

**KULLEĠĠ SAN BENEDITTU**  
**Boys Secondary School, Kirkop**

**B**

**HALF-YEARLY EXAMINATIONS – FEBRUARY 2013**

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																						

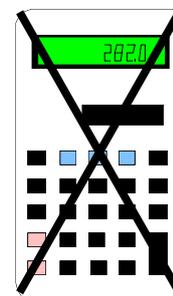
**DO NOT WRITE ABOVE THIS LINE**

**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.



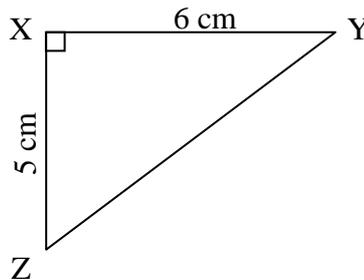
Question	Space for working, if required.
<p>1. Expand the following expression and simplify:</p> $2(3 + x) + 2(5x - 1)$ <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>2. Simplify and give the answer in <b>index form</b>:</p> $\frac{(y^3)^2}{y}$ <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>3. The radius of planet Earth is about 6 357 km. Express this length in centimetres, giving your answer in <b>standard form</b>.</p> <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>4. Find the <b>sum</b> of the largest prime number and the smallest prime number from the numbers:</p> $12, 15, 17, 19, 23, 25, 27.$ <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>5. Work out:</p> $\frac{2}{3} - \frac{1}{5}$ <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>6. Calculate the value for the following expression when <math>f = 2</math> and <math>g = -6</math>.</p> $(5f + g)^2$ <p style="text-align: right;"><b>Ans:</b> _____</p>	
<p>7. The area of a rectangle is <math>63 \text{ cm}^2</math>. Its width is 7 cm. What is the distance all round it?</p> <p style="text-align: right;"><b>Ans:</b> _____</p>	

8. Arrange in ascending order of size, **smallest first**:

$$\frac{4}{5}, 0.88, \frac{81}{100}, 0.79$$

**Ans:** \_\_\_\_\_

9. XYZ is a right-angled triangle in which XY = 6 cm and XZ = 5 cm.



The length of YZ is:

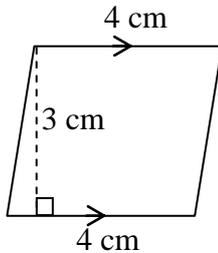
- (A)  $\sqrt{11}$       (B)  $\sqrt{30}$       (C)  $\sqrt{61}$       (D)  $\sqrt{22}$

**Ans:** \_\_\_\_\_

10. What name is given to a triangle whose sides are all different in size from each other?

**Ans:** \_\_\_\_\_

11. Find the area of the following parallelogram.

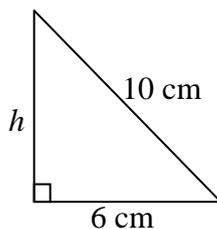


**Ans:** \_\_\_\_\_

12. John travelled 300 km in 5 hours. Find his speed in km/h.

**Ans:** \_\_\_\_\_

13. The area of this triangle is  $24 \text{ cm}^2$ . Find the height  $h$ .

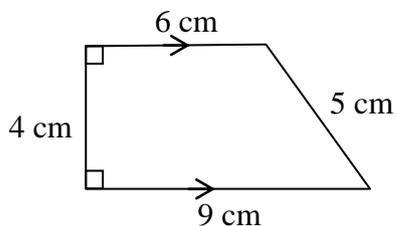


**Ans:** \_\_\_\_\_

14. Complete the following sequence:

1, 1, 2, 3, 5, 8, \_\_\_\_\_, \_\_\_\_\_

15. Find the area of the following trapezium.

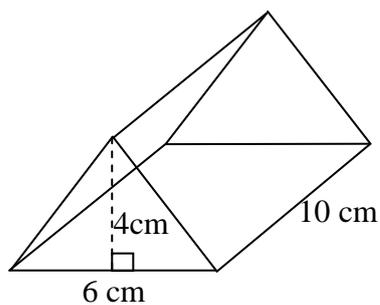


Ans: \_\_\_\_\_

16. A runner's average speed in a 140 m race is 7 m/s. Find the time he takes to complete the race.

Ans: \_\_\_\_\_

17. Find the volume of the following prism.



Ans: \_\_\_\_\_

18. Solve:

$$10x - 14 = 3x$$

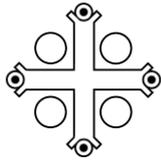
Ans: \_\_\_\_\_

19. A rectangle has length  $(x + 3)$  cm, width 6 cm and area of  $48 \text{ cm}^2$ . Find  $x$ .

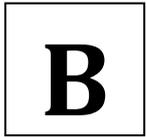
Ans: \_\_\_\_\_

20. The circumference of a circle is  $18\pi$  cm. Find the radius.

Ans: \_\_\_\_\_



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**HALF-YEARLY EXAMINATIONS – FEBRUARY 2013**

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	5	7	6	7	7	6	5	7	80	20	100
Mark																

**DO NOT WRITE ABOVE THIS LINE**

**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 the following fraction, giving your answer correct to **the nearest thousand**.

$$\frac{372 \times 160}{123 - 103}$$

Ans: \_\_\_\_\_

- (b) (i) Round 2.7934 to **3 significant figures**.

Ans: \_\_\_\_\_

- (ii) Round 5.0998 to **2 decimal places**.

Ans: \_\_\_\_\_

*(4 marks)*

2. (a) Express 0.82 as a fraction in **its lowest terms**.

Ans: \_\_\_\_\_

(b) Work out:  $3\frac{2}{3} - 1\frac{3}{7}$

Ans: \_\_\_\_\_

(c) Write these numbers in **ordinary form**:

(i)  $4.135 \times 10^3 =$  \_\_\_\_\_

(ii)  $9.36 \times 10^{-2} =$  \_\_\_\_\_

(6 marks)

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3. (a) Given that  $5^x = 125$ , then  $x =$  \_\_\_\_\_

(b) Given that  $7^y = 1$ , then  $y =$  \_\_\_\_\_

(c) Given that  $\frac{w^7 \cdot w^3}{w^5} = w^x$ , then  $x =$  \_\_\_\_\_

(d) If  $3^k \times 2 = 54$ , then  $k =$  \_\_\_\_\_

(e) Simplify:

$$\frac{5a^3b^3}{35ab^2} = \text{_____}$$

(8 marks)

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4. (a) A bag costs €32 in Malta and \$48.75 in the United States. The exchange rate is €1 = \$1.3052.

(i) Which country offers the cheaper price for the bag? Show your working.

Ans: \_\_\_\_\_

(ii) How much is the difference in price between the two countries? Give your answer in United States dollars.

Ans: \_\_\_\_\_

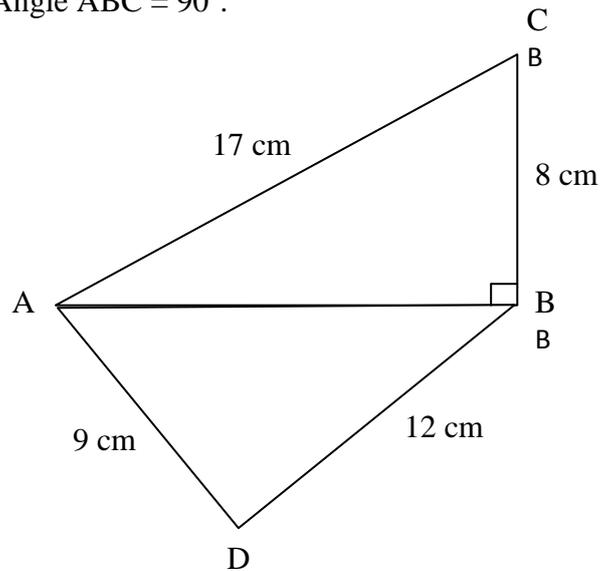
- (b) A farmer employs 9 men to harvest his potato crop. They take 8 days to do the job. If he had employed just 6 men, how long would it have taken them?

Ans: \_\_\_\_\_

(6 marks)

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5. The figure represents two triangles ABC and ABD.  $AC = 17$  cm,  $BC = 8$  cm,  $AD = 9$  cm and  $DB = 12$  cm. Angle  $ABC = 90^\circ$ .



- (a) Using triangle ABC, calculate the length of AB.

Ans: \_\_\_\_\_

- (b) Show that triangle ABD is a right-angled triangle.

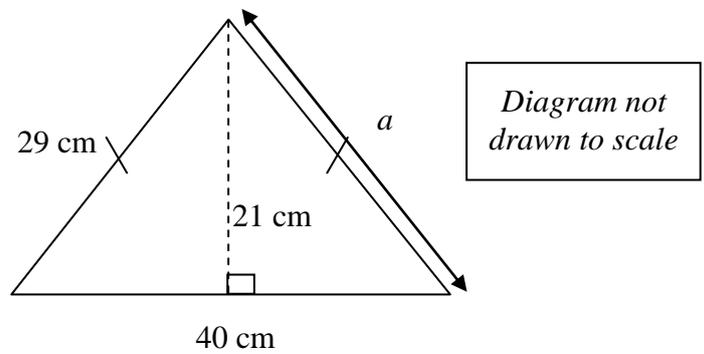
- (c) State which angle in triangle ABD is equal to  $90^\circ$ .

Ans: \_\_\_\_\_

(6 marks)

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6. For the following **isosceles** triangle, find:



(i) the length,  $a$ .

Ans: \_\_\_\_\_

(ii) the perimeter.

Ans: \_\_\_\_\_

(iii) the area of the triangle.

Ans: \_\_\_\_\_

(5 marks)

7. (a) Simplify the expression:  $\frac{2x}{3} + \frac{3(x + 1)}{2}$

Ans: \_\_\_\_\_

(b) If  $a = \frac{b + c}{3}$ , make  $b$  the subject of the formula.

Ans: \_\_\_\_\_

(c) I think of a number, double it and subtract 3.

(i) If the number I think of is 6, what is the result?

Ans: \_\_\_\_\_

(ii) If the number I think of is  $x$ , give a formula for the result  $R$ .

Ans: \_\_\_\_\_

(7 marks)

8. Solve:

(i)  $3(5x - 9) = 6x$

Ans: \_\_\_\_\_

(ii)  $3(x + 2) - 4(2x - 2) = 18 - 7x$

Ans: \_\_\_\_\_

(6 marks)

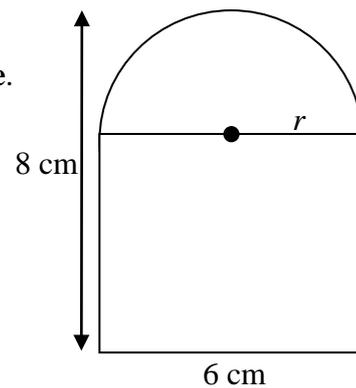
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9. A doorway is made up of a **rectangle** and a **semi-circle**.

Find:

(a) the radius,  $r$ , of the semi-circle.

Ans: \_\_\_\_\_



*Diagram not drawn to scale*

(b) the area of the semi-circle, **correct to 1 decimal place**.

Ans: \_\_\_\_\_

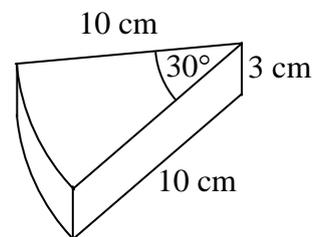
(c) the area of the whole doorway, **correct to 1 decimal place**.

Ans: \_\_\_\_\_

(7 marks)

10. The following shows the dimensions of a wedge.

Calculate:



(a) the length of the curved part, **correct to 1 decimal place**.

Ans: \_\_\_\_\_

(b) the area of the cross-section, **correct to 2 decimal places**.

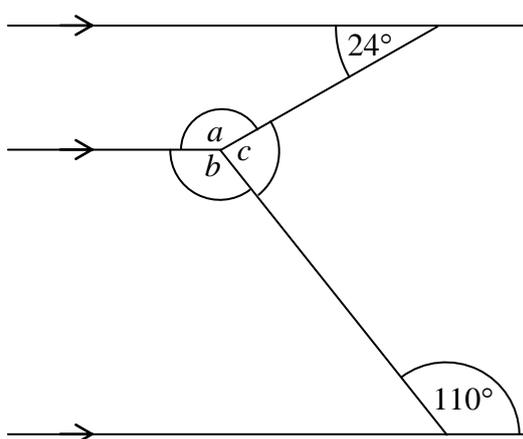
Ans: \_\_\_\_\_

(c) the volume of the wedge, **correct to 3 significant figures**.

Ans: \_\_\_\_\_

(7 marks)

11. Find the missing angles,  $a$ ,  $b$  and  $c$ , giving reasons for your answers.



$a =$  \_\_\_\_\_

Reason: \_\_\_\_\_

$b =$  \_\_\_\_\_

Reason: \_\_\_\_\_

$c =$  \_\_\_\_\_

Reason: \_\_\_\_\_

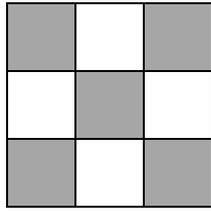
*Diagram not drawn to scale*

(6 marks)

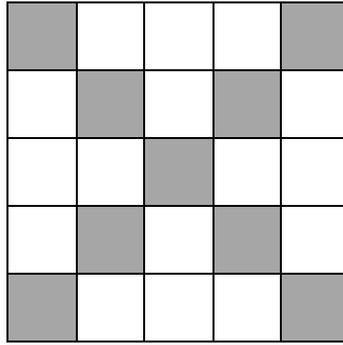
12.



*Shape 1*



*Shape 2*



*Shape 3*

*Shape 4*

(a) Draw the 4<sup>th</sup> shape of the above sequence.

(b) Complete the table for the above sequence.

<b>Shape No.</b>	1	2	3	4	5
<b>No. of squares</b>	1	9			
<b>No. of shaded squares</b>	1	5			

(c) Find the  $n^{\text{th}}$  term for the number of shaded squares in the above sequence.

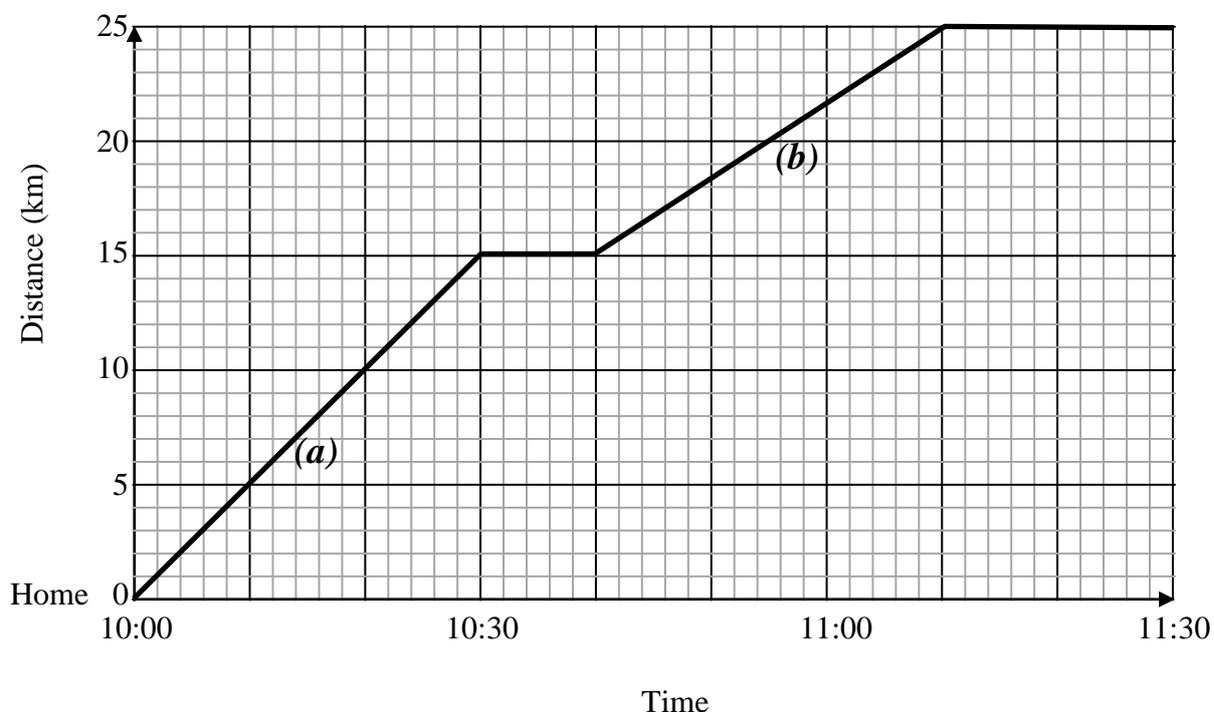
*Ans:* \_\_\_\_\_

(d) How many shaded squares will the 100<sup>th</sup> shape have?

*Ans:* \_\_\_\_\_

*(5 marks)*

13. The graph below shows Tom's bicycle journey one morning. On his way to his friend's house, Tom stops to buy something, then gets back to his journey.



(a) At what time does he leave home?

Ans: \_\_\_\_\_

(b) How much time does he spend at the shop?

Ans: \_\_\_\_\_

(c) At what time does he arrive at his friend's house?

Ans: \_\_\_\_\_

(d) Calculate his speed during journey (a).

Ans: \_\_\_\_\_

(e) Calculate his speed during journey (b)

Ans: \_\_\_\_\_

(7 marks)

**END OF EXAM**