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	KU	RE
Paper 1		
Paper 2		
<b>Total</b>		

**2500/29/01**

NATIONAL  
QUALIFICATIONS  
2012

WEDNESDAY, 2 MAY  
10.40 AM – 11.15 AM

**MATHEMATICS**  
**STANDARD GRADE**  
General Level  
Paper 1  
Non-calculator

**Fill in these boxes and read what is printed below.**

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day    Month    Year

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Scottish candidate number

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Number of seat

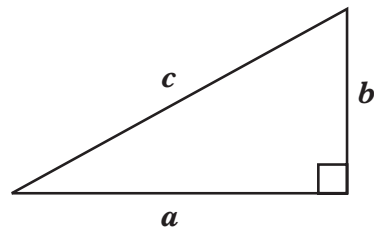
- 1 You may not use a calculator.**
- 2 Answer as many questions as you can.
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## FORMULAE LIST

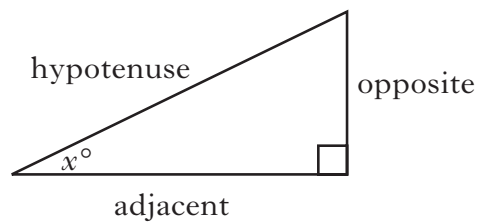
Circumference of a circle:	$C = \pi d$
Area of a circle:	$A = \pi r^2$
Curved surface area of a cylinder:	$A = 2\pi r h$
Volume of a cylinder:	$V = \pi r^2 h$
Volume of a triangular prism:	$V = Ah$

Theorem of Pythagoras:



$$a^2 + b^2 = c^2$$

Trigonometric ratios  
in a right angled  
triangle:

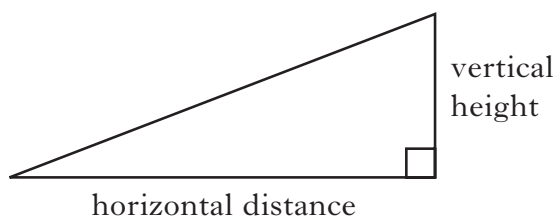


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

Gradient:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

<i>Marks</i>	KU	RE
<b>1</b>		
<b>1</b>		
<b>1</b>		
<b>2</b>		

1. Carry out the following calculations.

(a)  $14.6 - 3.21 + 5.3$

(b)  $2.44 \times 90$

(c)  $76.8 \div 6$

(d)  $\frac{1}{4} + \frac{1}{3}$

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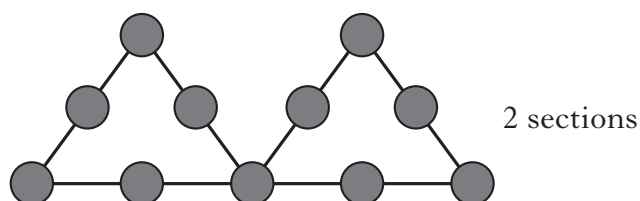
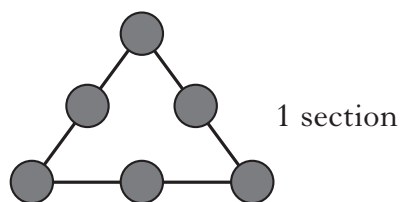


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3. An amusement arcade has a lighting effect in the shape of triangles with coloured lights attached.

The lighting effect can be assembled in sections as shown below.



- (a) Complete the table below.

Number of sections ( $s$ )	1	2	3	4	5		12
Number of coloured lights ( $c$ )	6	11					

- (b) Write down a formula for calculating the number of coloured lights ( $c$ ) when you know the number of sections ( $s$ ).

- (c) The amusement arcade's lighting effect uses a total of 116 coloured lights.

How many sections are in the lighting effect?

[Turn over

4. From the numbers 50, 93, 43, 56, 85, 42 choose:

(a) two numbers which are multiples of seven;

(b) the prime number;

(c) the number which is closest to a square number.

<i>Marks</i>	DO NOT WRITE IN THIS MARGIN	
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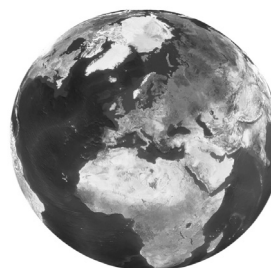
Marks

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5. A website shows some extreme temperatures recorded on Earth.

The highest temperature recorded was  $58^{\circ}\text{C}$  in Libya in 1922.

The lowest temperature recorded was  $-64^{\circ}\text{C}$  in Siberia in 1973.



Find the difference between these two temperatures.

6. Starting with the smallest, write the following in order.

$\frac{1}{5}$     0.05    51%    0.505     $\frac{5}{10}$

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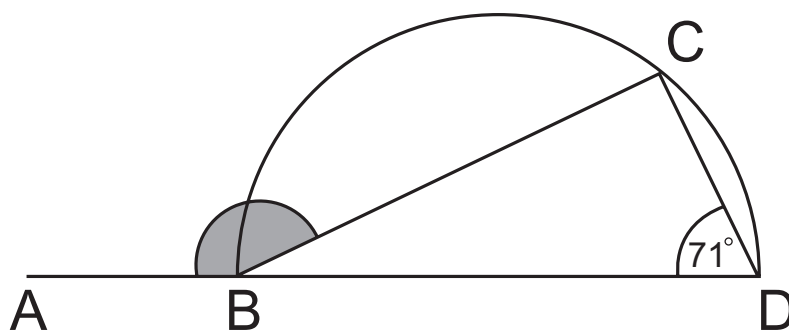




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10.



The diagram above shows a semi-circle with BD as diameter.

- C lies on the circumference
- In triangle BCD, angle CDB is  $71^\circ$
- AD is a straight line

Calculate the size of the shaded angle ABC.

3

[END OF QUESTION PAPER]

**ADDITIONAL SPACE FOR ANSWERS**

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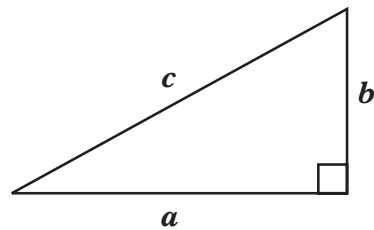
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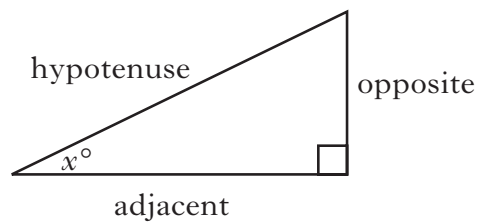
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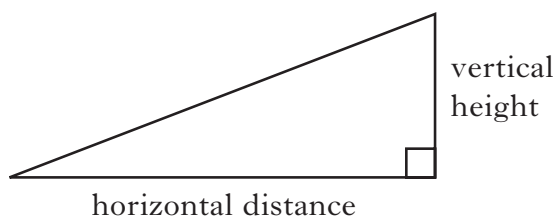


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9. (a) Solve algebraically

$$6(2x - 3) = 42.$$

(b) Factorise

$$12t + 9u.$$

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[Turn over

Marks

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4	

10. At the World Athletic Championships the mean time for the first semi-final of the 100 metres was 9.98 seconds.



For the second semi-final the times, in seconds, were:

10.21 10.04 9.92 9.98 10.04 9.94 9.9 9.73.

Was the mean time for the second semi-final better than the mean time for the first semi-final?

Give a reason for your answer.

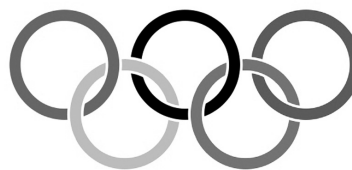




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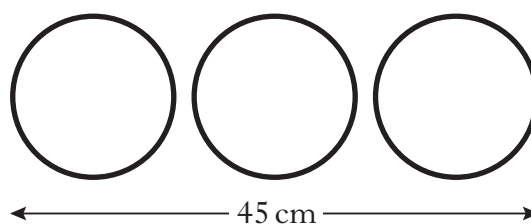
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12. The Olympic symbol consists of five identical circles.



Part of the symbol is shown in the diagram below.

- the length of the symbol is 45 centimetres
- the circles are equally spaced
- the gap between the adjacent circles is 1.5 centimetres.



Calculate the radius of a circle.

3






**ADDITIONAL SPACE FOR ANSWERS**

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