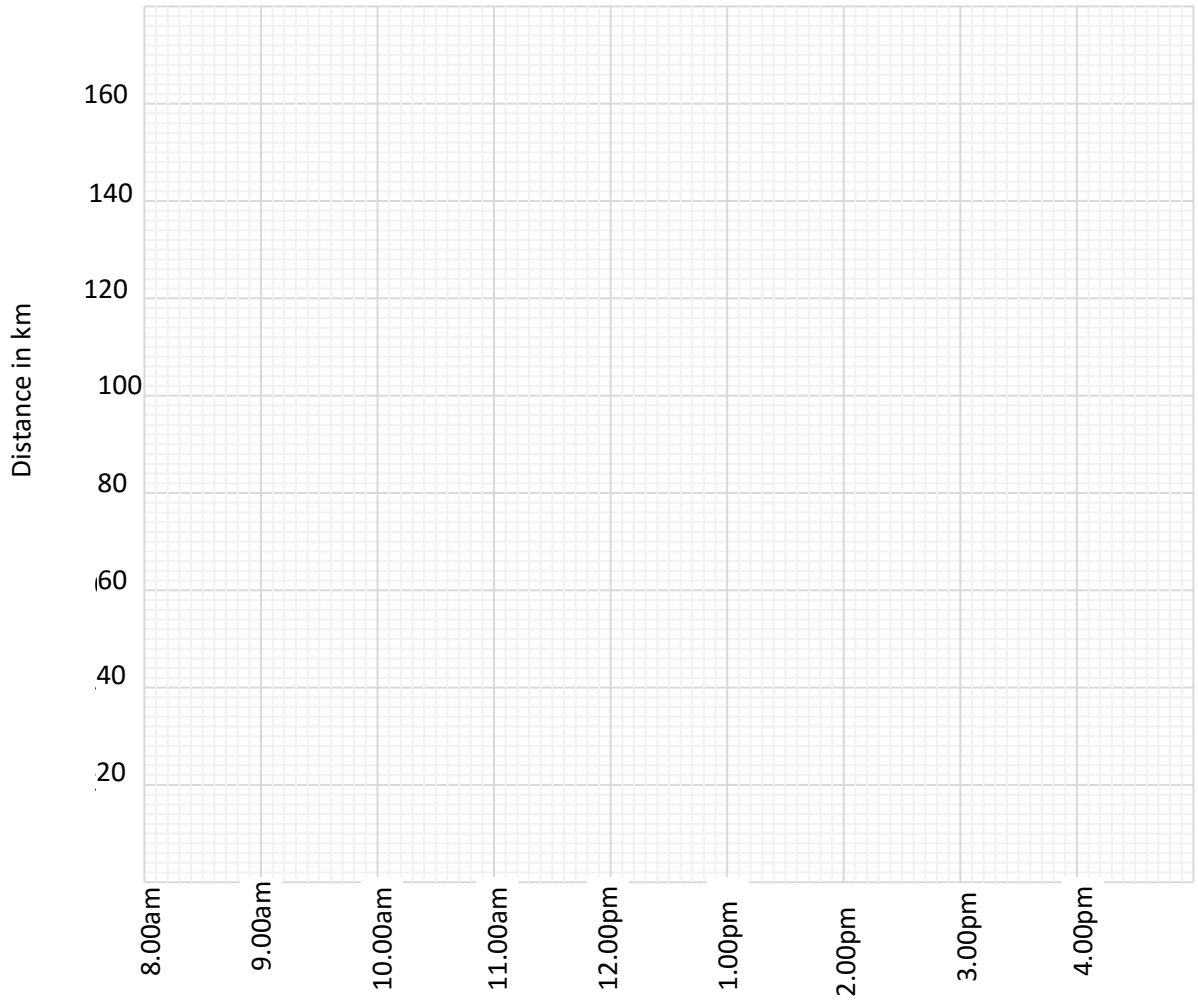
    (a) At what time did the headmaster arrive at the school? (4 marks)

(a) Work out the head teacher's average speed for the whole journey. (1 marks)

31. Change 12400metres to kilometers

32. Mutono left town X at 8.00 am and drove at 90km per hour for one hour to town Y. He rested for half an hour at town Y. He left town Y and drove for one hour at 70km per hour to town Z. He rested for half an hour at town Z. He then left town Z and drove to town X at a steady speed of 40 km per hour.

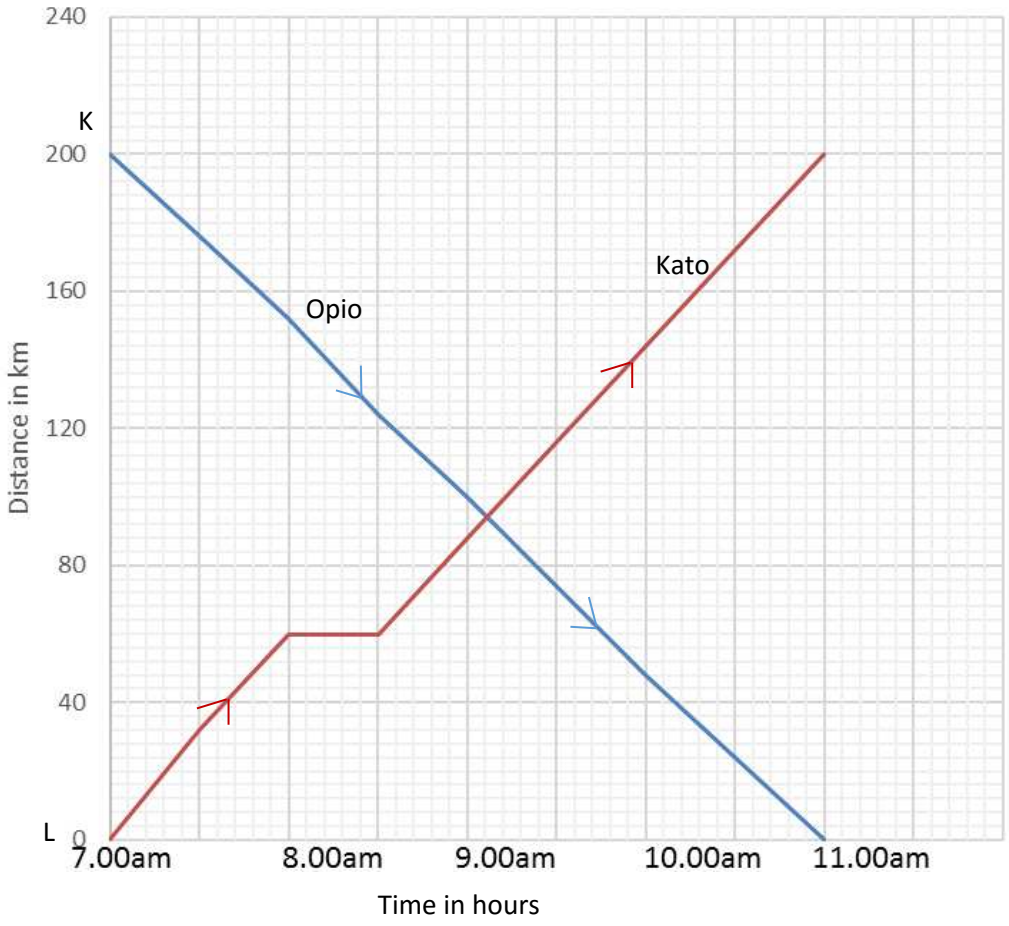
(a) draw Mutono`s journey on the graph provided on the next page.



(b) Work out Mutono`s average speed for the whole journey (03 marks)

33. Motor cyclist covered a distance of 42km in $3\frac{1}{2}$ hours. Calculate the average speed of the journey.

34. **Use the graph to answer the question that follow.**



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

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

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

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

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

35. Change 2.5 metres into centimeters.

36. A boy ran a distance of 6km in 45 minutes. What was his speed in kilometers per hour?

37. Makeba's car uses 8litrer of petrol for every 50km.

(a) how much petrol does he need for a journey of 325km? (2marks)

(b) If litre of petrol costs shs. 2,900, how much money will he spent on petrol needed to run the car for $1\frac{1}{2}$ hour at a speed of 50 km per hour?

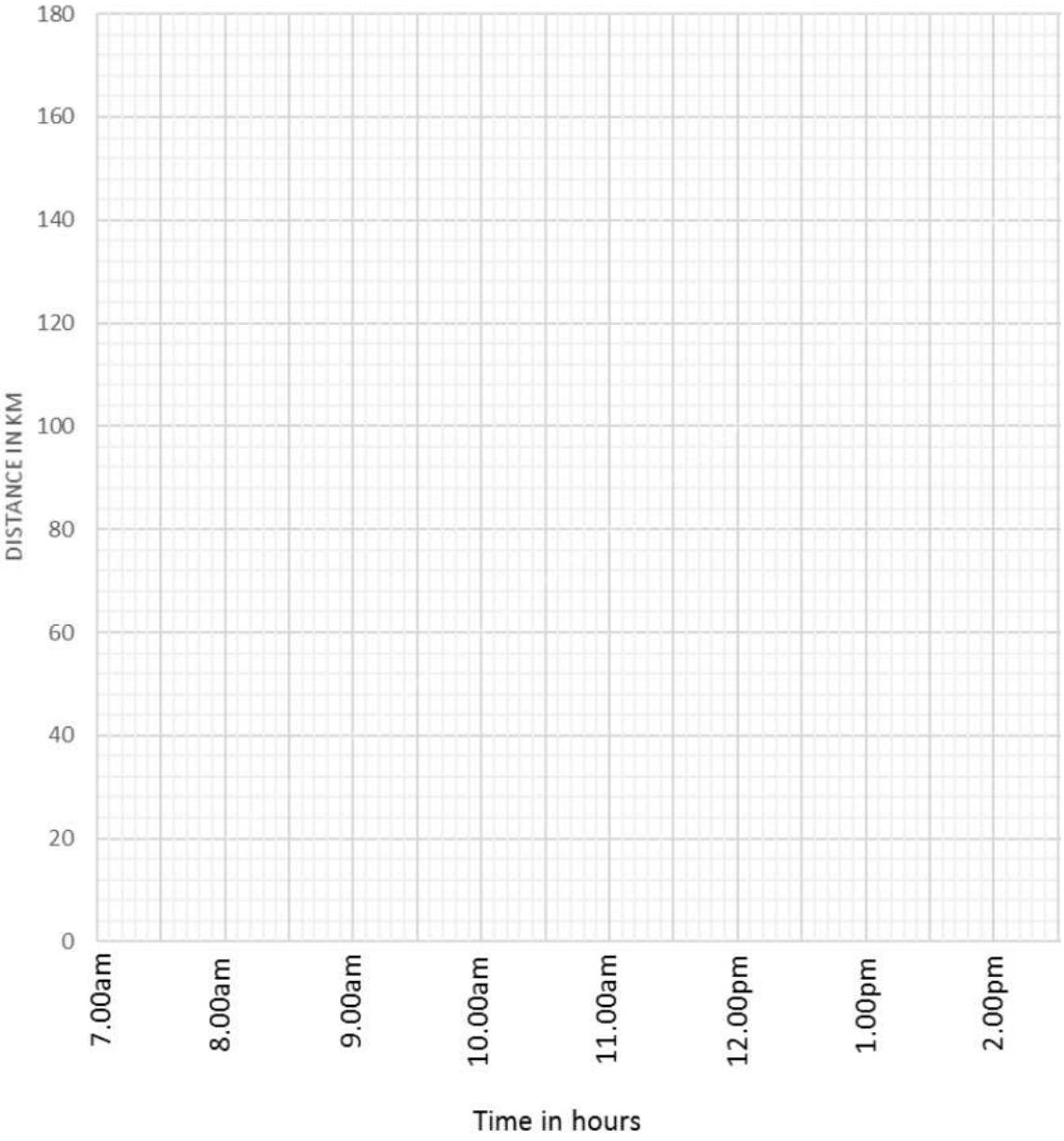
38. Change 750 centimeters into metres

39. A bus covered a distance of 280km in 3 hours and 30 minutes. What was its average speed?

40. Okidi left Kampala at 7.00a.m. driving a lorry at an average speed of 40km/hr for 2hours to Jinja. He rested for one hour at Jinja, then continued to Tororo at an average speed of 50km/hr for another 2hours.

41. (a) Use the above information to show Okidi's Journey on the graph below. (03marks)

(b)



42. Opoka rides a distance of 2.97km from his home to school on a bicycle. The wheel of the bicycle has a diameter of 63cm.

(a) How many revolutions does the wheel make to cover the distance? (Take π-22/7)

(03m arks)

(b) If Opaka makes 50 revolutions in one minute, how long does he take to reach the school?

(02 marks)

43. A cyclist covers 70km in $2\frac{1}{2}$hours, how long will he take to cover 21km at the same speed?

44. The table below shows how a motor cyclist travelled from town R through towns Q and S to town P.

Study and use it to answer the question that below

Town	arrival	departure
R		9:00 a. m
Q	9:30 a. m	9:42 a. m
S	10:35 a. m.	11:10 a. m
P	1:30 p. m	

a. How long motor cyclist stay at town S (01mark)

b. Find time the motor cyclist took to travel from town R to town P (02mark)

c. If the distance from town R to town P is 180km, calculate the average speed of the motor cyclist for the whole journey. (02marks)

45. Change 10 square meters into square centimeters.

46. A school bus taking pupils to a Game park covered 75% of its journey in 1 ½ hours. The bus travelled at a steady speed of 80km per hour. Find how the school is from the game Park. (04marks).

47. A motorist travels 64km in 40 minutes. Find the speed of the motorist in kilometres per hour.

48. A taxi driver left town A for town B at 10:30am driving at a speed of 80 kilometres per hour.

The driver reached town B at 2:00 pm.

(a) Calculate the time taken by the driver to reach town B. (03 marks)

(b) Find the distance between town A and townB

49. A car uses 7 litres of petrol to cover 28 kilometres. How many litres of petrol can it use to cover 64kilometers?

50. Martha drove from town A to town B at a speed of 72km per hour, town A is 90 km from town B. calculate the time she took to reach town B.

Suggested answers

1. A taxi leaves Kampala at 9:15 a.m. and reaches Mbarara Taxi Park at I2:15p.m. The same taxi leaves Mbarara at 1:30 p.m. and arrives in Kampala at 5:00p.m.

If the distance from Kampala to Mbarara is 270km. Calculate:

a) The average speed of the taxi from Kampala to Mbarara.

Time taken = 12:15

\- 9:15

3:00hrs

Average speed = $\frac{distance\ travelled}{time} = \frac{270}{3}$ = 90km/h

b) The total time taken by taxi to make the two trips.

Time taken to travel from Mbarara to Kampala = 5:00

\- 1:30

= 3:30

Total time to and fro = 3:00 + 3:30 = 6h 30min

c) the average speed of the taxi for the two journeys

Average speed for the two journeys = $\frac{total\ distance}{total\ time}$

= $\frac{2\ x\ 270}{6\frac{1}{2}}$

= 83.08km/k

2. Cherop covers 80cm in each step he takes when walking. He takes 100 steps per minute.

(a) How long does he take to walk a distance of 3.2 km?

Changing 3.2 km into centimeters = 3.2 x 100000

= 320000

Number of steps to cover 320000 = $\frac{320000}{80} = 4{,}000$

Time taken to cover 4000 steps = $\frac{4000}{100} = 40minutes$

(b) What is Cherop's average speed in km per hour?

40 minutes = $\frac{40}{60} = \frac{2}{3} hours$

Speed = distance ÷ time

= 3.2 ÷ $\frac{2}{3}$ = 3.2 x$\frac{3}{2}$ = 4.8km/h

3. Gateway bus travelling at 55 km per hour took 4 hours to cover part of its journey. The rest of the journey was covered in 2 hours at a speed of 40km per hour. Find the average speed of the bus over the whole journey.

Distance = speed x time

Total distance = 55 x 4 + 2 x 40

= 220 + 80

= 300

Average speed = $\frac{total\ distance}{total\ time} = \frac{300}{(4+2)} = \frac{300}{6} = 50kmh^{-1}$

4. A plane took $^1/_4$ of an hour to fly from A to B 30 km, apart. Find the speed of the plane in kilometres per hour.

Speed = $\frac{distance}{time} = 30 \div \frac{1}{4} = 30\ x\ 4 = 120km/hr$

5. Kintu's speed is 90 km per hour. Express this in metres per second.

90km/hr

Change km to m and hours to second

= $\frac{1000\ x\ 90}{1\ x\ 3600} = 25m/s$

6. (a) A taxi with its 14 passengers and the driver all weigh 1700kg. If the weight of each person is 70kg, what is the weight of the vehicle?

Mass of 14 passenger + 1 driver = 15 x 70 = 1050

Mass of the taxi = 1700 – 1050

= 650kg

(b) A bus moving at a speed of 80 km per hour leaves Jinja at 8:00 a.m. for Busia and arrives there at 11:00 a.m. How far is Busia from Jinja?

Time taken = 11:00 - 8:00 = 3hours

Distance = speed x time

= 80 x 3

= 240km

7. Isingoma drives at 120km per hour and okello drives at 100 km per hour. If they leave Town A at the same time to go to Town B 360km away, how far will Okello be from Town B when Isingoma arrives there?

Time taken by Isingoma = $\frac{Distance}{speed}$ =$\frac{360}{120} = 3hours$

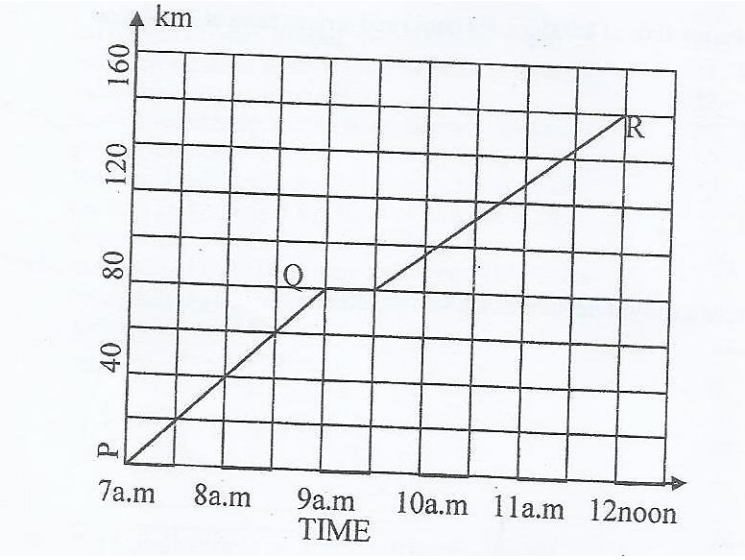
Distance moved by Okell in 3 hours = speed x time

= 100 x 3

= 300km

Remaining distance to reach town B = 360 – 300 = 60km

8. A motorist drove from Town P to Town R via Q. study the graph below carefully and use it to answer the questions that EE follow:



a) How far is Town Q from P?

From the graph is 80km

b) For how long did the motorist stay at Town Q?

He stayed 30 minutes

c) At what time did the motorist reach town R?

He reached R at 12:00noon

d) What was the motorist's average speed on the whole journey?

Total time taken = 12:00 – 7:00 = 5hours

Total distance = 160km

Speed = $\frac{distance}{time} = \frac{160}{5} = 28km/hr$

9. The distance between Tororo and Mbale towns by road is 45Km. On the map of Uganda the distance between the two towns is 5cm. Find the scale of the map.

Scale on a map should in the same units

1km = 100,000cm

45km = 45 x 100000 = 4,500,000cm

Scale:

5cm represent 4,500,000

1cm on map represent $\frac{4,500,000}{5}$ =90,000

Scale 1: 90000

10. A bus broke down after covering $\frac{5}{7}$ of the journey. The remaining distance to complete the journey was 140km. How long was the whole journey?

Fraction for remaining journey = 1 - $\frac{5}{7}$ =$\frac{2}{7}$

Let the journey be x km

$\frac{2x}{7}$ = 140km

x = $\frac{140\ x\ 7}{2}$ =490km

11. A motor cyclist leaves his home at 9.00a.m. for Kisoro town which is 45Km away, riding at 16 km per hour. At 9.15a.m he gets a puncture and delays for 15minutes. At what speed must he cover the remaining journey in order to reach Kisoro town at 10.OOa.m? (Give your answer in kilometers per hour.)

Time taken before the puncture = 9.15am – 9.00am = 15 minutes = $\frac{15}{60} = \frac{1}{4} hours$

Distance covered before the puncture = speed x time = 16 x $\frac{1}{4} = 4km$

Time wasted 15 minutes

Remaining distance = 45 -4 =41km

Remaining time = 10.00 – (9.15 + 0.15) = 30minutes or $\frac{1}{2} hours$

Speed = $\frac{distance}{time} = \frac{41}{\frac{1}{2}} = 82km/hr$

12. John Akii-Bua ran 100 metres in 10 seconds. Express his speed in kilometres per hour.

100m = $\frac{100}{1000} km$; 10 seconds = $\frac{10}{3600}$hrs

Speed = distance ÷ time

=$\frac{100}{1000} km \div \frac{10}{3600}$hrs

= $\frac{100}{1000} \; x \; \frac{3600}{10} = 36km/hr$

13. A Gaso bus travelling from Kampala to Lyantonde at an average speed of 60 km per hour broke down after 2 ½ hours' drive. The repairs took 30 minutes. The bus continued with the journey at an average speed of 50 km per hour for an hour.

a) Find the distance covered by the bus.

Distance = speed x time = 2 ½ x 60 + 50 x 1 = 200km

b) Find the average speed of the bus over the whole journey.

Total time = 2 ½ + ½ + 1 = 4hour

Speed = $\frac{distance}{time} = \frac{200}{4} = 50km/hour$

14. Matembe drove at 60 km per hour for 2 ½ hrs from A to B.

a) If Matembe left town A at 1:50 p.m at what time did he reach town B?

Time of arrival = 1:50

+ 2:30

4 :20 pm

b) If the cost of petrol was Shs. 1190 per litre and Matembe's car used one litre to cover 10 kilometres, find the cost of petrol for the journey.

Distance covered = speed x time

= 60 x 2 ½ = 150km

But 10km require 1liter of petrol

150km require $\frac{150}{10}$ x 15 liters

1liter costs 1190

15liters cost 1190 x 15 = shs 177,850

15. Peter walked 0.15km. What distance did he cover in metres?

1km = 1000m

0.15m = 0.15 x 1000 = 150m

16. A driver covered a distance of 120km in $1^{1}/_{2}$ hours.

(a) What was his average speed?

Speed = distance ÷ time

= 120 ÷ 1 ½ (km/hr)

= 120 ÷ $\frac{3}{2}$

= 120 x $\frac{2}{3}$ =80km/hr

(b) What distance would he cover if he travelled for 2 ¾ hours?

Distance = speed x time

= 80 x 2 ¾

= 80 x $\frac{11}{4}$ = 220km

17. Okello had 30km still to cover after travelling $\frac{3}{5}$ of the journey. How long was the journey?

The fraction of uncovered journey = 1- $\frac{3}{5}$ = $\frac{2}{5}$

Let the journey be x

$\frac{2}{5}\ of\ x = 30$

x = 30 x $\frac{5}{2}$ = 75

18. The diameter of a wheel of a motorcycle is 35cm. The motor-cycle covers 33 Km.

a) Find the number of revolutions the wheel makes to cover that journey.

Circumference of the wheel = πd = $\frac{22}{7}$ x 35 = 110cm

Changing 33km to cm

km	Hm	Dm	m	dm	cm	mm
1	0	0	0	0	0	

1km = 100, 000

⇨ 33km = 33 x 100,00 = 3300000cm

Numbers revolution = $\frac{distance}{circumfrence} = \frac{3300000}{110} = 30000\ revolution$

b) If the motor-cycle covers 110 meters per minute, how long will the journey of 33 Km take? (Give your answer in hours).

110m = $\frac{110}{1000} = 0.11km$

1minute = $\frac{1}{60}\ hours$

⇨ 0.11km requires $\frac{1}{60}\ hours$

∴ 33km will require $\left(\frac{1}{60}\ hours\ x\ 33\right) \div 0.11$

$= \frac{1}{60}\ x\ 33\ \div \frac{11}{100}$

$= \frac{1}{60}\ x\ 33\ x\ \frac{100}{11}\ hours$

$= 5\ hours$

19. A cyclist covers a distance of 21km in 45 minutes. How long will it take him to cover 84km?

21km require 45 minute

84km will require $\frac{45\ x\ 84}{21} = 180\ minute = \frac{180}{60} = 3hours$

20. Kamoga Devis can run t metres in 45 seconds.

(a) Express his speed in kilometres per hour.

t m = $\frac{t}{1000} km$

45 seconds = $\frac{45}{3600}\ hour$

Speed = $distance\ \div time$

= $\frac{t}{1000} \div \frac{45}{3600} = \frac{t}{1000}\ x\ \frac{3600}{45} = 0.08t\ km/h$

21. Mbabazi walked 3,600m in 36 minutes. Find his average speed in Km per hour.

1000m = 1km

3600m = $\frac{3600}{1000} = 3.6km$

60 minutes = 1hour

36minutes = $\frac{36}{60} = \frac{3}{5}\ hour$

Speed = distance /time

= 3.6 ÷ $\frac{3}{5}$

= 3.6 x $\frac{5}{3}$

= 6km/hr

22. A man left his home at 7.00a.m riding a bicycle and arrived at his place of work 25Km away at 9.30 am

a) Find his average speed.

Time taken = 9. 30 am

- 7. 00 am

2 . 30 or 2 ½ hour

Speed = $\frac{distance}{time} = 25\ \div 2\frac{1}{2} = 25\ \div \frac{5}{2} = 25\ x\ \frac{2}{5} = 10km/hr$

b) If he left his place of work for home at 5.00pm. Riding at an average speed of 15Km per hour, at what time did he get home?

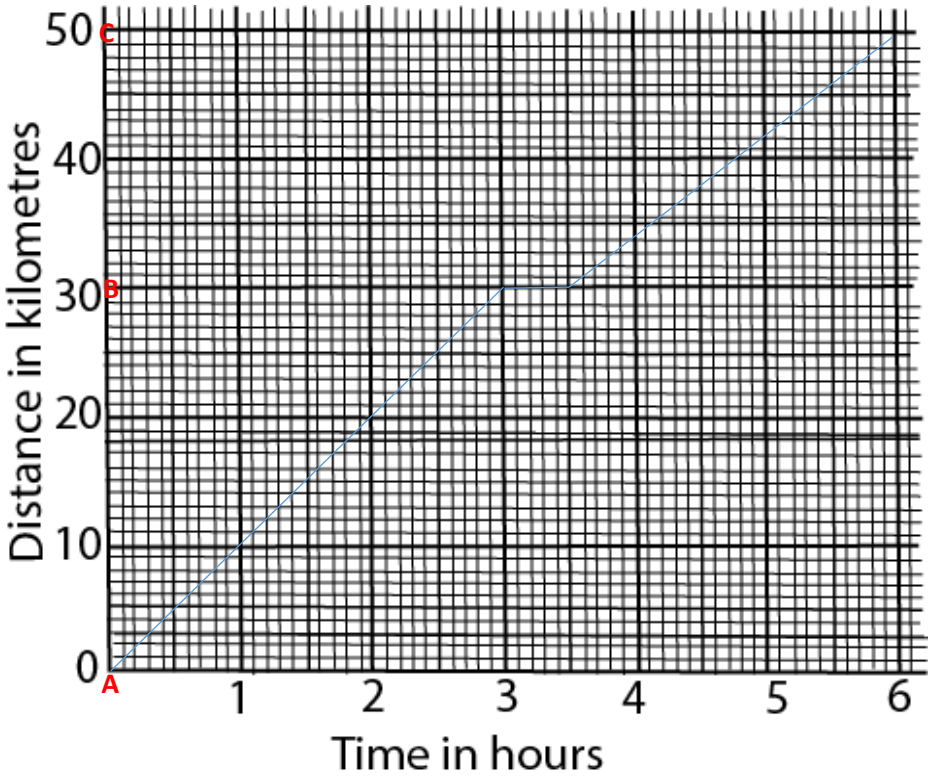
Time taken $= \frac{distance}{speed} = \frac{25}{15} = \frac{5}{3} = 1\frac{2}{3}\ hours = 1hour\ 40minutes$

Time of arrival = 5:00 + 1:40 = 6:40pm

23. Kiyemba rode a bicycle from town A to town C through town B as follows:

He rode from A to B a distance of 30km for 3 hours and then rested for ½ an hour. From B, he rode to C a distance of 20Km in $2^1/_2$ hours.

On the graph given below, draw a line to show Kiyemba's movement. Also show towns B and C.



24. Mukasa's bicycle got spoilt after he had covered a distance of 20 km which was $\frac{1}{4}$ of his journey. How long was the journey?

Let the whole journey be x

$\frac{1}{4}\ x = 20$

x = 20 x 4 = 80

25. John and Mary set out for a journey of 180km. John's car consumes one litre of petrol every ten kilometres while Mary's consumes one litre every nine kilometres. If one litre of petrol costs sh 1,500, how much more money did Mary spend?

Liters of petrol consumed by Mary

9km require 1litres

180km require $\frac{1\ x\ 180}{9} = 20l$

Number of litres consumed by John's car

10km require 1 litre

180km require (180 x 1)/10 = 18 litres

Extra petrol consumed by Mary = 20 – 18

= 2 litres

Extra money spent by Mary = 2 x 1500

= 3000

26. a) Express 36km/h in metres per second.

Change 36km to metres = 36 x 1000 = 36000m

Change 1hr to seconds = 1 x 3600 = 3600s

∴ 36km/hr = 36000m/3600s = 10m/s

(b) A motorist covered 200km from 9.00am to 11.00am. Calculate his average speed.

Time taken = 11.00 – 9.00 = 2hours

Speed = $\frac{distance}{time} = \frac{200km}{2hours} = 100km/h$

27. Joy drove from town A to town B a distance of 120km in 2 hours. If it took her $1\frac{1}{2}$ hours to drive from B to the next town C at the same speed, how far is town C from town A?

Speed = $\frac{distance}{time} = \frac{120}{2} = 60km/h$

Distance between A and C = speed x time

= 60 x 3 ½ hours

= 60 x $\frac{7}{2} = 210km$

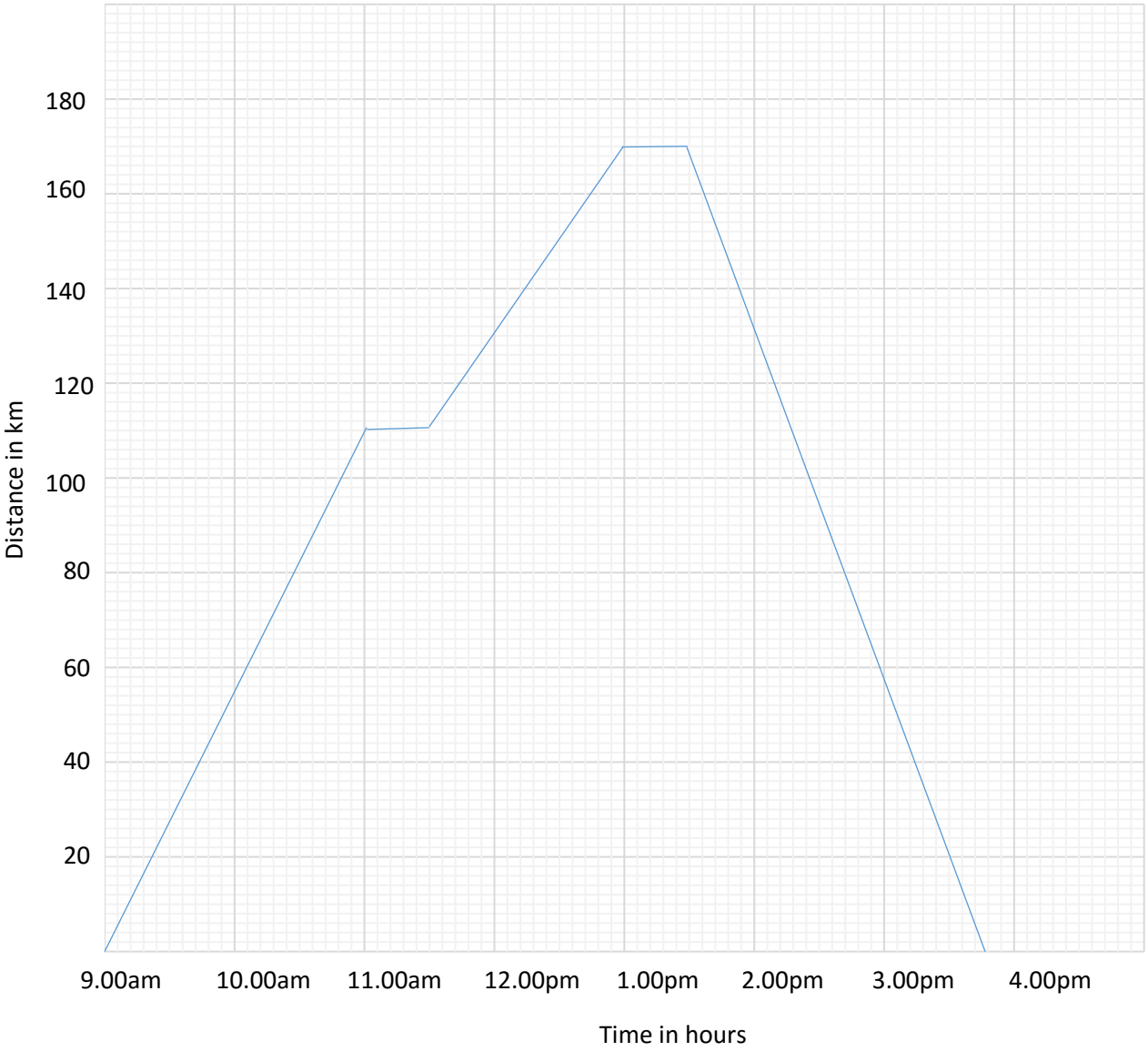
28. Change 30cm to metres

100cm = 1m

30m = $\frac{30\ x\ 1}{100}$ = 0.3m

29. Bbosa left town P at 9.00am and drove at 55km per hour for 2 hours to town Q he rested for half an hour at town Q he left town Q and drove for $1\frac{1}{2}$ hours at 40km per hour to town R; he rested for half an hour at town R. He then left town R and drove back to town P 75 km per hour

(c) Draw Bbosa`s journey on the graph provided



(d) Find the average speed for the whole journey.

Total time = 6.7hours

Total distance = 170 x 2 = 340km

Speed = $\frac{distance}{time} = \frac{340}{6.7} = 51.5kmhr^{-1}$

30. The head teacher drove from the school to town P for 3 hours at a steady speed of 60 km per hour. He left town P at 11 am and drove back to the school on the same road at a steady speed of 90 km per town hour.

(a) At what time did the headmaster arrive at the school? (4 marks)



Distance between the school and the town P = speed x time
= 60 x 3
= 180km

Time taken to go back = $\frac{Distance}{speed} = \frac{180}{90} = 2hours$

Time of arrival = 11.00am + 2hours = 1.00pm

(b) Work out the head teachers average speed for the whole journey. (1 marks)

Total distance = 180 x 2 = 360km

Total time = 3 +2 = 5hour

Speed = $\frac{distance}{time} = \frac{360}{5} = 72kmhr^{-1}$

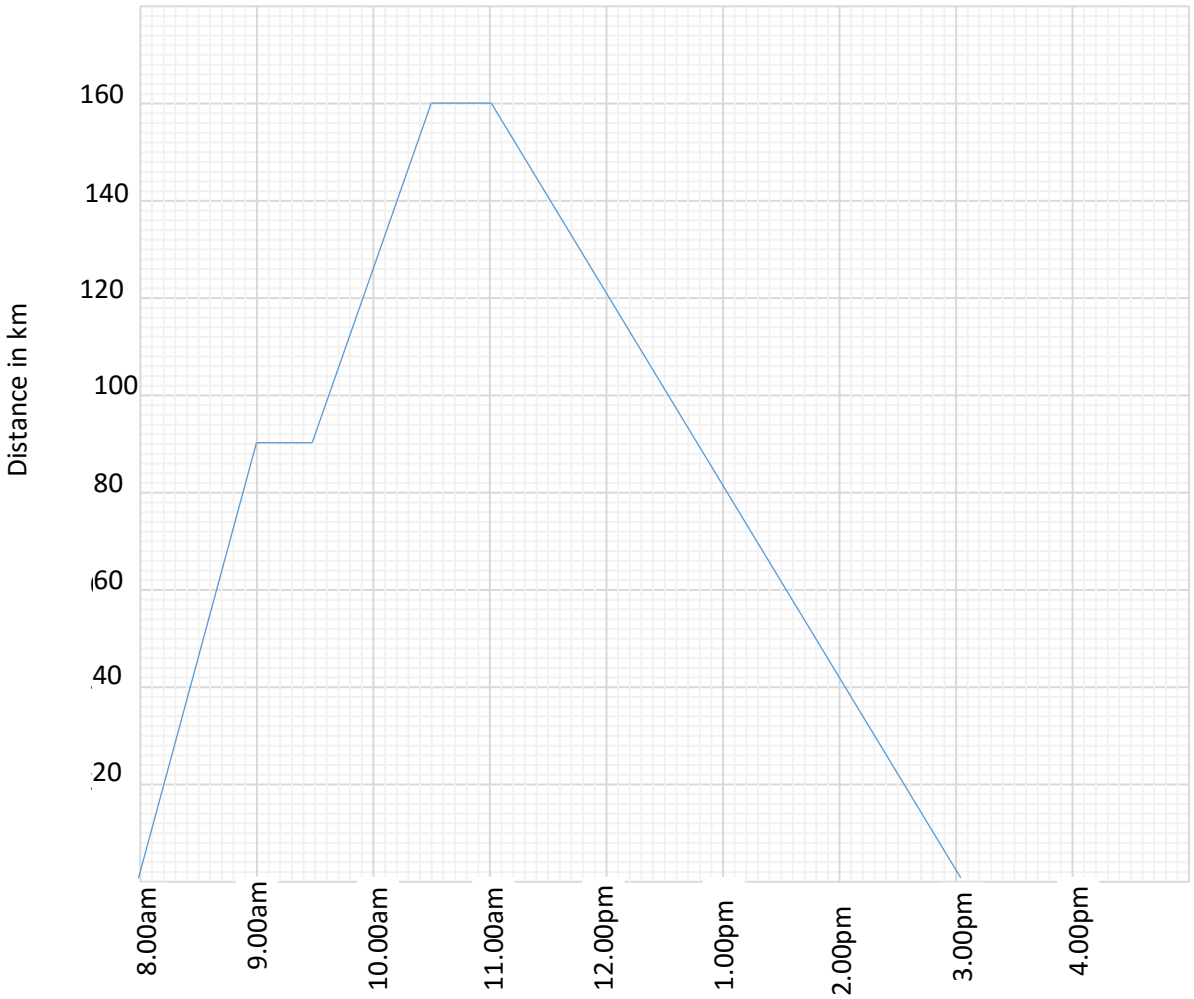
31. Change 12400metres to kilometers

1000m = 1km

12400m = $\frac{12400\ x\ 1}{1000} = 12.4km$

32. Mutono left town X at 8.00 am and drove at 90km per hour for one hour to town Y. He rested for half an hour at town Y. He left town Y and drove for one hour at 70km per hour to town Z. He rested for half an hour at town Z. He then left town Z and drove to town X at a steady speed of 40 km per hour.

(a) draw Mutono`s journey on the graph provided on the next page.



(b) Work out Mutono`s average speed for the whole journey (03 marks)

Speed = $\frac{distance}{time} = \frac{160\ x\ 2}{7} = 45\frac{5}{7}\ km/hr$

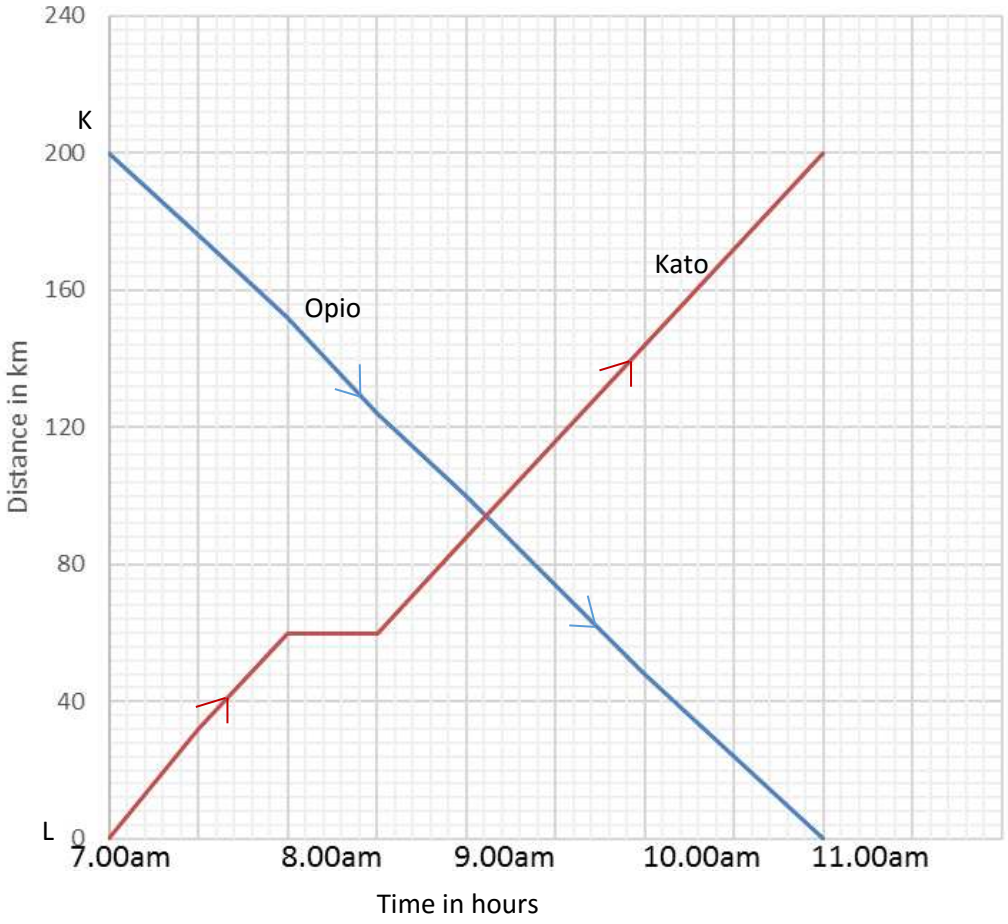
33. Motor cyclist covered a distance of 42km in $3\frac{1}{2}$ hours. Calculate the average speed of the journey.

Speed = $\frac{distance}{time} = \frac{42}{3\frac{1}{2}}$

= $42 \div \frac{7}{2}$

= $42 \times \frac{2}{7}$ = $12khr^{-1}$

34. **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 x 4 = 108 km

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

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

By 10.00am Opio was 12 x4 = 48km from L

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

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

Distance covered after resting = 200 – 60km = 140km

Time taken after resting = 11.00 – 8.30am = 2hour 30minutes = 2½ hours

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

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

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

35. Change 2.5 metres into centimeters.

1m = 100cm

2.5m = 2.5 x 100 cm = 250cm

36. A boy ran a distance of 6km in 45 minutes. What was his speed in kilometers per hour?

Change 45 minutes to hours = $\frac{45}{60} = \frac{3}{4}$

Speed = $\frac{distance}{time} = 6 \div \frac{3}{4} = 6\ x \frac{4}{3} = 8kmhr^{-1}$

37. Makeba's car uses 8litrer of petrol for every 50km.

(a) how much petrol does he need for a journey of 325km? (2marks)

50km take 8 liters

325 km take $\frac{8\ x\ 325}{50} = 52\ litres$

∴ $325km\ require\ 52\ litres$

(b) If litre of petrol costs shs. 2,900, how much money will he spent on petrol needed to run the car for $1\frac{1}{2}$ hour at a speed of 50 km per hour?

Distance = speed x time = 50 x 1 ½ = 75km

Total fuel required to run 75km

50km require 8litres

75km require $\frac{8\ x\ 75}{50} = 12litres$

Cost of 12 litres = 12 x 2900 = shs. 34800

38. Change 750 centimeters into metres

100 cm = 1m

$\therefore$ 750cm = $\frac{1\ x\ 750}{100} = 7.5m$

39. A bus covered a distance of 280km in 3 hours and 30 minutes. What was its average speed?

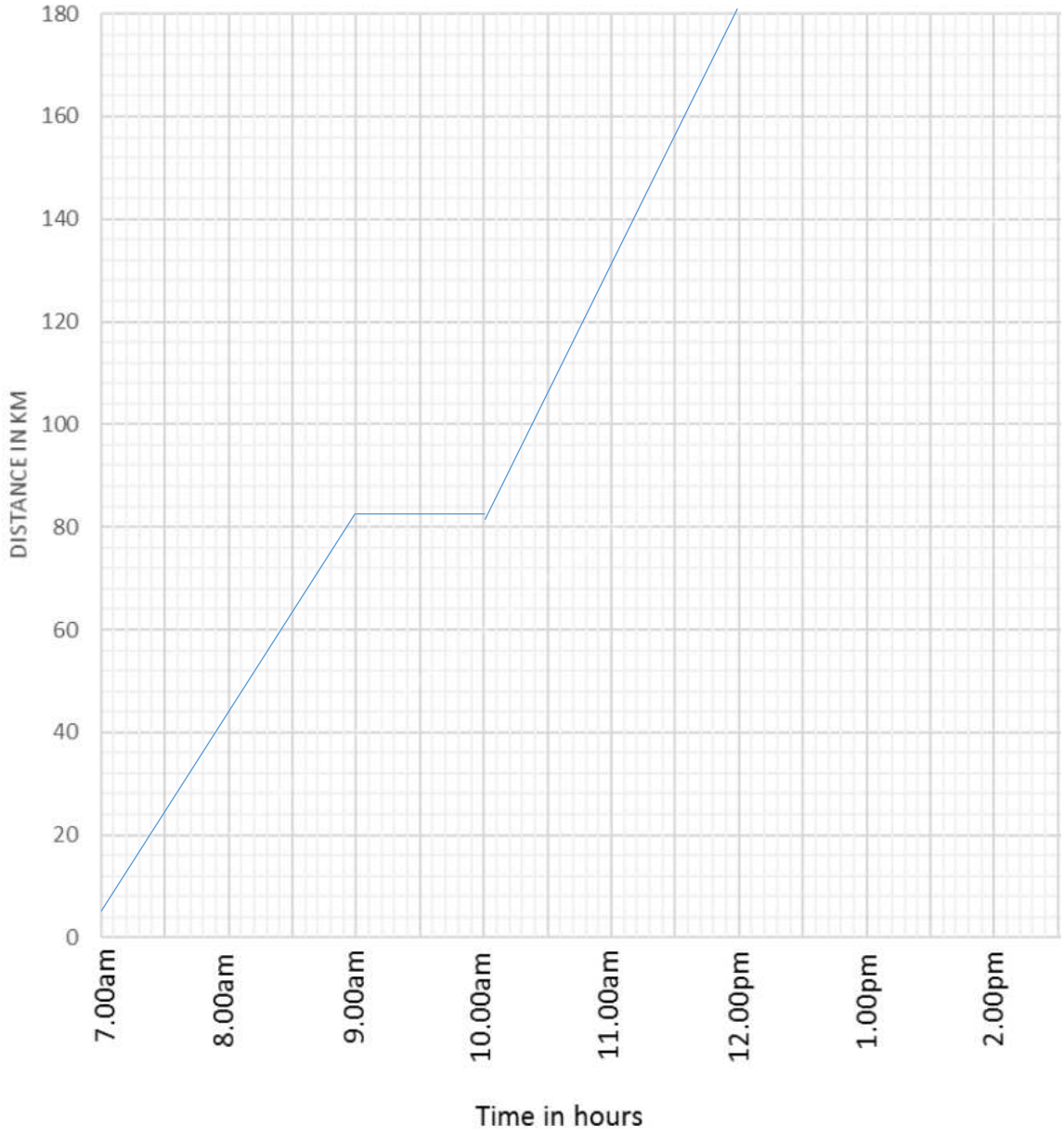
Speed = $\frac{distance}{time} = \frac{280}{3\frac{1}{2}}$

= $280 \div \frac{7}{2} = 280\ x\ \frac{2}{7} = 80kmhr^{-1}$

40. Okidi left Kampala at 7.00a.m. driving a lorry at an average speed of 40km/hr for 2hours to Jinja. He rested for one hour at Jinja, then continued to Tororo at an average speed of 50km/hr for another 2hours.

41.

(a) Use the above information to show Okidi's Journey on the graph below. (03marks)



(b)Calculate Okidi's average speed for the whole journey. (02marks)

Distance from Kampala – Jinja = speed x time = 40 x 2 = 80km

Distance from Jinja to Tororo = 50 x 2 = 100km

Total distance = 80 + 100 km = 180km.

Total time = Time ending – starting time

= 12:00 = 07:00 = 5hours

Speed = $\frac{Distance}{time} = \frac{180}{5} = 36kmhr^{-1}$

42. Opoka rides a distance of 2.97km from his home to school on a bicycle. The wheel of the bicycle has a diameter of 63cm.

(a) How many revolutions does the wheel make to cover the distance? (Take π-22/7)

Change 2.97km to cm = 2.97 x 100000 = 297000cm (03m arks)

Circumference of the wheel = πd = $\frac{22}{7}\ x\ 63 = 198cm$

Number of revolutions = $\frac{distance}{circumfrnce} = \frac{297000}{198} = 1500revolution$

(b) If Opaka makes 50 revolutions in one minute, how long does he take to reach the school?

50 revolution per minutes = 1minute (02 marks)

1500 revolutions take $\frac{1\ x\ 1500}{50} = 30\ minutes$

43. A cyclist covers 70km in $2\frac{1}{2}$hours, how long will he take to cover 21km at the same speed?

Method I

First determine the speed of a cyclist

$$speed = \frac{distance}{time} = \frac{70}{2\ 1/_2} = \frac{70}{\frac{5}{2}} = 70\ x\frac{2}{5} = 28kmhr^{-1}$$

Then, find the time; $Time = \frac{distance}{spedd} = \frac{21}{28} = \frac{3}{4}hrs$

Method II (by proportions)

70 km are covered in 2 ½ hours

1 km is covered in 2 ½ ÷ 70

21 km is covered in (2 ½ ÷ 70) x 21 = $\frac{3}{4}hrs$

44. The table below shows how a motor cyclist travelled from town R through towns Q and S to town P.

Study and use it to answer the question that below

Town	arrival	departure
R		9:00 a. m
Q	9:30 a. m	9:42 a. m
S	10:35 a. m.	11:10 a. m
P	1:30 p. m	

a. How long motor cyclist stay at town S (01mark)

11: 10

- 10: 35 35 minutes

35

b. Find time the motor cyclist took to travel from town R to town P (02mark)

Time taken = 12.00 -9.00 + 1.30 = 4hrs 30 minutes

c. If the distance from town R to town P is 180km, calculate the average speed of the motor cyclist for the whole journey. (02marks)

$Speed = \frac{Distance}{time}$

$= \frac{180}{\frac{9}{4}} = \frac{180\ x\ 4}{9} = 80kmhr^{-1}$

45. Change 10 square meters into square centimeters.

$1m^2$ = 1m x 1m

= 100cm x 100cm

10000 cm^2

∴ $10m^2$ = 10 x 10000 cm^2

= 1000000cm^2

46. A school bus taking pupils to a Game park covered 75% of its journey in 1 ½ hours. The bus travelled at a steady speed of 80km per hour. Find how the school is from the game Park. (04marks).

Distance covered in 1 ½ hour = speed x time

= 80 x 1 ½

= 120km

Let the total distance be X

Thus, $\frac{75X}{100} = 120$

X = 160

47. A motorist travels 64km in 40 minutes. Find the speed of the motorist in kilometres per hour.

Change 40 minutes to hours = $\frac{40}{60} = \frac{2}{3}$

Speed = Distance/ time

= 64 ÷ $\frac{2}{3}$ = 64 x $\frac{3}{2}$ = 96km/hr

48. A taxi driver left town A for town B at 10:30am driving at a speed of 80 kilometres per hour. The driver reached town B at 2:00 pm.

(a) Calculate the time taken by the driver to reach town B. (03 marks)

Change the time into 24-hour clock and subtract = 1400

- 1030

= 330 = 3 ½ hours

(b) Find the distance between town A and townB

Distance = speed x time

= 80 x 3 ½ = 80 x $\frac{7}{2}$ = 280km

49. A car uses 7 litres of petrol to cover 28 kilometres. How many litres of petrol can it use to cover 64kilometers?

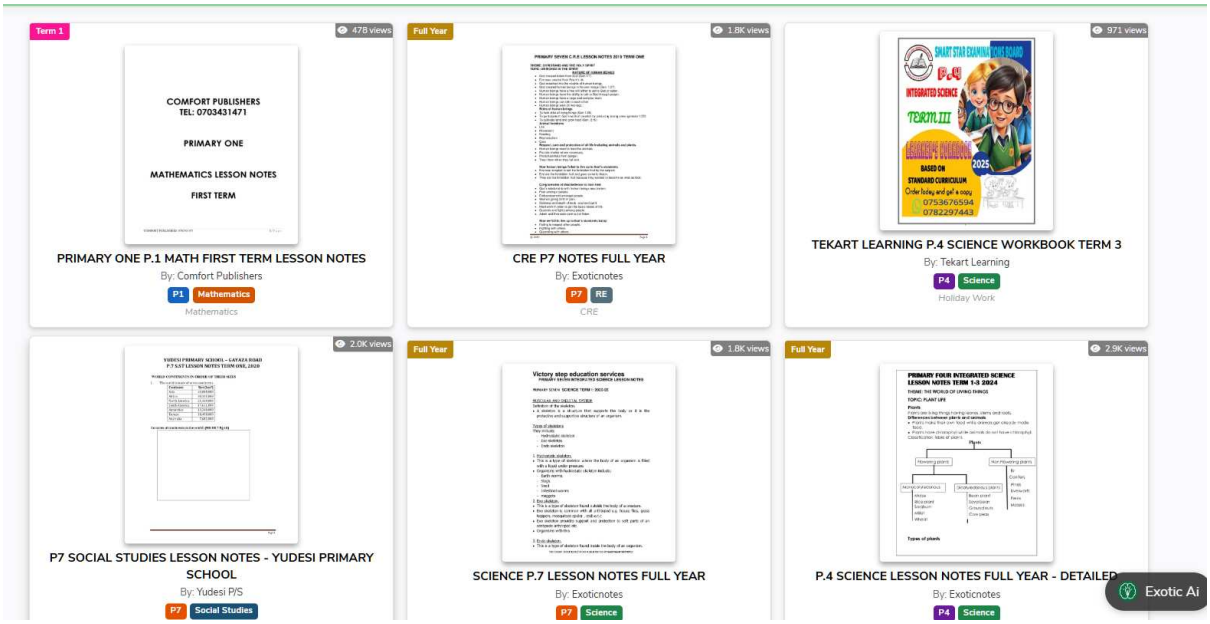
28km require 7L

64km require = $\frac{64\ x\ 7}{28} = 16\ litres$

50. Martha drove from town A to town B at a speed of 72km per hour, town A is 90 km from town B. calculate the time she took to reach town B.

Time = $\frac{distance}{speed} = \frac{90}{72} = \frac{15}{12} = \frac{5}{4} = 1\frac{1}{4}\ hours$

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