

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit



FORM 4

MATHEMATICS SCHEME A
Non-Calculator Paper

TIME: 20 minutes

Name: _____

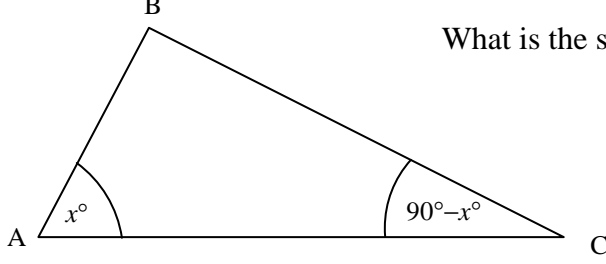
Class: _____

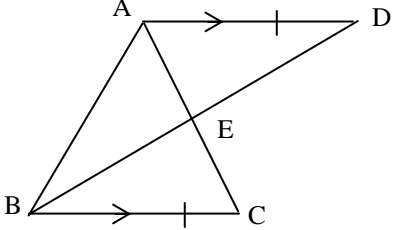
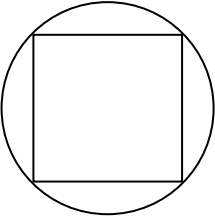
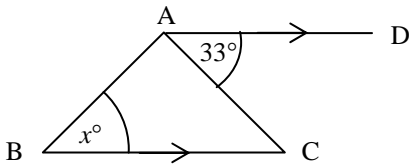
Mark


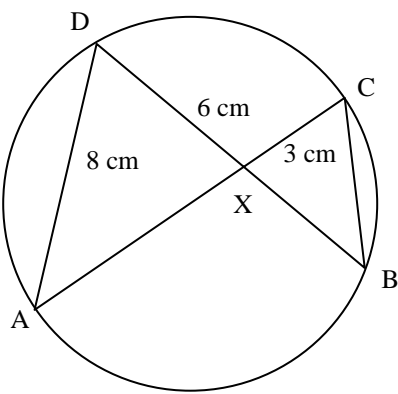


Instructions to Candidates

- **Answer all questions. There are 20 questions to answer.**
- **Each question carries 1 mark.**
- **Calculators, protractors and other mathematical instruments except rulers are not allowed.**
- **You are not required to show your working. However space for working is provided if you need it.**

No.	Question	Space for Working
1.	The value of $\sqrt{2600}$ is about (A) 5 (B) 2.5 (C) 50 (D) 25 Answer: _____	
2.	Divide $\frac{256}{9}$ by $\frac{128}{81}$. Answer: _____	
3.	Write 370×100 in standard form. Answer: _____	
4.	 <p style="text-align: center;">What is the size of $\angle ABC$?</p> <p style="text-align: center;">Answer: _____</p>	
5.	Write down the equation of the line which passes through the point (0, 4) and has a gradient 2. Answer: _____	
6.	A television set costs €220 including 10% VAT. What is its price without VAT? Answer: _____	
7.	$\sqrt{\frac{x^3 y}{y^5 x^{-1}}}$ is equal to: (A) xy (B) y/x (C) x^2/y^2 (D) 1 Answer: _____	
8.	Solve $x^2 - 4x + 4 = 0$. Answer: _____	

9.	<p>John's birthday falls on 1st April. Mary's birthday occurs 50 days later. On what date is Mary's birthday?</p> <p style="text-align: right;">Answer: _____</p>	
10.	 <p>AD is parallel and equal to BC. The area of triangle ABC is 24 cm^2. What is the area of triangle ABD?</p> <p style="text-align: right;">Answer: _____</p>	
11.	<p>One of the following numbers divides 3951171233 exactly. (A) 237656 (B) 769985 (C) 1973 (D) 74560 Which one is it?</p> <p style="text-align: right;">Answer: _____</p>	
12.	 <p>A square fits exactly inside a circle of radius 9 cm. The square has side of length:</p> <p>(A) 9 cm (B) 12.73 cm to 2 decimal places (C) 18 cm (D) 8.5 cm</p> <p style="text-align: right;">Answer: _____</p>	
13.	<p>Work out the value of $\frac{u^2 - v^2}{u - v}$ given that $u = 129$ and $v = 1$.</p> <p style="text-align: right;">Answer: _____</p>	
14.	<p>How many bottles of capacity 12.5 cm^3 are required to contain 2 litres of perfume?</p> <p style="text-align: right;">Answer: _____</p>	
15.	 <p>AB = AC. AD is parallel to BC</p> <p>What is the value of x?</p> <p style="text-align: right;">Answer: _____</p>	

16.	<p>The line segment joining the origin to the point $(3, -1)$ is rotated by 180° about the origin. What are the new coordinates of the point?</p> <p style="text-align: right;">Answer: _____</p>	
17.	<p>A man bought 300 tulip bulbs. The probability that a bulb will produce flowers is 0.85. How many bulbs can he expect not to produce flowers?</p> <p style="text-align: right;">Answer: _____</p>	
18.	<p>Draw the shape which the following LOGO program draws when run.</p> <pre style="margin-left: 40px;"> PD RT 45 FD 100 LT 90 FD 100 LT 90 FD 100 LT 90 FD 100 </pre> <p style="text-align: center;"></p>	
19.	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Points A, B, C and D lie on the circle.</p> <p>What is the length of BC?</p> <p style="text-align: right;">Answer: _____</p> </div> </div>	
20.	<p>Given that GBP 1 is equivalent to €1.50, how many GBP are needed to buy a mobile phone which costs €300?</p> <p style="text-align: right;">Answer: _____</p>	

END OF PAPER

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit



FORM 4

MATHEMATICS SCHEME A

TIME: 1h 40min

Main Paper

1	2	3	4	5	6	7	8	9	10	11	12	13		NC	Main	Total

Name: _____

Class: _____

**Calculators are allowed but all necessary working must be shown.
Answer all questions.**

1. Solve the equations:

(a) $x^2 - 8x - 9 = 0$

(b) $\frac{x-6}{1-x} = 4$

Answer: _____

Answer: _____

(6 marks)

2. (a) Express in ordinary form
 $3.4 \times 10^{-2} + 2.56 \times 10^{-3}$

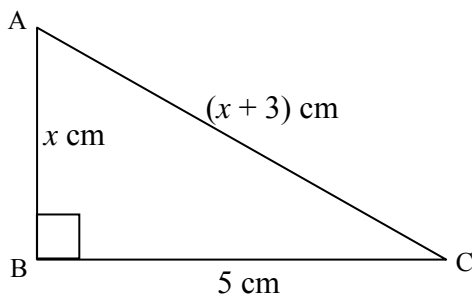
(b) Express 341.1×0.03 in standard form.

Answer: _____

Answer: _____

(4 marks)

3.

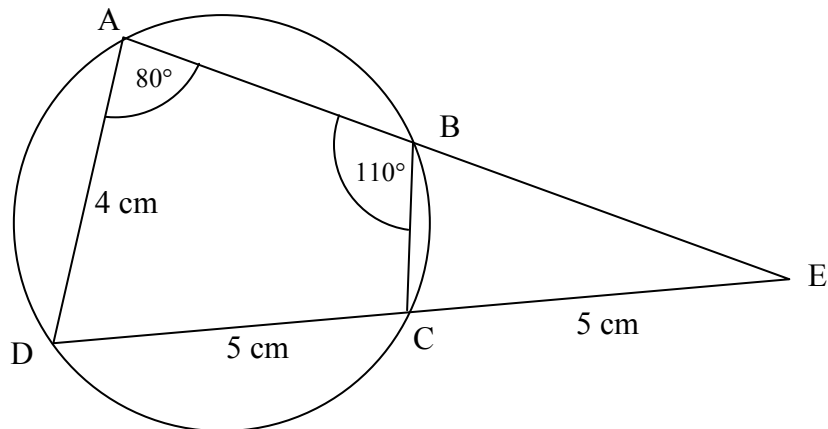


ABC is a right-angled triangle with sides as shown. Work out the value of x .

Answer: _____

(5 marks)

4.



In the figure shown, ABCD is a cyclic quadrilateral, $CD = CE = 5$ cm and $AD = 4$ cm.

- (a) State the size of $\angle ADE$ giving a reason for your answer.

$\angle ADE =$ _____ Reason: _____ Answer

- (b) State the size of $\angle AED$ giving a reason for your answer.

$\angle AED =$ _____ Reason: _____ Answer

- (c) Work out the area of triangle ADE correct to one decimal place.

Answer: _____

(6 marks)

5. A man invested €5500 in GBP at 4.2% per annum interest for two years. At the time when he invested the original sum of money the exchange rate was GBP 0.65 per €1.

- (a) What was the original sum invested in GBP?

Answer: _____

- (b) What was the amount of interest earned in GBP after one year?

Answer: _____

- (c) The interest earned in the first year was invested with the original sum. What was the amount in GBP after the second year?

Answer: _____

- (d) If he withdrew the sum after the second year and the rate of exchange was GBP 0.63 per €1, what was the amount in € when he withdrew the sum?

Answer: _____

(8 marks)

Name: _____

Class: _____

A

6. (a) Shape A is rotated anticlockwise by 90° about the point P to obtain shape B. State the coordinates of P.

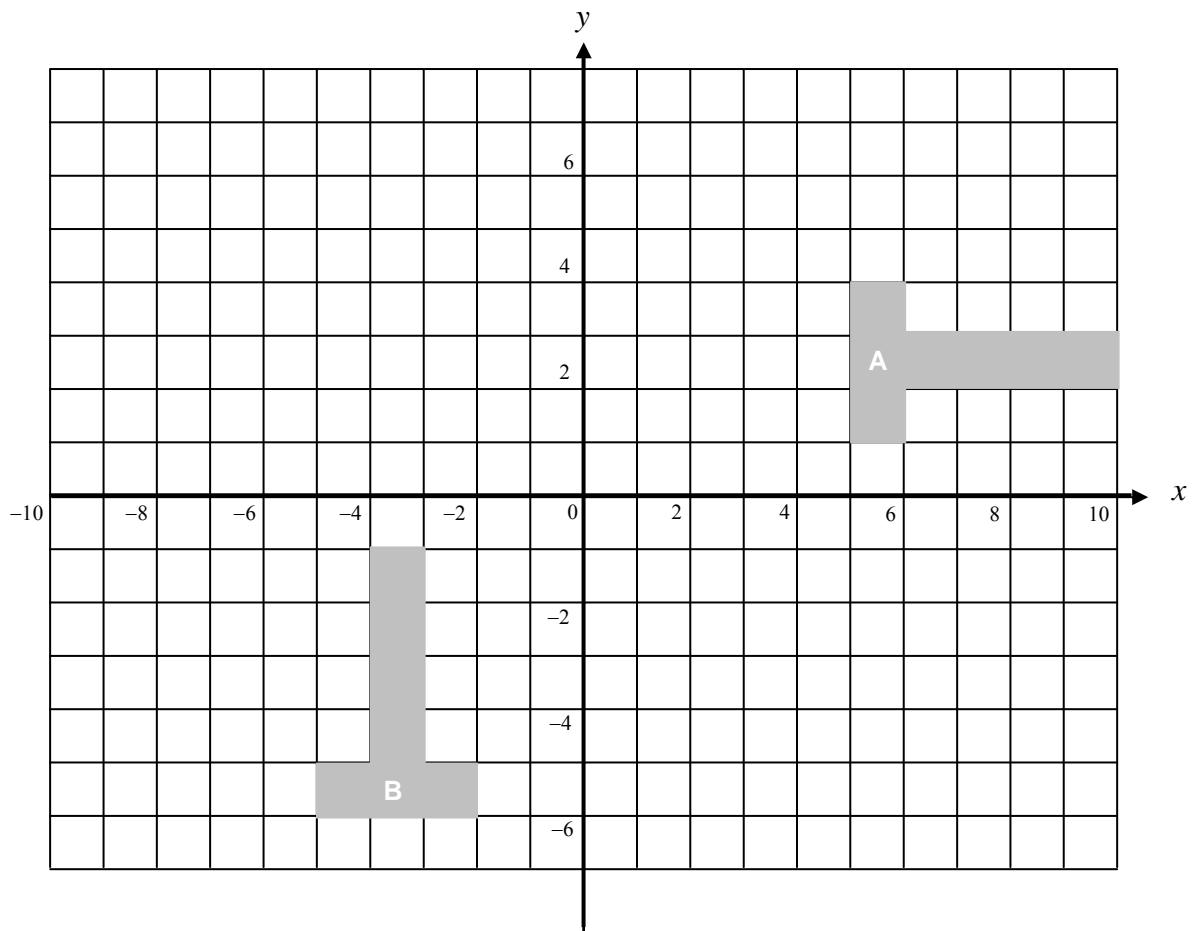
Answer: P(_____ , _____).

- (b) When shape A is rotated anticlockwise by 90° about the point (5, 1) and translated by $\begin{pmatrix} a \\ b \end{pmatrix}$ it matches exactly shape B. State the values of a and b .

Answer: $a =$ _____ , $b =$ _____

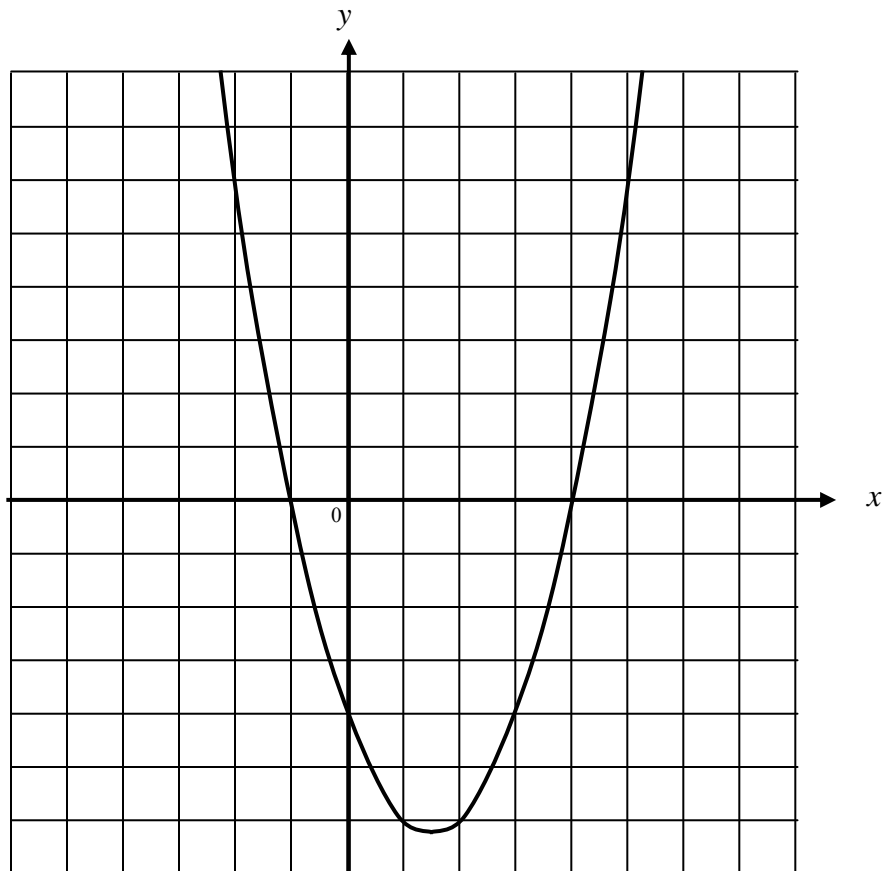
- (c) Enlarge shape A using scale factor 2 about the point (10, 8) as the centre of enlargement. Label your shape C.

- (d) Reflect shape B in the x axis. Label your shape D.



(7 marks)

7. The graph of $y = ax^2 + bx + c$ is shown below.
 Scale: x axis: 1 square \equiv 1 unit, y axis: 1 square \equiv 1 unit



- (a) Use the graph to find the value of c .

Answer: $c =$ _____

- (b) Write down the values of x for which $y = 0$.

Answer: _____, _____

- (c) Draw the graph of the line $y = x - 1$.

- (d) From the graphs write down the coordinates of the points of intersection of the line and the curve.

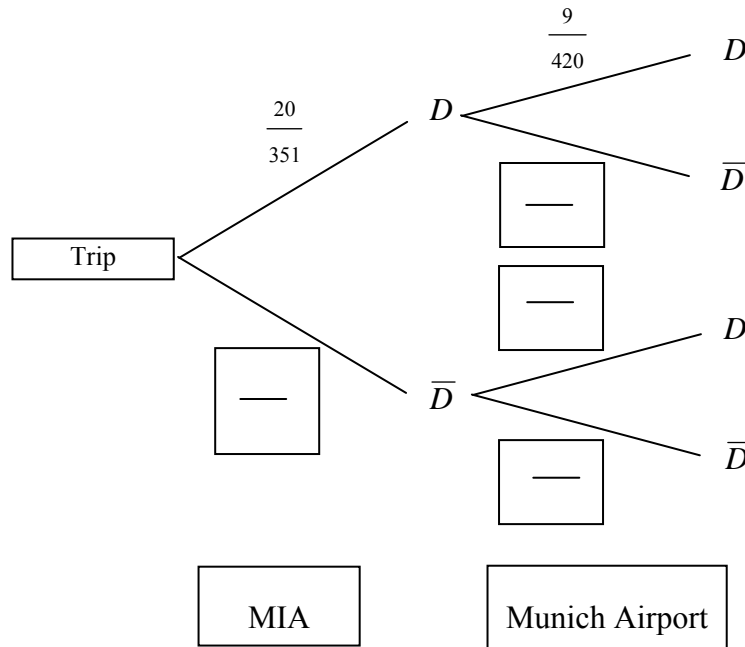
Answer: _____, _____

(7 marks)

8. To make a trip from Malta to Helsinki one has to take an aeroplane from Malta International Airport (MIA) to go from Malta to Munich and then board an aeroplane at Munich Airport to go from Munich to Helsinki.

The probability of a delay at MIA is $\frac{20}{351}$. The probability of a delay at Munich Airport is $\frac{9}{420}$.

In the tree diagram below D represents a delay, while \bar{D} represents no delay.

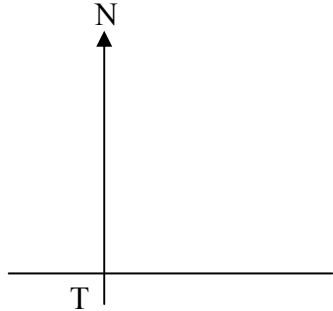


- (a) Complete the tree diagram by filling in the missing fractions in the empty boxes.
- (b) What is the probability, correct to 3 decimal places, that there will be **only one** delay?
- (c) What is the probability, correct to 3 decimal places, that there will be **at least one** delay?

(7 marks)

9. A flagpole (F) is situated on a bearing of 065° from a tree (T). The distance from the tree to the flagpole is 40m. John (J) is on a bearing of 180° from the flagpole. The bearing of the tree from John is 270° . The flagpole, the tree and John are on the same horizontal plane.

- (a) Draw a diagram to show their relative positions.



- (b) Work out John's distance from the flagpole correct to the nearest centimetre.

Answer: _____

- (c) John, who is 1.5 m tall, measures an angle of elevation of 50° to the top of the flagpole. Work out the height of the flagpole correct to the nearest centimetre.

Answer: _____

(8 marks)

10. (a) Write down the first three prime numbers of the form $2^n + 1$, where n is a whole positive number.

Answer: _____

- (b) Find the least common multiple of the numbers found in (a).

Answer: _____

(4 marks)

11. Greta bought a television and paid €2645 when the VAT rate was 15%. One month later, to buy the same television, Claudia had to pay €2714 due to a different VAT rate. The price without VAT remained the same.

- (a) Work out the price of the television without VAT.

Answer: _____

- (b) Work out the VAT rate when Claudia bought the television.

Answer: _____

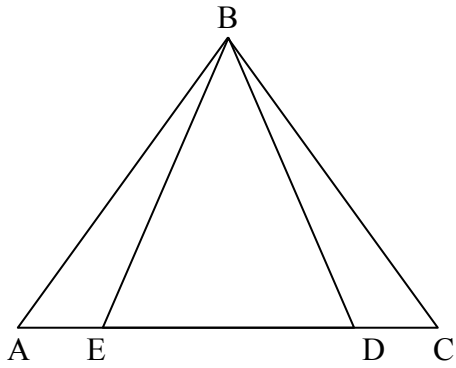
(6 marks)

12. Solve the simultaneous equations: $x + y = 5$ and $x + 3y = 3$

Answer: $x =$ _____ , $y =$ _____

(4 marks)

13.



Four lines from a point B intersect a straight line at A, E, D and C as shown.

In triangle ABC, $AB = BC$ and $AE = DC$.

(a) Prove that triangles AEB and BDC are congruent.

(b) Given that $AB = 10$ cm, $AC = 8$ cm and X is the midpoint of AC:

(i) Calculate the size of $\angle BAE$.

Answer: $\angle BAE =$ _____

(ii) Calculate the length of BX.

Answer: $BX =$ _____

(8 marks)

End of Paper