

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
Cambridge Checkpoint

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**MATHEMATICS**

**1112/02**

Paper 2

**April 2013**

**1 hour**

Candidates answer on the Question Paper.

Additional Materials:    Calculator  
                                 Geometrical instruments

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

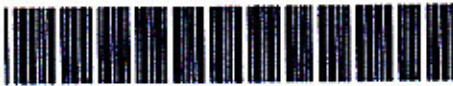
Answer **all** questions.

You should show all your working in the booklet.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 50.

For Examiner's Use	
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<b>Total</b>	



- 1 Choose a suitable metric unit to measure each of the following.

the mass of a letter	
the height of a house	
the capacity of a bath	

[2]

- 2 Solve the equation

$$4b + 11 = 39$$

$$b = \dots\dots\dots [1]$$

- 3 A carpet costs \$15 per square metre.  
The delivery charge is \$21

Peter buys  $n$  square metres.

Tick (✓) the expression which represents the total cost in \$.

$21(n + 15)$

$15(n + 21)$

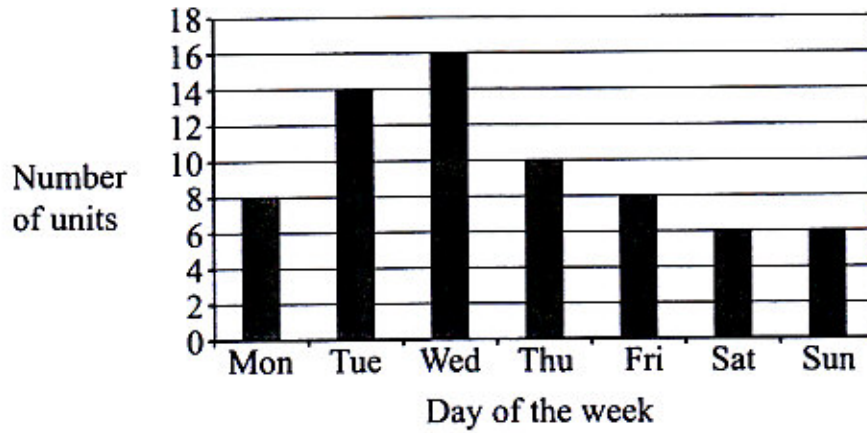
$15n + 21$

$21n + 15$

[1]



4 The chart shows the number of units of electricity produced each day of the week.



Over the seven days shown

(a) Calculate the total number of units produced.

..... units [1]

(b) Calculate the mean number of units produced per day.

..... units [1]





- 5 The table shows hourly rates of pay in a factory.

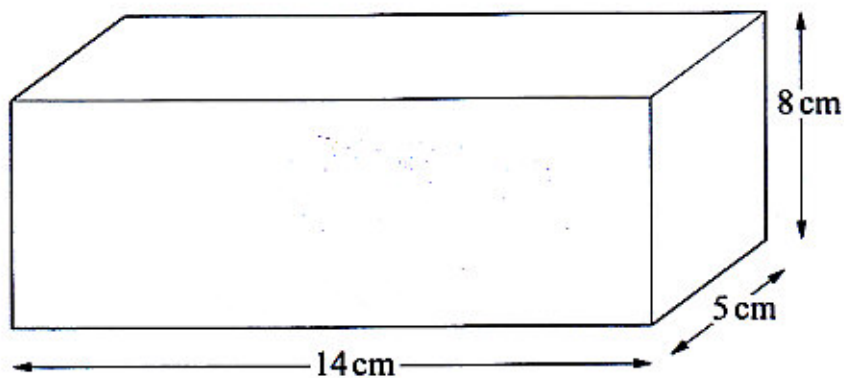
Day rate	Night rate
\$7.20 per hour	\$8.80 per hour

Sanjit works for 6 hours during the day on Monday and for 5 hours on Tuesday night.

Calculate how much money Sanjit earns altogether.

\$ ..... [2]

- 6 A cuboid has dimensions 8 cm, 5 cm and 14 cm.



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Find the volume of the cuboid.

..... cm<sup>3</sup> [1]



- 7 A teacher asks all the students in her class to write down an algebraic expression. Julie writes down this expression:

$4n - 5$
----------

The expression that Jim writes down is:

$2n + 14$
-----------

What value of  $n$  makes the value of Julie's expression **equal to** the value of Jim's expression?

You must show your working.

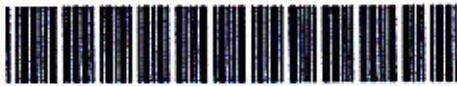
$n =$  ..... [2]

- 8 Pupils in Grade 7 and Grade 8 can study either Arabic, Spanish or Mandarin.

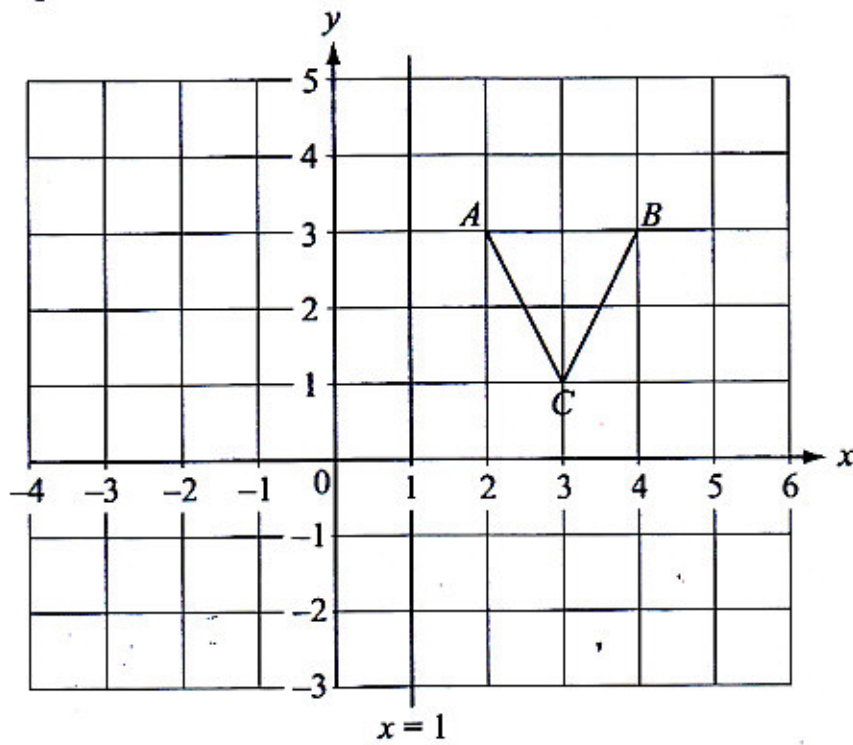
Complete the two-way table.

	Arabic	Spanish	Mandarin	Total
Grade 7	11			45
Grade 8		19		
Total		37	50	120

[2]



9 Look at the diagram below.

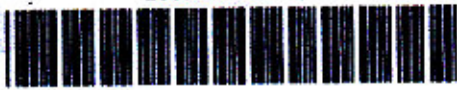


(a) Write down the co-ordinates of the point B.

( ..... , ..... ) [1]

(b) The triangle ABC is reflected in the line  $x = 1$  to give a new triangle PQR.

Draw the new triangle PQR on the diagram above. [2]



- (c) The original triangle  $ABC$  is rotated  $90^\circ$  clockwise about the point  $(3, 1)$  to give another triangle.

Write down the co-ordinates of the new position of  $B$ .

( ..... , ..... ) [1]

- (d) The diagram is drawn on a one centimetre grid.

Work out the area of the original triangle  $ABC$ .

.....  $\text{cm}^2$  [1]

- 10 Andy, Brian and Charlie share \$72 in the ratio 2 : 3 : 4

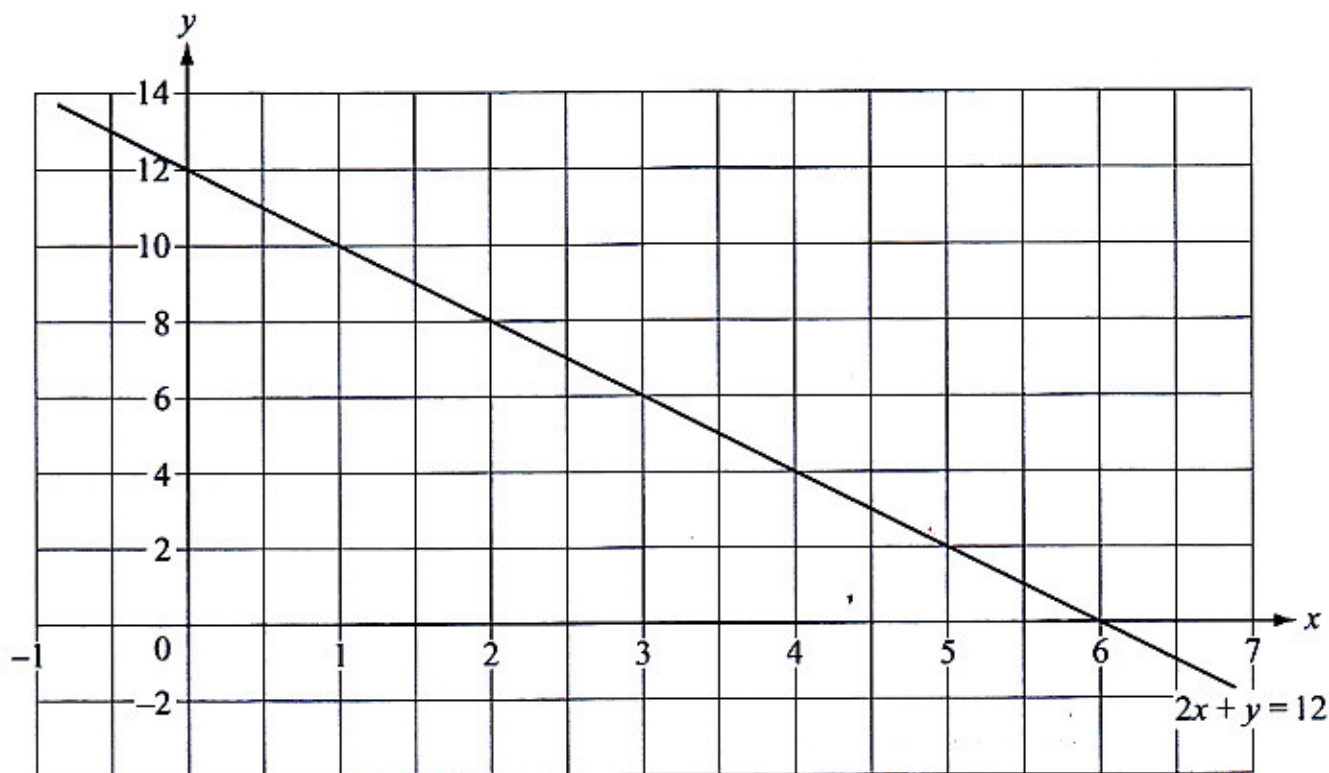
Work out how much Brian receives.

\$ ..... [2]





11 The grid shows the straight line with equation  $2x + y = 12$



(a) Complete the table of values for  $y = 2x + 2$

$x$	0	2	4	6
$y$	2			

[1]

(b) Draw the line  $y = 2x + 2$  on the grid.

[1]

(c) Write down the solution to the simultaneous equations.

$$\begin{aligned} 2x + y &= 12 \\ y &= 2x + 2 \end{aligned}$$

$x =$  .....

$y =$  ..... [1]



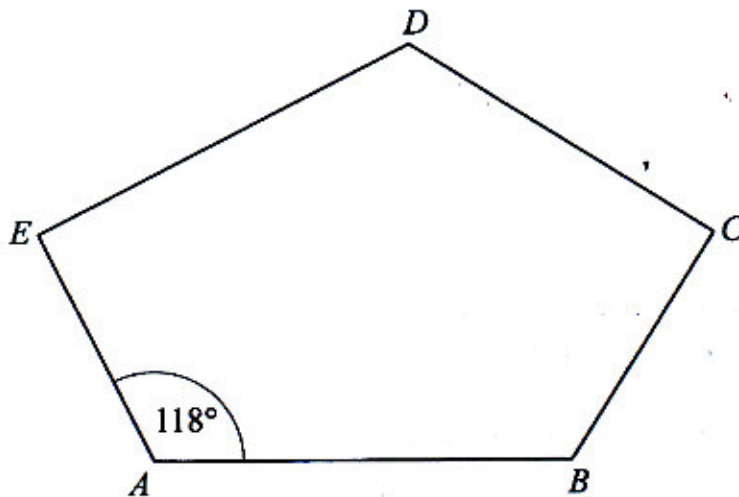


- 12 Tim thinks of a number.  
His number rounded to 2 decimal places is 5.46

What is the **smallest** possible number Tim could have thought of?

..... [1]

- 13 The diagram shows a pentagon *ABCDE*.



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Angle *EAB* =  $118^\circ$

Explain how you can tell from the size of this angle that the pentagon is **not** regular.

.....  
.....  
..... [1]



14 Factorise

$$y^2 - 8y$$

..... [1]

15 A train leaves London at 08:55 and arrives in Peterborough at 09:35

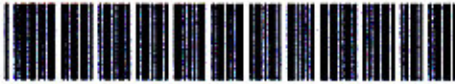
(a) How long does the journey from London to Peterborough take in minutes?

..... minutes [1]

(b) The distance from London to Peterborough is 164 km.

Calculate the average speed of the train in km/h.

..... km/h [2]



- 16 Kieran buys a car for \$8000  
The following year he sells the car for \$7500

Find the percentage loss.



..... % [2]

- 17 Fill in the boxes.

$$(x + 3) \left( \square - \square \right) = x^2 - x - 12 \quad [1]$$

- 18 The distance from the Earth to the Sun is 92 868 000 miles.

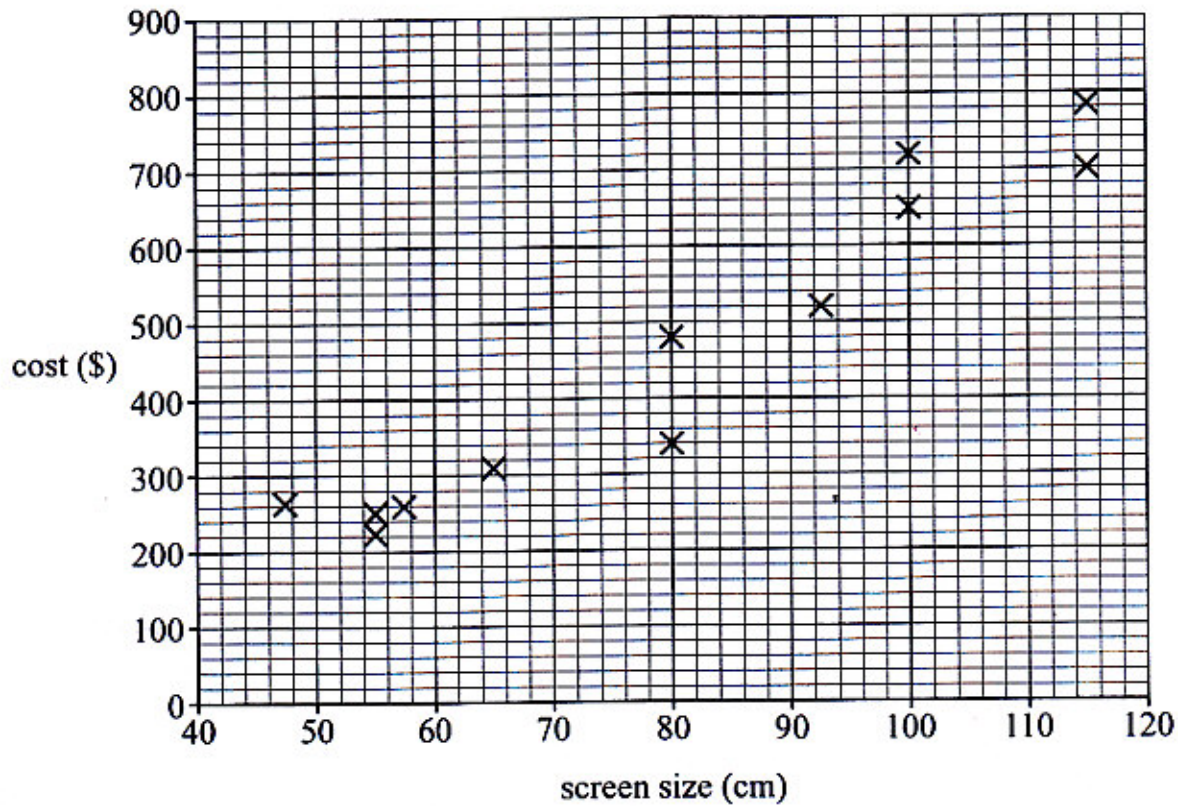
Write this distance correct to 3 significant figures.

..... miles [1]





- 19 A company makes 12 different types of television.  
The cost (in dollars) and screen size (in centimetres) of each type of television are shown in the scatter diagram.



- (a) Write down the cost of the television which has a screen size of 65 cm.

\$ ..... [1]

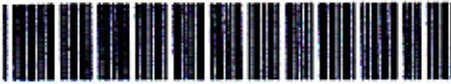
- (b) The company is introducing a new television with a screen size of 85 cm.

Put a ring around the cost that you think would be most appropriate for the new television.

\$320      \$530      \$690      \$800

Explain your answer.

.....  
..... [1]



20 Use a trial and improvement method to find an approximate solution to the equation

$$x^3 + 5x = 400$$

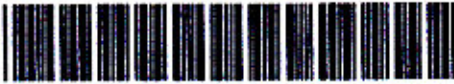
Start with  $x = 7$

Give your answer to one decimal place.  
You must show all your working.

$x$	$x^3 + 5x$	
7		

$x =$  ..... [4]





21 Two fair four sided dice numbered 1 to 4 are rolled and the scores are **multiplied** together.



(a) Complete the sample space diagram to show all the outcomes.

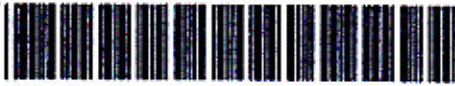
		Score on second dice			
		1	2	3	4
Score on first dice	1	1			
	2				
	3				
	4				

[1]

(b) What is the probability of obtaining an even outcome?

.....

[1]



- 22 A baby elephant has a mass of 105 kg.  
The elephant increases in mass by 95 kg per year.

Work out how many years it will take for the elephant's mass to increase to 2 tonnes.



Give your answer to the nearest year.

..... years [3]

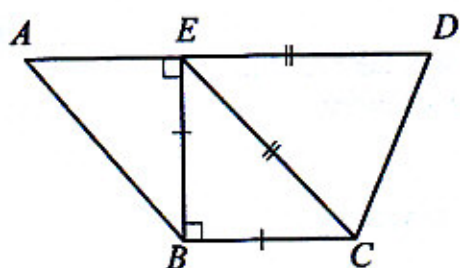
- 23 A circular fish pond has an area of  $20\text{m}^2$   
Calculate the **diameter** of the fish pond.

..... m [3]





24 A trapezium is made up of triangles.



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Triangles  $ABE$  and  $BCE$  are right-angled triangles.  
 Triangles  $CDE$  and  $BCE$  are isosceles triangles ( $BC = BE$ ).  
 $AE = 3$  cm and  $EB = 4$  cm.

Work out the length of  $AD$ .

..... cm [3]