

# Mathematics

## PM

21 Oct. 2014 09: 00-11: 00 AM



### Pupil's complete index number

Province/City District Sector School Pupil

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### Pupil's names

Surname: .....

Other Names: .....

PUPIL'S INDEX NUMBER AND NAMES  
**MUST** BE WRITTEN AS THEY APPEAR  
ON THE REGISTRATION FORM.

## PRIMARY LEAVING NATIONAL EXAMINATIONS, 2014

### MATHEMATICS

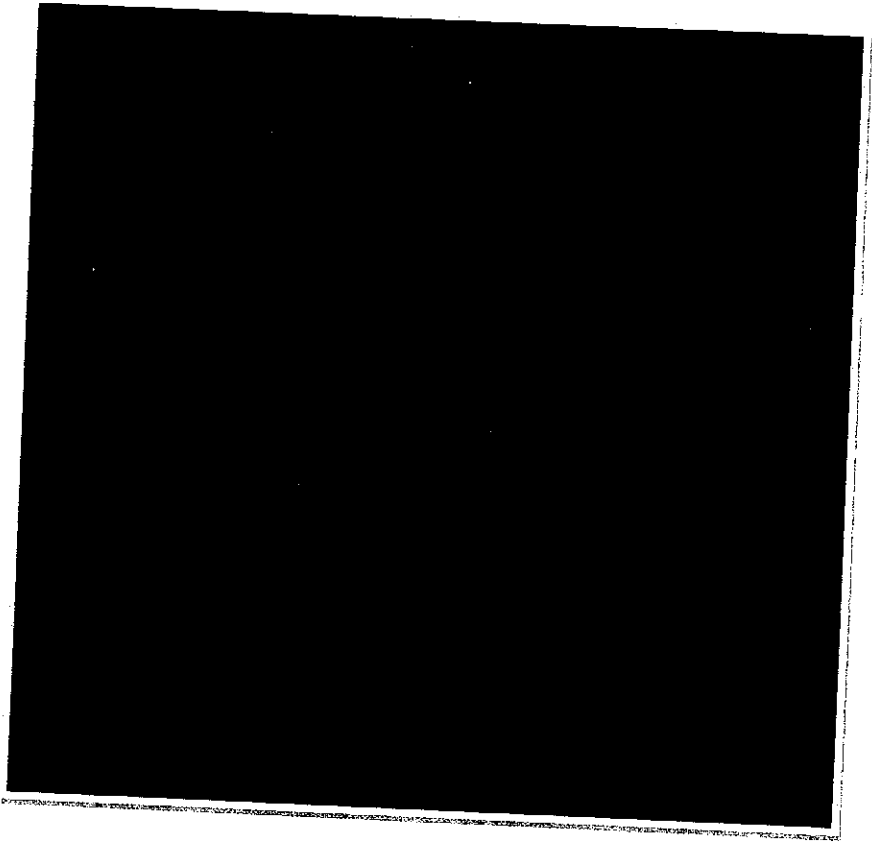
Duration: Two hours

Marks:

/100

### INSTRUCTIONS

- 1) Do not open this question paper until you are told to do so.
- 2) This paper consists of 35 questions and 12 pages. Before starting, verify if all pages and all questions are there and are arranged in order.
- 3) Answer **ALL** questions in this paper.
- 4) Read each question carefully before answering it.
- 5) Answer the questions in the space provided on this question paper.
- 6) Show your working clearly. Marks will be given for showing steps.  
All rough work must be done in the space under each question.
- 7) You must use a blue or black pen.
- 8) You are allowed to use a ruler, and a protractor.
- 9) You are **not** allowed to use a calculator.



YOU MAY DO ROUGH WORK IN THE SPACE PROVIDED BELOW EACH QUESTION	GIVE YOUR ANSWERS IN THE SPACES PROVIDED IN THIS COLUMN - SHOW THE WORKING STEPS.
1. Add: $563,091 + 36,909$ . <b>(2marks)</b>	
2. (a) What is the place value of 0 (zero) in the figure 460,123? <b>(1mark)</b>  (b) Write in figures : Six million, eight hundred thousand, twenty six. <b>(1mark)</b>	
3. What is the square root of 2.25? <b>(2marks)</b>	
4. Subtract: $0.2\text{hm}^2 - 4\text{dam}^2 = \dots\text{m}^2$ <b>(2marks)</b>	

5. Add and express the answer in binary:

$$101_{\text{two}} + 10_{\text{three}}$$

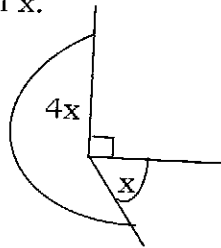
**(2marks)**

6. Calculate:  $2\text{h}30\text{min} - 1\text{h}45\text{min}$ .

**(2marks)**

7. In the figure below, find the value of  $x$ .

**(2marks)**



8. Find the mean of: 9, 3, 1, 8, 4 and 5.

**(2marks)**

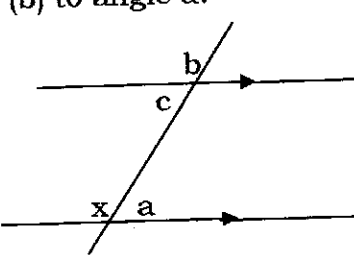
9. How many lines of symmetry does

(a) a rectangle have ?

**(1mark)**

(b) a square have ?

**(1mark)**

<p>10. In the figure below, which of the angles a, b or c is equal (a) to angle x? <b>(1mark)</b></p> <p>(b) to angle a? <b>(1mark)</b></p> 	
<p>11. Find the area of a square whose perimeter is 18 cm. <b>(2marks)</b></p>	
<p>12. Express 105 as a product of its prime factors. <b>(2marks)</b></p>	
<p>13. Solve for x: <math>2x - 1 = 2 - x</math> <b>(2marks)</b></p>	
<p>14. Calculate the highest common factor (H.C.F) of 9, 12 and 15. <b>(2marks)</b></p>	

<p>15. In a class of 40 pupils, the ratio of boys to girls is 2 : 3. Find the:</p> <p>(a) number of girls in the class. <b>(1mark)</b></p> <p>(b) number of boys in the class. <b>(1mark)</b></p>	
<p>16. In a school of 1,200 pupils, 60% weigh 40kg or more. How many pupils weigh less than 40kg? <b>(2marks)</b></p>	
<p>17. (a) Six books cost 2,400Frw altogether. How many similar books can be bought with 5,000Frw? <b>(1.5marks)</b></p> <p>(b) How much money will remain? <b>(0.5mark)</b></p>	
<p>18. A pupil scored 28 marks out of 40. Express the pupil's marks as a percentage. <b>(2marks)</b></p>	
<p>19. A water tank contains 6,000 litres of water. If a tap is opened and releases water at 20 litres per minute, how long will it take the tank to become completely empty? <b>(2marks)</b></p>	

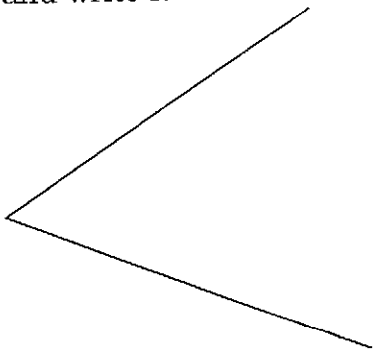
20. Simplify completely:  $\left(\frac{3}{5} \div \frac{4}{5}\right) \times \frac{4}{9}$ .  
**(2marks)**

21. Evaluate:  $\frac{4mp+3n}{n}$  when  $m = -3$ ,  $n=6$   
and  $p=-2$ . **(2marks)**

22. Set A = {all prime numbers between 0 and 14}.  
Set B = {all odd numbers between 0 and 14}.  
(a) List the elements of  $A \cap B$ . **(1mark)**

(b) Represent the information in a Venn diagram showing elements in each set.  
**(1mark)**

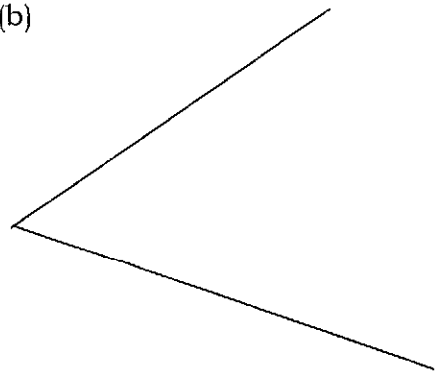
23. (a) Measure the acute angle below and write its size. **(1mark)**



(b) Using a pair of compasses and ruler, bisect the acute angle above. **(1mark)**

(a)

(b)

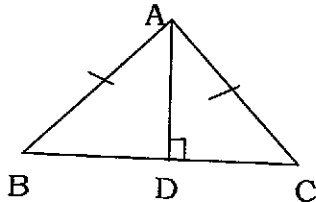


24. Find the percentage profit on a bicycle bought at 55,000Frw and sold at 66,000Frw. **(2marks)**

25. The total surface area of a sphere is  $5,544\text{cm}^2$ . Find its volume.  $[\pi = \frac{22}{7}]$  **(2marks)**

26. In triangle  $ABC$ ,  $\overline{AD}$  is perpendicular to  $BC$ ,  $AB = AC$  and angle  $ABC = 45^\circ$ .

(a) Find the size of angle  $CAD$ . **(2marks)**



(b) What is the name given to the triangle  $ABC$ ? **(1mark)**

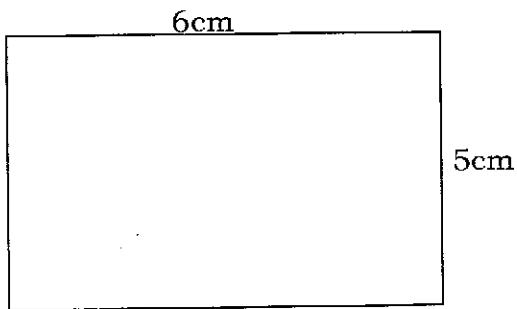
27. Arrange the following fractions in ascending order :  $0.42, \frac{11}{25}, \frac{12}{30}, 0.41$  **(3marks)**



28. A rectangular flower garden is represented by a scale drawing below with a scale of 1cm representing 10m. Calculate:

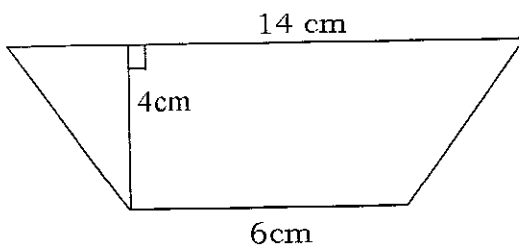
- (a) the actual length of the garden.
- (b) the actual width of the garden.
- (c) the surface area of the garden.

**(3marks)**



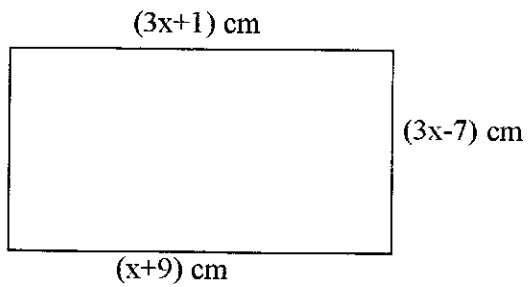
29. An interest of 20,000Frw was made after 2 years at a simple interest rate of 10% per year. Find the amount of money invested. **(3marks)**

30. The figure below is a trapezium. Find its area. **(3marks)**



31.(a) If  $a = -1$ ,  $b = 2$  and  $c = 3$ , find the value of  $2a^2b - ac$ . **(2marks)**

(b) Observe the figure below and answer the questions that follow.



(i) Name the figure. **(1mark)**

(ii) Calculate the value of  $x$ . **(2marks)**

(iii) Calculate the perimeter and the surface area of the figure. **(2marks)**

32. A sum of 3,000,000Frw is invested for 2 years at a compound interest of 5% per year. What is the  
(a) Interest after 2 years? **(5marks)**

(b) Amount of money after 2 years?  
**(2marks)**

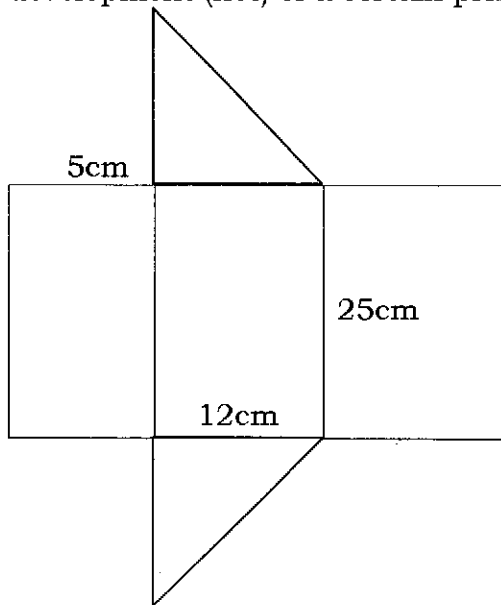
33. The height of a cylinder is 10cm and its base circumference is 44cm.

$[\pi = \frac{22}{7}]$ . Find the:

(a) Volume of the cylinder. **(3marks)**

(b) Total surface area of the cylinder.  
**(4marks)**

34. The figure below shows a development (net) of a certain prism.



(a) Calculate the volume of the prism. **(2marks)**

(b) Calculate the total surface area of the prism. **(5marks)**

35. Below are marks scored by 20 pupils in a Mathematics test marked out of 20 marks.

10	11	12	15	8
11	16	10	12	10
11	12	8	10	16
10	8	10	8	12

(a) Complete the frequency table across. **(4marks)**

(b) Find the mode mark. **(1mark)**

(c) Calculate the mean mark. **(2marks)**

(a) Frequency table

Marks, x	Frequency, f	f × x
	Total, f=	Total, f×x=

(b) The mode mark =

(c) The mean mark=