



KULLEGĠ SAN BENEDITTU
Boys Secondary School, Kirkop

Levels
6-7

HALF-YEARLY EXAMINATIONS – FEBRUARY 2014

FORM 3

MATHEMATICS Levels 6-7

TIME: 30mins

Non Calculator Paper

Question	1	2	3	4	5	6	7	8	9	Total
Mark										

DO NOT WRITE ABOVE THIS LINE

NAME AND SURNAME: _____

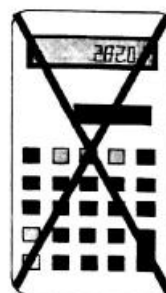
CLASS: _____

INDEX: _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

- Answer all questions.
- This paper carries 25 marks.
- **Calculators, protractors** and other mathematical instruments are **NOT ALLOWED**.
- On your desk you should have nothing except for **pen, pencil, ruler** and the **examination paper**.



1. Factorise completely: $4a + 16b$

Ans _____

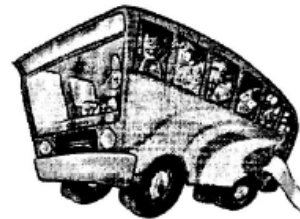
(2 marks)

2. Expand and simplify: $2(3x + 5) + 3(x + 4)$

Ans _____

(3 marks)

3. A bus leaves the terminus. $\frac{2}{3}$ of the seats are full.
After the first stop, $\frac{1}{4}$ of the seats are full.



- a) Did people get **on** or **off** the bus at the first stop? Explain.

- b) What is the **difference**, as a fraction of the full seats, between the seats at the terminus and those after the first stop?

Ans _____

- c) If the bus has 57 seats, with how many persons did the bus leave the **terminus**?

Ans _____

(5 marks)

4. Solve: $6x - 2 = 4x + 2$

Ans $x =$ _____

(3 marks)

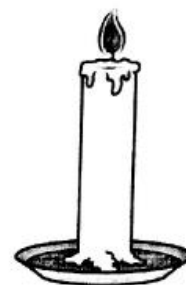


5. a) Make y subject of the formula: $2y + z = 6$.

Ans _____

- b) The height h cm of a candle after t hours is given by the formula:

$$h = 20 - 4t$$



- i) Find the value of h when $t = 0$.

Ans $h =$ _____ cm

- ii) How high will the candle be after 2 hours?

Ans _____ cm

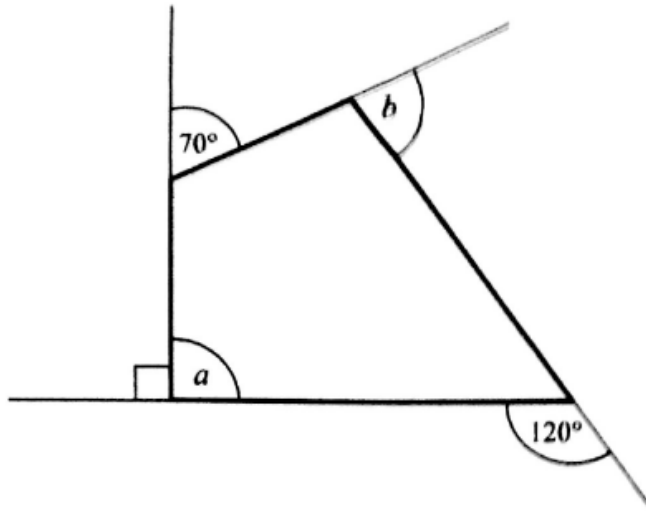
- iii) At what time will the candle burn out?

Ans _____ hours

(8 marks)



6.



- i) Angle a is _____. It is called (a right, an acute, an obtuse, a reflex) angle.
- ii) The sum of exterior angles is _____.
- iii) Work out the value of angle b .
- iv) Angle b is called (a right, an acute, an obtuse, a reflex) angle.

(6 marks)

7. A fisherman is 16 km away from shore.

- a) If he needs to reach the shore in $\frac{1}{2}$ hour, what should the speed be?

Ans Speed = _____ km/hr

- b) A lightning strikes in the sky. The sound takes 20 seconds to travel to the fisherman. If sound travels at a speed of 331 metres per second, how far away is the lightning?



Ans _____ m

(3 marks)



8. a) The ratio $3 : 4$ is the same as $15 : \underline{\hspace{2cm}}$.
- b) In a recipe for a cake the ratio of *butter: sugar: flour* is $1 : 3 : 4$.
- i) The total mass of the ingredients is 1600g. How much of each ingredient is used?



Ans butter = g , sugar = g , flour = g

- ii) How much sugar is needed if 100g of butter is used?

Ans g

(7 marks)

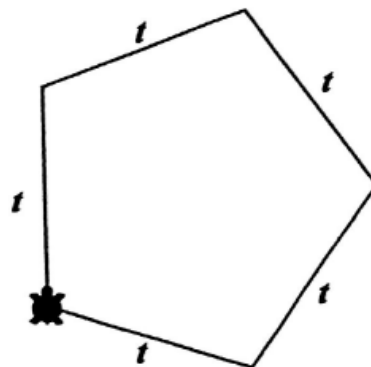
9. The diagram shows a **regular pentagon** of side t turtle steps.

- a) Write a **formula**, in terms of t , for the perimeter P of the pentagon.

Ans $P = \underline{\hspace{2cm}}$ turtle steps

- b) Work out the **value** of P when $t = 40$.

Ans $P = \underline{\hspace{2cm}}$



- c) Fill in this LOGO procedure which draws a pentagon of side 40 turtle steps:

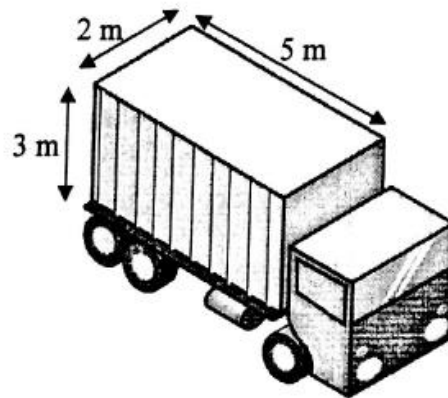
REPEAT [FD RT].

(6 marks)



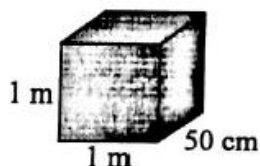
10. The trailer of a truck is in the form of a cuboid. It measures 2 m by 5 m by 3 m.

a) Work out the **volume** of the trailer.



Ans Volume = _____ m^3

The trailer is completely full of boxes, all measuring 1 m by 1 m by 50 cm.



b) Work out the **volume** of 1 box in m^3 .

Ans Volume = _____ m^3

c) How many boxes are there in the trailer?

Ans _____ boxes

d) Work out the **total surface area** of 1 box.

Ans _____

(8 marks)



11. The following table shows the temperature in Russia at different times of a day.

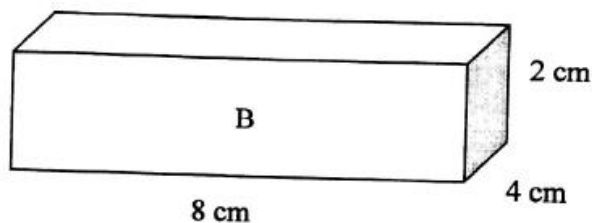
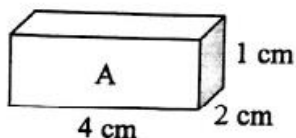
Time	2.00 am	11.00 am	3.00 pm	11.00 pm
Temperature (°C)	-8	5	7	-3

- a) At what **time** of the day was the **coldest**? _____
- b) What was the **hottest** temperature during the day? _____ °C
- c) What is the **difference** between the temperatures at 11.00 am and 11.00 pm?

Ans Difference = _____ °C

(4 marks)

12.



- a) Write down the **ratio** of the heights of cuboids A and B.

- b) Work out the **volume** of cuboid A and of cuboid B.

Ans A = _____ cm³, B = _____ cm³.

- c) Write down the **ratio of the volumes** of the cuboids in its **simplest form**:

Ans _____

- d) What do you notice when comparing the ratios in parts (a) and (c)?

- e) Are the shapes **similar** or not? (Yes/No)

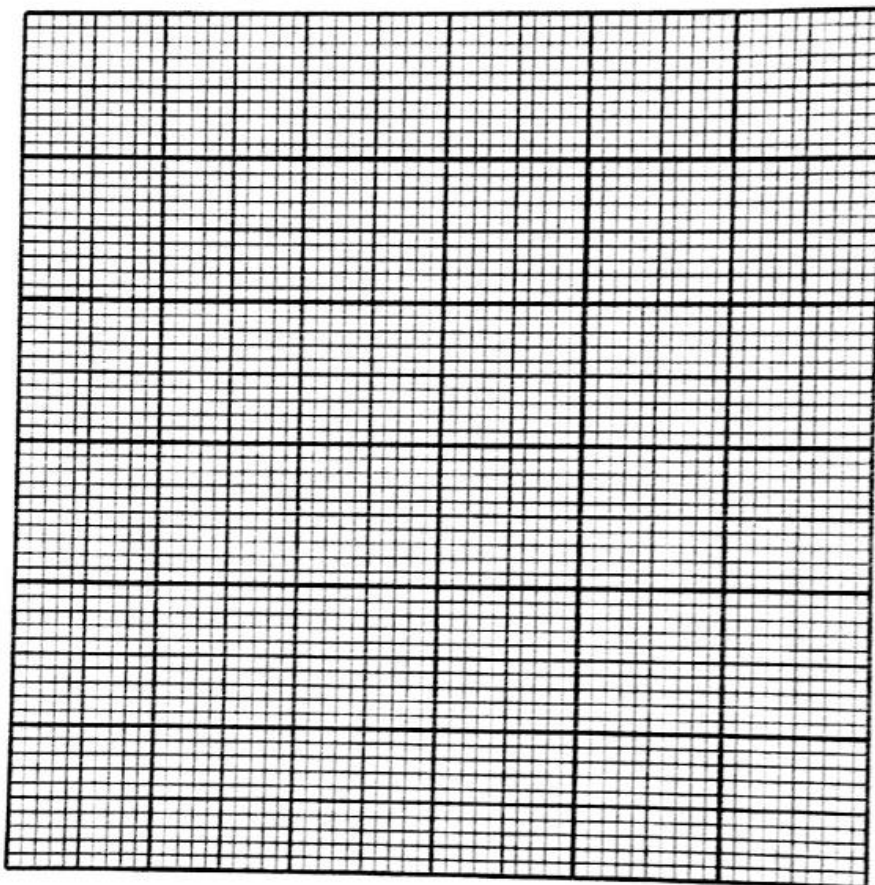
(8 marks)



13. a) Complete this table for $y = 2 - x$.

x	-2	-1	0	1	2	3
2	2		2			2
$-x$	2		0			
y	4		2		0	

- b) Using a scale of 2 cm to represent 1 unit on both axes, draw the graph of $y = 2 - x$.



- c) Write down the co-ordinates of the point where the line cuts the y -axis.

Ans Co-ordinates (____, ____)

- d) Work out the gradient of the line from the graph.

Ans Gradient = _____

END OF EXAM

(10 marks)

