

KULLEĠĠ SAN BENEDITTU
Boys Secondary School, Kirkop

B

HALF-YEARLY EXAMINATIONS – FEBRUARY 2012

FORM 4

MATHEMATICS Scheme B

TIME: 20 mins

Non Calculator Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
Mark																						

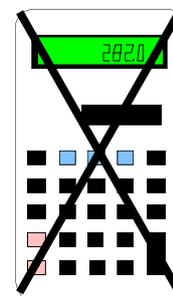
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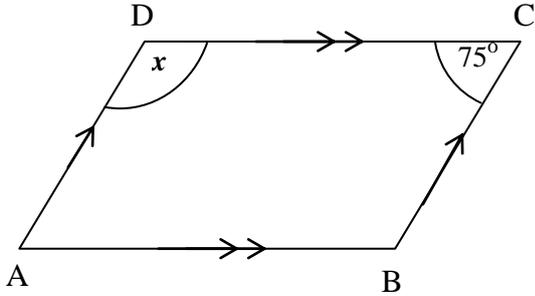
NAME AND SURNAME: _____ **CLASS:** _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

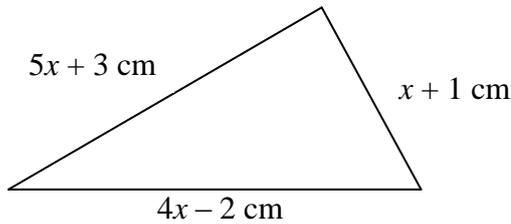
- Answer all questions.
- This paper carries 20 marks.
- **Calculators, protractors** and other mathematical instruments are **NOT ALLOWED**.
- On your desk you should have nothing except for **pen, pencil, ruler** and the **examination paper**.
- You are not required to show your working. However, space for working is provided if you need it.



Question	Space for working, if required.
1. Which of the following is a prime number? 45, 29, 27, 51, 49. Ans: _____	
2. Estimate the value of $5.02 \times (9.93 - 1.88)$. Ans: _____	
3. The largest ever meat-eating dinosaur, the Tyrannosaurus lived about 70 million years ago. Express this figure in standard form . Ans: _____	
4. 0.042 has the same value as: A. $\frac{42}{1000}$ B. $\frac{4}{2000}$ C. $\frac{42}{100}$ D. $\frac{42}{10000}$ Ans: _____	
5. Find the value of x . <div style="text-align: center;">  </div> <p style="text-align: center;">NOT TO SCALE</p> <p style="text-align: right;">Ans: _____</p>	
6. How many sectors with centre angle 30° are needed to cover three-fourths of a circle? Ans: _____	

<p>7. Use the formula $s = ut + kt^2$ to find the value of s when $u = -2$, $k = 2$ and $t = 5$.</p> <p style="text-align: right;">Ans: _____</p>	
<p>8. Work out:</p> $2\frac{1}{3} - 1\frac{2}{5}$ <p style="text-align: right;">Ans: _____</p>	
<p>9. The number of people at a football match was 67 635. Write this number correct to two significant figures.</p> <p style="text-align: right;">Ans: _____</p>	
<p>10. The circumference of a circle is 24 cm. What is the approximate length of the diameter of this circle? (<u>Hint</u>: Take $\pi = 3$)</p> <p>A. 4 cm B. 6 cm C. 8 cm D. 10 cm</p> <p style="text-align: right;">Ans: _____</p>	
<p>11. Simplify: $2a + 3b - a + 4b$</p> <p style="text-align: right;">Ans: _____</p>	
<p>12. Put in order, smallest first:</p> $3.88 \times 10^2, \quad 4.96 \times 10^{-2}, \quad 5.32 \times 10^{-3}, \quad 1.08 \times 10^3$ <p>Ans: _____</p>	
<p>13. Find the cost of 23 books each costing €9.99.</p> <p style="text-align: right;">Ans: _____</p>	
<p>14. In a recipe 120 ml of milk is needed to make 4 buns. How much milk is needed to make 10 buns?</p> <p style="text-align: right;">Ans: _____</p>	

15. Write an expression for the perimeter of this triangle.



Ans: _____

16. Find the value of:

$$\frac{5^4 \times 5^{-1}}{5^5 \times 5^{-2}}$$

Ans: _____

17. Make x the subject of the formula: $y = 3x + 2$

Ans: _____

18. Calculate the average speed, in km/h, of a cyclist who travels 125 km in 5 hours.

Ans: _____

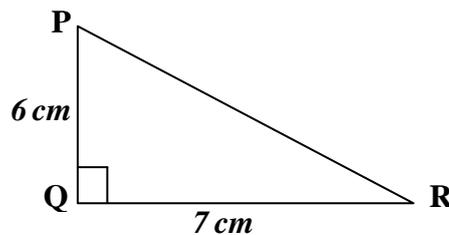
19. Write down the next two terms in the sequence.

10, 11, 13, 16, 20, _____, _____

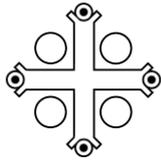
Ans: _____

20. PQR is a right-angled triangle in which $PQ = 6 \text{ cm}$ and $QR = 7 \text{ cm}$.
The length of PR is :

- A. $\sqrt{13} \text{ cm}$
- B. $\sqrt{26} \text{ cm}$
- C. $\sqrt{85} \text{ cm}$
- D. $\sqrt{42} \text{ cm}$



Ans: _____



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HALF-YEARLY EXAMINATIONS – FEBRUARY 2012

FORM 4

MATHEMATICS Scheme B

TIME: 1hr 40mins

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Main	NC	Global Mark
Max. Mark	4	6	8	6	6	8	8	5	6	8	7	2	6	80	20	100
Mark																

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NAME AND SURNAME: _____ **CLASS:** _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

- Answer all questions.
- This paper carries 80 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1. a) Use your calculator to find the value of:

i) $\sqrt{\frac{(4 \times 6.7) + 5.2}{2}}$ Ans: _____

ii) $\left(\frac{27.6}{3}\right)^2 - 23 \times 1.5$ Ans: _____

b) A rectangular room measures 32.1 m by 42.4 m.

- i) **Estimate** the area of the room by rounding the measurements to one significant figure.

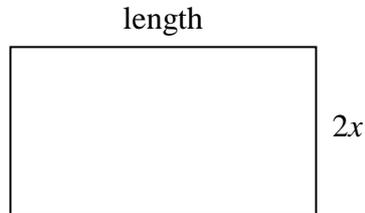
Ans: _____

ii) Calculate the **actual area**, giving your answer to 3 significant figures.

Ans: _____

(4 marks)

2. A rectangle has a width of $2x$ centimetres. If the length is 3 cm longer than its width:



a) write an expression for the length of the rectangle.

Ans: _____

b) write an expression for the **perimeter** of the rectangle and simplify it .

Ans: _____

c) If the perimeter is 22 cm long, determine the value of x .

Ans: _____

(6 marks)

3. a) Solve the equation: $2(x - 3) + 5x = 43$

Ans: _____

b) Simplify the expression: $\frac{2x}{3} - \frac{3x}{5}$

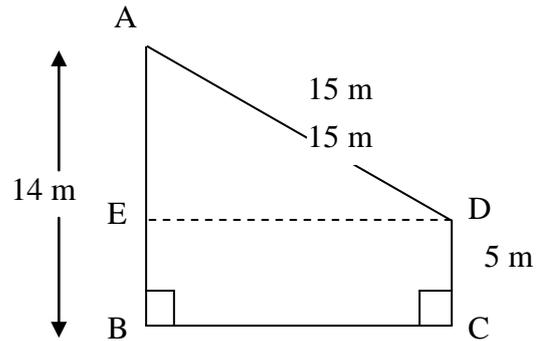
Ans: _____

c) Make a the subject of the formula in: $v^2 = u^2 + 2as$

Ans: _____

(8 marks)

4. The figure represents a front garden ABCD in the form of a trapezium.
 $AB = 14\text{ m}$, $AD = 15\text{ m}$ and $DC = 5\text{ m}$.
 Calculate:



- a) the length of BC,
 (*Hint: ED was drawn to help you*)

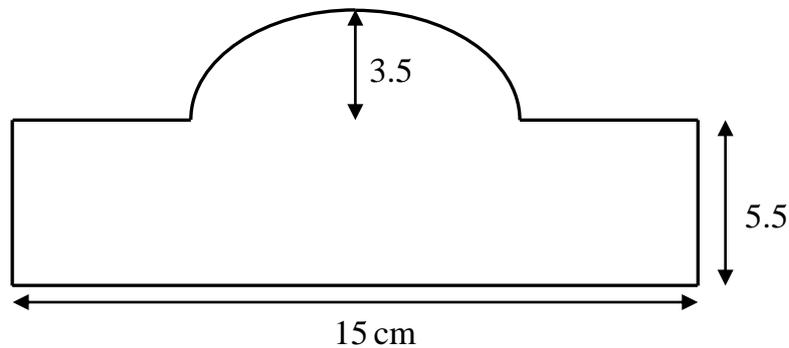
Ans: _____

- b) the **area** of the front garden ABCD.

Ans: _____

(6 marks)

5. The diagram shows the shape of an advert card. It is in the shape of a rectangle with a semi-circle of radius 3.5 cm added.



- a) Calculate the area of the card correct to **1 decimal place**.

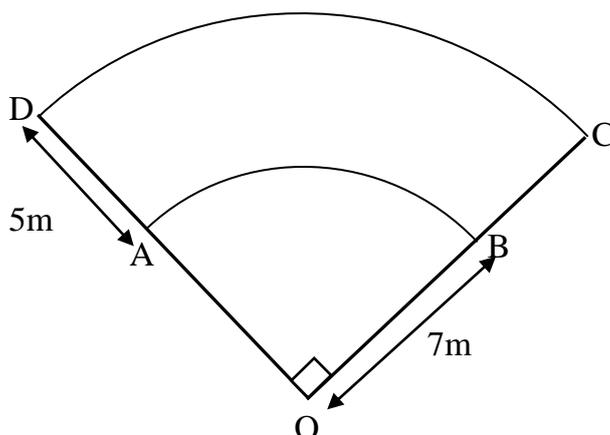
Ans: _____

- b) Work out the perimeter of the card correct to **1 decimal place**.

Ans: _____

(7 marks)

6. The diagram below shows a swimming pool.
Sector OAB is the shallow part of the pool while ABCD is the deep part.
(Give all your answers to 3 significant figures)



- a) Find the **area** of OAB, the shallow part of the pool.

Ans: _____

- b) Find the **area** of the pool OCD.

Ans: _____

- c) Calculate the **area** of ABCD, the deep part of the pool.

Ans: _____

- d) What is the **perimeter** of the pool?

Ans: _____

(8 marks)

7. a) Twelve men would take 15 days to finish a job if each man works 8 hours a day. If this job has to be finished in 10 days, how many hours must **each man** work each day?

Ans: _____

- b) Find the total number of **extra hours** that these 12 men must do **altogether** to finish the job in 10 days.

Ans: _____

- c) If the workers are paid for these extra hours at a rate of €8.75 per hour, how much would **each** get paid for the extra hours worked?

Ans: _____

(8 marks)

-
8. a) Evaluate: i) $y^0 =$ _____ ii) $3^{-3} =$ _____

- b) Write $13^9 \times 13^6$ as a single number in index form.

Ans: _____

- c) Given that $2^x = 8$, what is the value of x ?

Ans: _____

- d) Given that $b^{-3} \times b^7 = b^n$, then what is the value of n ?

Ans: _____

(5 marks)

9. a) An arrow reaches a target 120 m away in 3 seconds. Calculate the **speed** of the arrow in m/s.

Ans: _____

- b) It took Jonathan $2\frac{1}{2}$ hours to drive from Smalltown to Hillsville at an average speed of 40 km/h. Calculate the **distance** in km between these two towns.

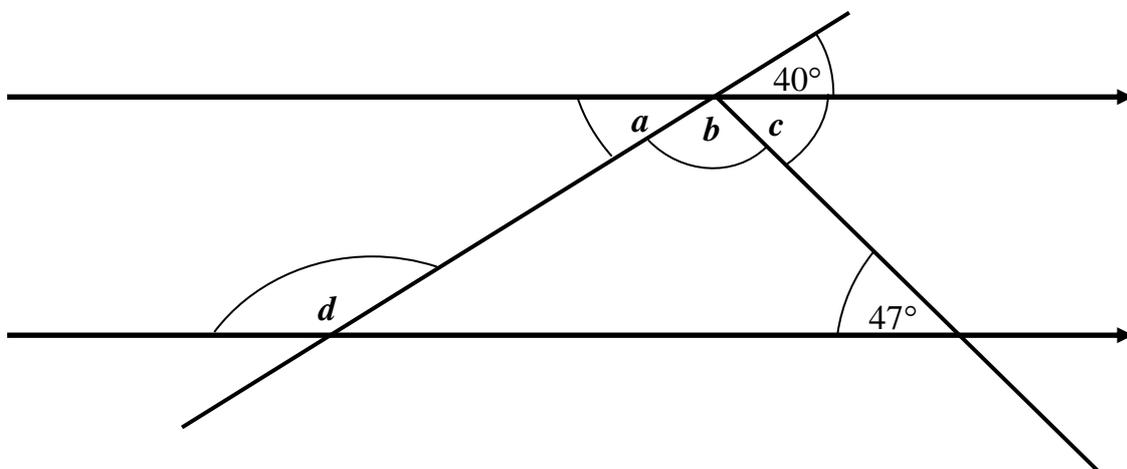
Ans: _____

- c) **How long** does it take a boat travelling at a constant speed of 26 km/h to travel a distance of 65 km?

Ans: _____

(6 marks)

10. Find the size of each angle marked with a letter. **Give reasons for your answers.**
(The diagram is not drawn to scale)



Ans: $a =$ _____ (_____)

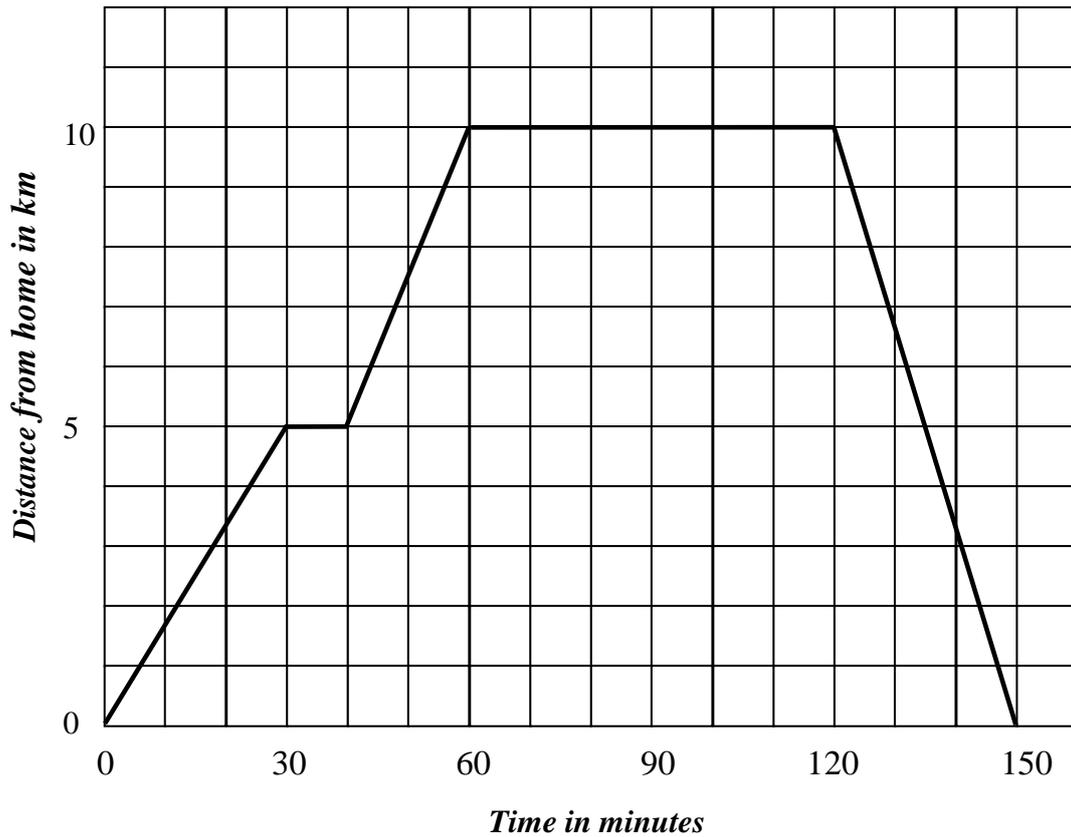
Ans: $b =$ _____ (_____)

Ans: $c =$ _____ (_____)

Ans: $d =$ _____ (_____)

(8 marks)

11. The graph below represents Paul's bicycle journey from home to the library.



a) Paul's first stop on the way to the library was at a coffee shop. How long had he cycled before his first stop?

Ans: _____

b) How long did he stay at the coffee shop?

Ans: _____

c) How long did the journey to the library take?

Ans: _____

d) How far is the library from Paul's home?

Ans: _____

e) How long did Paul take to cycle back home?

Ans: _____

f) Calculate Paul's average speed on the journey back home in km/h.

Ans: _____

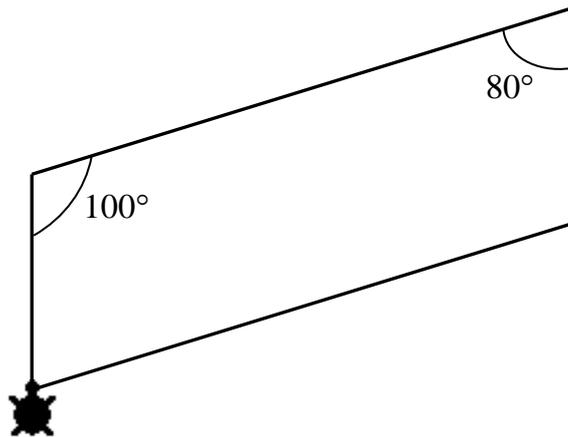
(7 marks)

12. Fill in the missing **LOGO** commands to draw the parallelogram below.

PD
 FD 40

 FD 100

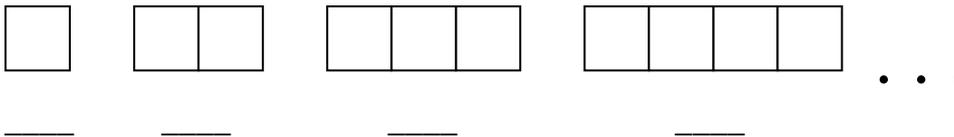
 FD 40
 HOME



(2 marks)

13. a) Each square in the pattern below is of side 1 cm.

i) Write the **perimeter** of each shape in the space provided.



ii) If n is the number of squares, underline the correct expression for the perimeter of each shape.

n^2 $n + 1$ $2n + 2$ $2n - 2$

b) The n th term of a sequence is given by the expression $3n - 1$. Find:

i) the 4th term.

Ans: _____

i) the 10th term.

Ans: _____

(6 marks)