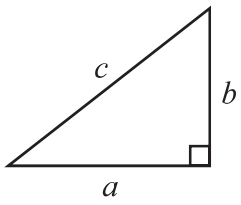
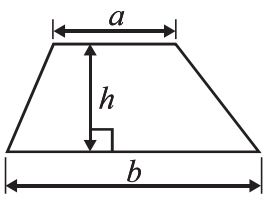
International GCSE MATHEMATICS

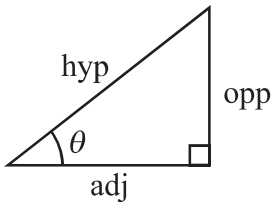
FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
$a^2 + b^2 = c^2$



Area of a trapezium = $\frac{1}{2}(a + b)h$





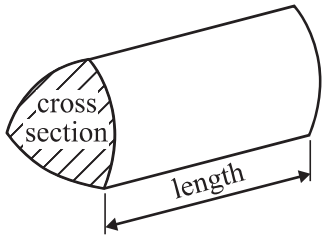
adj = hyp × cos θ
opp = hyp × sin θ
opp = adj × tan θ

or $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

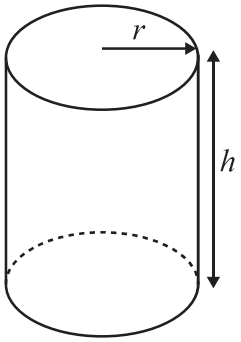
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

Volume of prism = area of cross section × length



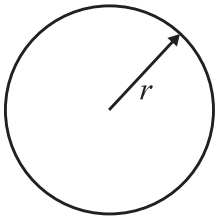
Circumference of circle = $2\pi r$

Area of circle = πr^2



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



Answer ALL TWENTY ONE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The table shows the six most popular names given to girls born in England in 2008.
The table also shows the number of girls given each name.

Name	Number of girls
Olivia	5317
Ruby	4924
Emily	4874
Grace	4773
Jessica	4667
Chloe	4601

(a) Write the number 4601 in words.

.....

(1)

(b) Write down the value of the 5 in the number 5317

.....

(1)

(c) Write the number 4773 correct to the nearest ten.

.....

(1)

(d) Write down the smallest even number in the table.

.....

(1)

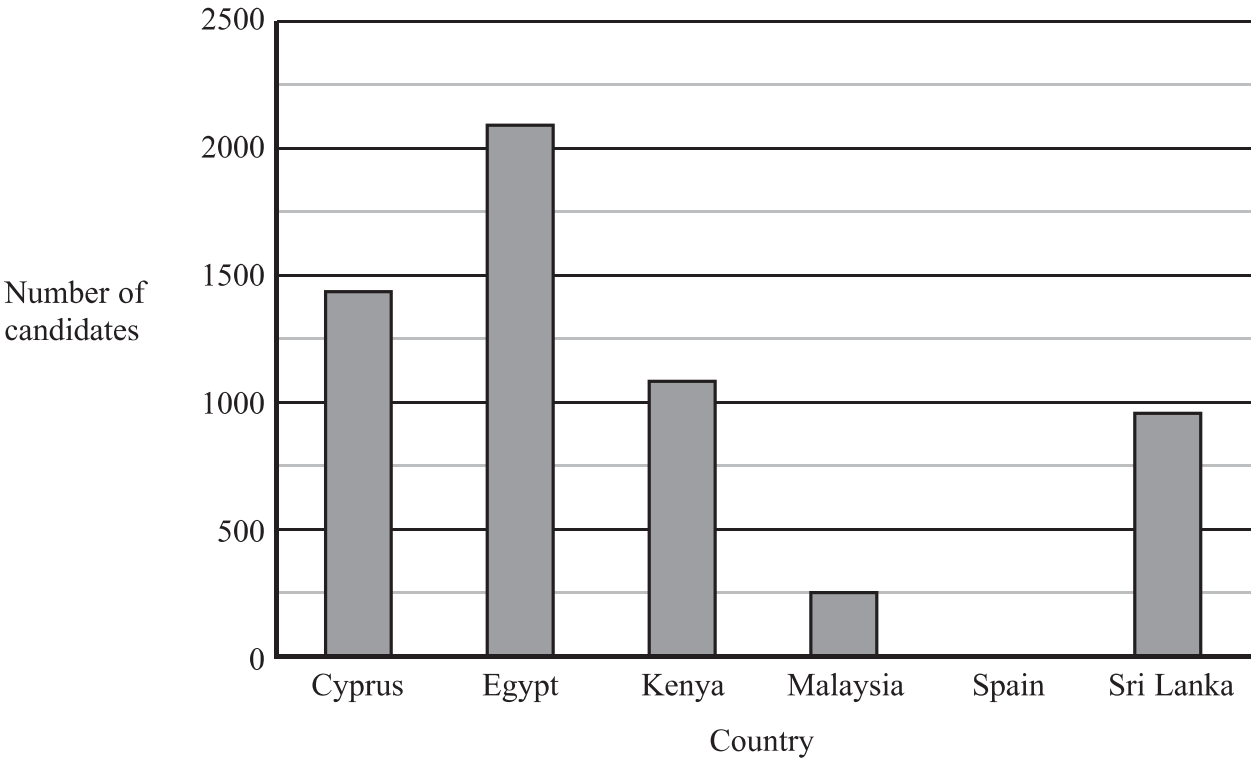
(e) One of the numbers in the table, when written correct to the nearest hundred, is 4700
Write down this number.

.....

(1)

(Total for Question 1 is 5 marks)

2 The bar chart shows information about the number of candidates for an examination from each of five countries.



(a) Which of the five countries had the greatest number of candidates?

.....

(1)

(b) Write down the number of candidates from Malaysia.

.....

(1)

(c) The number of candidates from one country was 1086
Which country was this?

.....

(1)

(d) The number of candidates from Spain was 727

Draw a bar on the bar chart to show this information.

(1)

(Total for Question 2 is 4 marks)

3 Here are the first five terms of a number sequence.

2 10 18 26 34

(a) Work out the next two terms of the sequence.

....., ...

(2)

(b) The 20th term of the sequence is 154

Work out the 19th term of the sequence.

.....

(1)

(Total for Question 3 is 3 marks)

4

24	25	26	27	28	29	30

From the numbers in the box, write down

(i) a multiple of 9

.....

(ii) a factor of 90

.....

(iii) a square number

.....

(iv) the square root of 576

.....

(v) a prime number

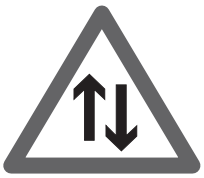
.....

(Total for Question 4 is 5 marks)

5 Here are nine road signs.

A

B



C

D

E

F

G

H

I

(a) The triangle in sign A has 3 equal sides.

Write down the mathematical name of this type of triangle.

.....

(1)

(b) Sign B is an 8-sided polygon.

Write down the mathematical name of an 8-sided polygon.

.....

(1)

(c) How many lines of symmetry has sign C?

.....

(1)

(d) Write down the order of rotational symmetry of sign D.

.....

(1)

(e) Change 3.8 m to centimetres.

..... cm

(1)

(f) Change 300 m to kilometres.

..... km

(1)

(g) Work out the length of time between 8 am and 6 pm.

..... hours

(1)

(h) Write 6 pm as a time using the 24-hour clock.

.....

(1)

(i) Write 16% as a decimal.

.....

(1)

(j) Write 16% as a fraction.
Give your fraction in its simplest form.

.....

(2)

(k) On the dotted line, write a number so that the two ratios are equivalent.

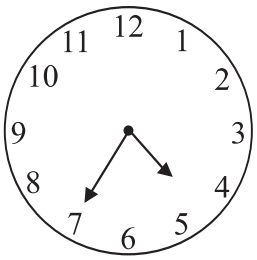
1 : 4 = 3 : .....

(1)

(Total for Question 5 is 12 marks)

Do NOT write in this space.

6



(a) The clock shows the time in the **afternoon** at which a train leaves Colombo for Kandy.

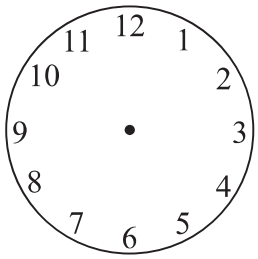
Write down this time using the 12-hour clock.

.....

(1)

(b) The train arrives in Kandy at five to eight in the evening.

On the clock face, draw hands to show a time of five to eight.



(1)

(c) Umar buys 7 first class tickets and 9 second class tickets for the train journey from Colombo to Kandy.
The total cost is 4500 Sri Lankan rupees.
The cost of each first class ticket is 360 Sri Lankan rupees.

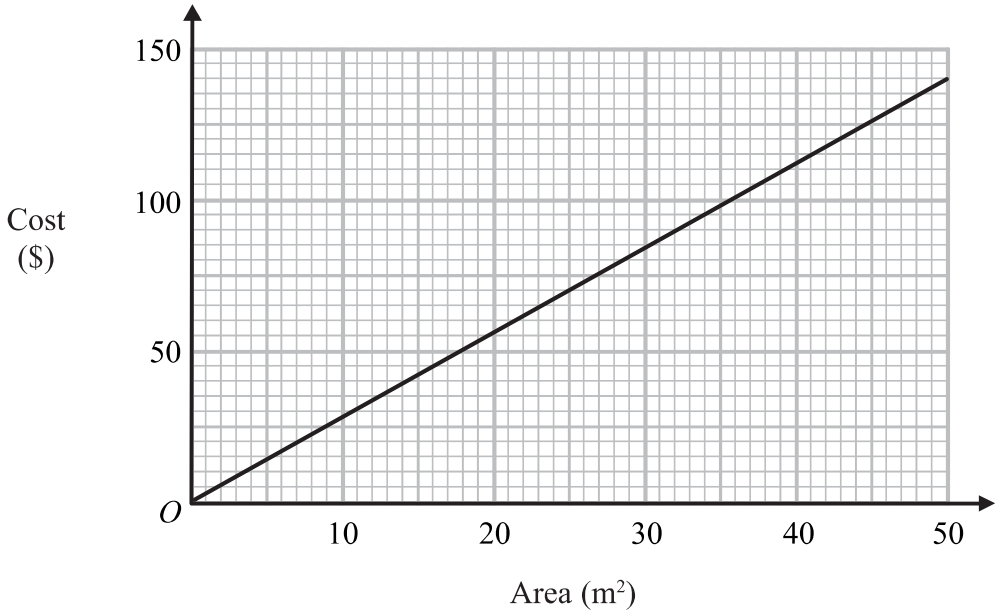
Work out the cost of each second class ticket.

..... Sri Lankan rupees

(3)

(Total for Question 6 is 5 marks)

7 This graph can be used to find the cost, in US dollars ($), of cleaning a carpet with an area of up to 50 m^2.



A carpet has an area of 41 m^2

(a) Use the graph to find the cost of cleaning this carpet.

$.....

(1)

The cost of cleaning another carpet is $65

(b) Use the graph to find the area of this carpet.

..... m^2

(1)

A rectangular carpet has a length of 6.8 m and a width of 5 m.

(c) Find the cost of cleaning this carpet.

$.....

(3)

(Total for Question 7 is 5 marks)

8 (a) Convert $\frac{3}{8}$ to a decimal.

.....

(1)

(b) Work out $\frac{5}{6}$ of 54 kg.

..... kg

(2)

(c) Write these fractions in order of size.
Start with the smallest fraction.

$\frac{16}{25}$ $\frac{2}{3}$ $\frac{3}{5}$ $\frac{13}{20}$

.....

(2)

(Total for Question 8 is 5 marks)

9 (a) Simplify $3c^2 + 5c^2 - c^2$

.....

(1)

(b) Simplify $4x - 3y + 5x - 2y$

.....

(2)

(Total for Question 9 is 3 marks)

10 Here are five cards.

ABDUL	ADAM	ANTON	ALAN	ARUN

Each card has a boy's name on it.
Sally takes at random one of the cards.

(a) Find the probability that ARUN is the name on the card that she takes.

.....

(1)

(b) Find the probability that A is the first letter of the name on the card that she takes.

.....

(1)

(c) Find the probability that there are 5 letters in the name on the card that she takes.

.....

(2)

(Total for Question 10 is 4 marks)

Do NOT write in this space.

11

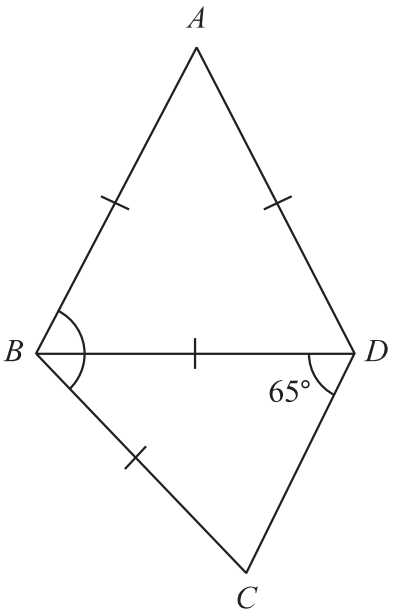


Diagram **NOT** accurately drawn

In triangle ABD, $AB = AD = BD$.
In triangle BCD, angle $BDC = 65°$ and $BC = BD$.

Work out the size of angle ABC.

.....°

(Total for Question 11 is 4 marks)

Do NOT write in this space.

12

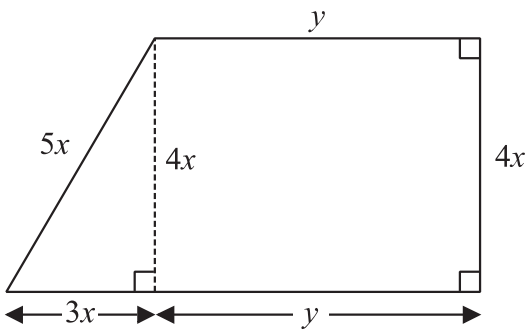


Diagram **NOT** accurately drawn

The shape in the diagram is made from a rectangle and a right-angled triangle.
The diagram shows, in terms of x and y, the lengths, in centimetres, of the sides of the rectangle and of the triangle.

The perimeter, P cm, of the shape is given by the formula

$$P = 12x + 2y$$

(a) Work out the value of P when $x = 3$ and $y = 7$

$P =$.....

(2)

(b) Work out the value of x when $P = 43$ and $y = 6.5$

$x =$.....

(3)

(c) Find, in terms of x and y, a formula for the area, A cm^2, of the shape.
Give your answer as simply as possible.

$A =$.....

(2)

(Total for Question 12 is 7 marks)

13 The table shows information about the mark scored on an examination question by each of 40 students.

Mark	Number of students
0	13
1	2
2	3
3	8
4	14

(a) Which mark is the mode?

.....

(1)

(b) Find the median mark.

.....

(2)

(c) Work out the mean mark.

.....

(3)

(Total for Question 13 is 6 marks)

14 (a) Work out the value of $\dfrac{\sqrt{7.4}}{9.8 - 2.1}$

Give your answer as a decimal.
Write down all the figures on your calculator display.

.....

(2)

(b) Give your answer to part (a) correct to 2 significant figures.

.....

(1)

(Total for Question 14 is 3 marks)

15 (a) Multiply out $6(n - 2)$

.....

(1)

(b) Factorise $p^2 - 5p$

.....

(2)

(c) Solve $\dfrac{7x - 3}{2} = x$

Show clear algebraic working.

$x =$.....

(3)

(Total for Question 15 is 6 marks)

16

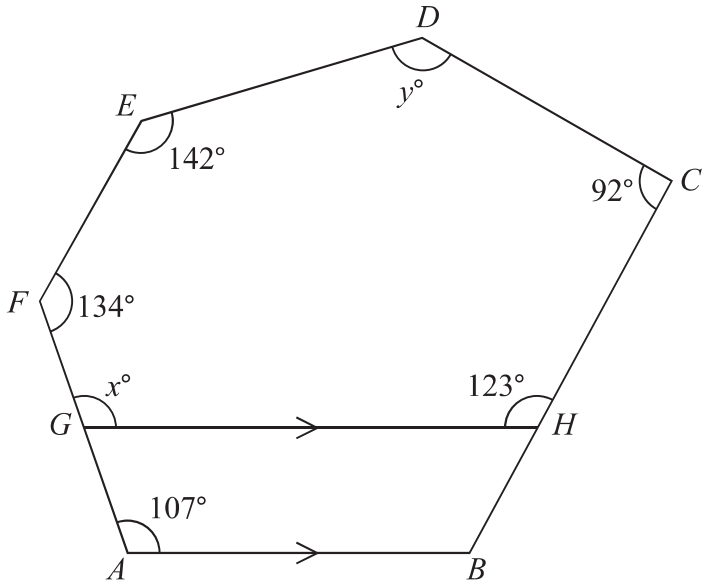


Diagram **NOT** accurately drawn

ABCDEF is a hexagon.
G is a point on *AF*.
H is a point on *BC*.
GH is parallel to *AB*.

(a) Give a reason why $x = 107$

.....

(1)

(b) Work out the value of *y*.

$y =$.....

(4)

(Total for Question 16 is 5 marks)

17 An airline increases the prices of its flights by 8%.

(a) Before the increase, the price of a flight to Cairo was £475

Work out the price of a flight to Cairo after the increase.

£.....

(3)

(b) The increase in price of a flight to Mumbai was £48

Work out the price of a flight to Mumbai after the increase.

£.....

(3)

(Total for Question 17 is 6 marks)

18 $S = \{s, q, u, a, r, e\}$
$V = \{a, e, i, o, u\}$

List the members of the set

(i) $S \cap V$

.....

(ii) $S \cup V$

.....

(Total for Question 18 is 2 marks)

19

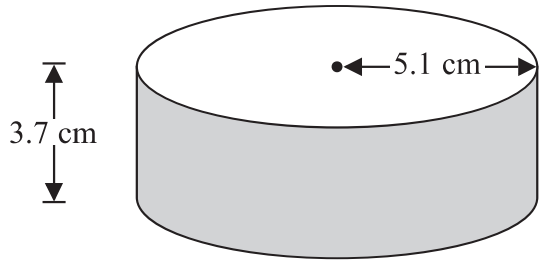


Diagram **NOT** accurately drawn

A solid cylinder has a radius of 5.1 cm and a height of 3.7 cm.

Work out the **total** surface area of the cylinder.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 19 is 3 marks)

20 The number of runners in the London Marathon on 25th April, 2010 was 37 527.

Work out an estimate for the number of these runners whose birthday was on that day.

.....

(Total for Question 20 is 4 marks)

21

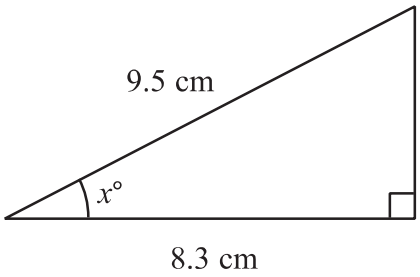


Diagram **NOT** accurately drawn

Work out the value of x.
Give your answer correct to 1 decimal place.

$x =$.....

(Total for Question 21 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

Do NOT write in this space.