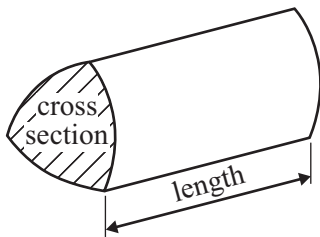


GCSE Mathematics (Linear) 1380

Formulae: Higher Tier

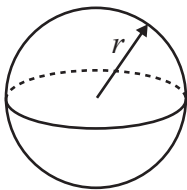
**You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.**

Volume of a prism = area of cross section \times length



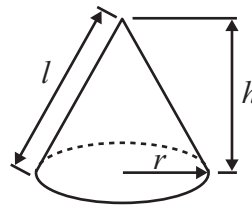
Volume of sphere = $\frac{4}{3} \pi r^3$

Surface area of sphere = $4\pi r^2$

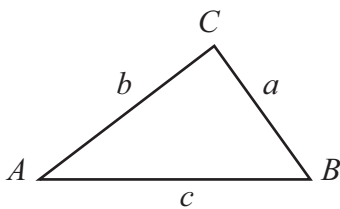


Volume of cone = $\frac{1}{3} \pi r^2 h$

Curved surface area of cone = $\pi r l$



In any triangle ABC



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$

where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$

Answer ALL EIGHTEEN questions.

**Write your answers in the spaces provided. You
must write down all stages in your working.**

1. Here is a list of ingredients for making a trifle for 4 people.

Trifle for 4 people	
120 g	of raspberry jelly
8	sponge fingers
420 m/	of custard
180 g	of tinned fruit

Rob is going to make a trifle for 6 people.
Work out the amount of each ingredient he needs.

..... g of raspberry jelly

..... sponge fingers

..... m/ of custard

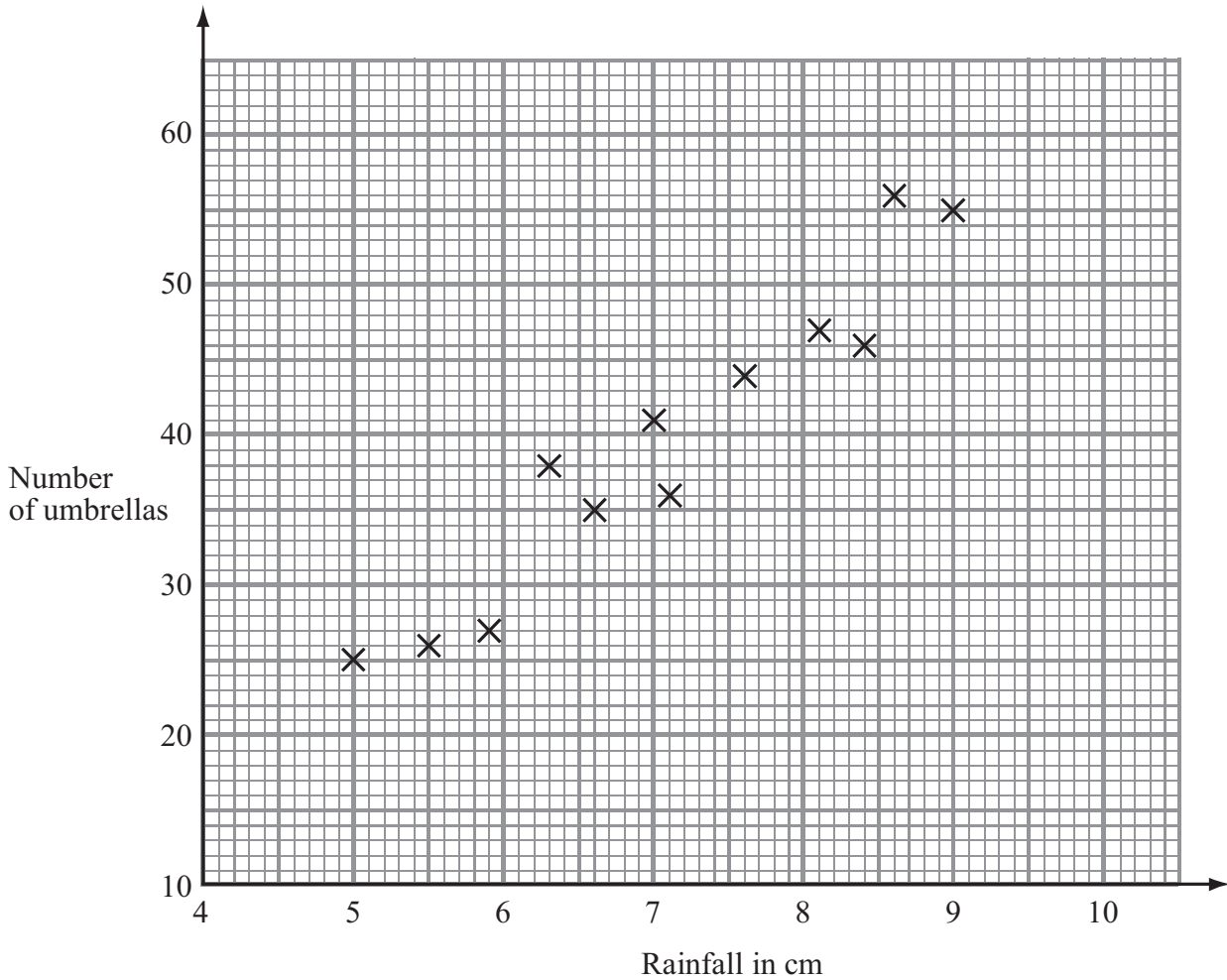
..... g of tinned fruit

(Total 3 marks)

Q1

2. Mr Wither sells umbrellas.

The scatter graph shows some information about the number of umbrellas he sold and the rainfall, in cm, each month last year.



In January of this year, the rainfall was 6.1 cm.
During January, Mr Wither sold 32 umbrellas.

(a) Show this information on the scatter graph. (1)

(b) What type of correlation does this scatter graph show?
..... (1)

In February of this year, Mr Wither sold 40 umbrellas.

(c) Estimate the rainfall for February.
..... cm (2)

(Total 4 marks)

3. In August 2008, Eddie hired a car in Italy.

The cost of hiring the car was £620

The exchange rate was £1 = €1.25

(a) Work out the cost of hiring the car in euros (€).

€
(2)

Eddie bought some perfume in Italy.

The cost of the perfume in Italy was €50

The cost of the same perfume in London was £42

The exchange rate was still £1 = €1.25

(b) Work out the difference between the cost of the perfume in Italy and the cost of the perfume in London.

Give your answer in pounds (£).

£
(3)

(Total 5 marks)

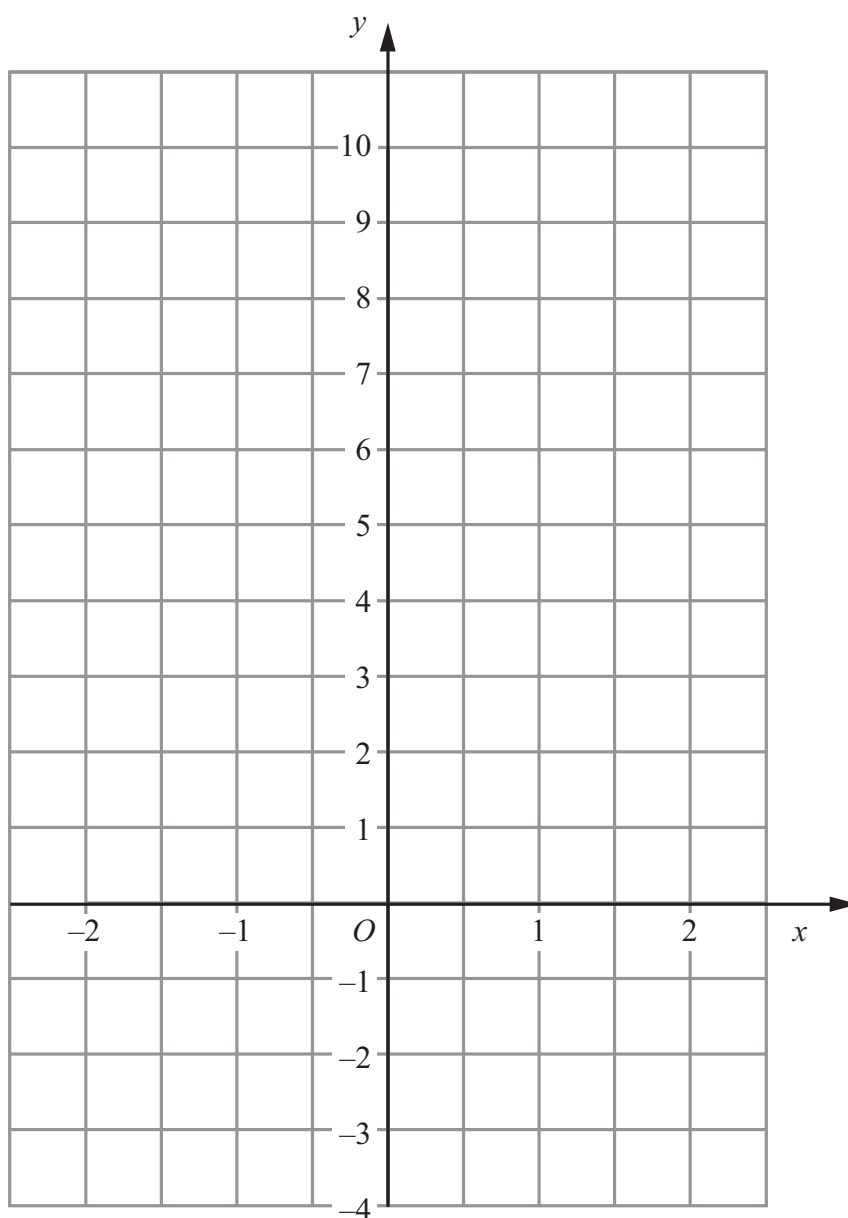
Q3

4. (a) Complete the table of values for $y = 3x + 4$

x	-2	-1	0	1	2
y		1			10

(2)

(b) On the grid, draw the graph of $y = 3x + 4$



(2)

(Total 4 marks)

Q4

5.

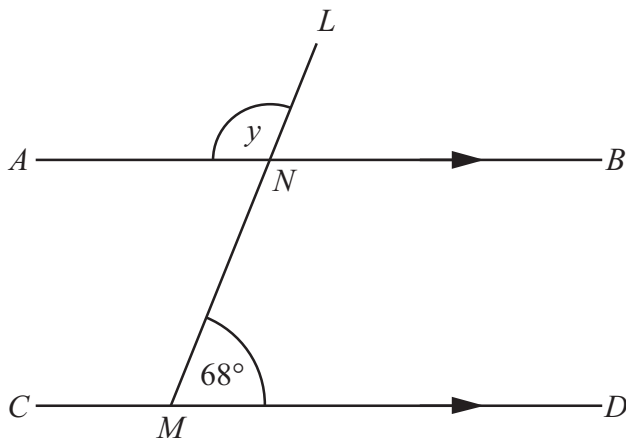


Diagram **NOT** accurately drawn

ANB is parallel to *CMD*.
LNM is a straight line.
 Angle *LMD* = 68°

(i) Work out the size of the angle marked *y*.

.....
 °

(ii) Give reasons for your answer.

.....

(Total 3 marks)

Q5

6. (a) Use your calculator to work out $\frac{2}{1.5+2.45}$

Write down all the figures on your calculator display.
 You must give your answer as a decimal.

.....
 (2)

(b) Write your answer to part (a) correct to 2 decimal places.

.....
 (1)

(Total 3 marks)

Q6

7. A circle has a diameter of 12 cm.

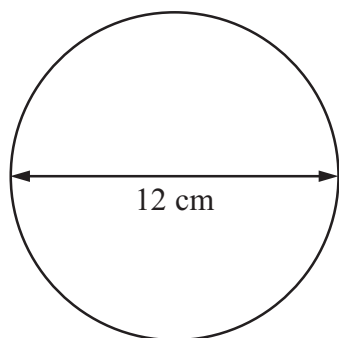


Diagram **NOT** accurately drawn

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm

(Total 2 marks)

Q7

8. The equation

$$x^3 + 10x = 25$$

has a solution between 1 and 2

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **all** your working.

$x =$

(Total 4 marks)

Q8

9. Work out £84 as a percentage of £350

..... %

(Total 2 marks)

Q9

10. There are some ribbons in a box.
The ribbons are green or red or yellow or white.

The table shows each of the probabilities that a ribbon chosen at random will be green or red or white.

Colour	Green	Red	Yellow	White
Probability	0.15	0.30		0.35

(a) Work out the probability that a ribbon chosen at random will be yellow.

.....
(2)

There are 500 ribbons in the box.

(b) Work out the number of red ribbons.

.....
(2)

(Total 4 marks)

Q10

11.

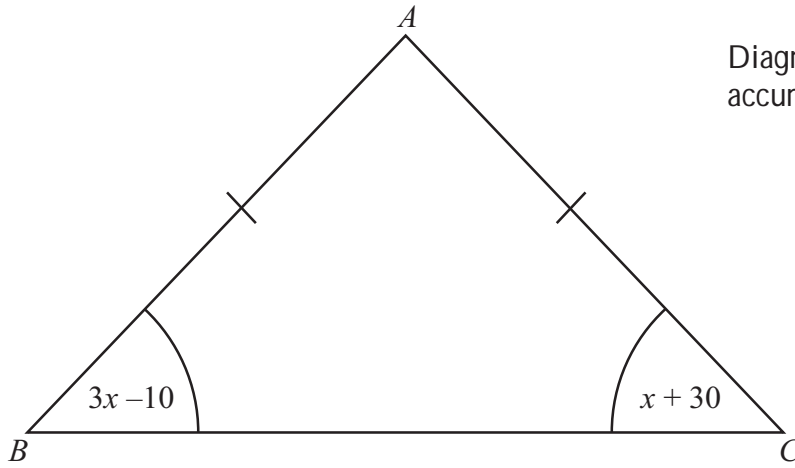


Diagram **NOT** accurately drawn

ABC is an isosceles triangle.
 $AB = AC$.

(a) Explain why $3x - 10 = x + 30$

..... (1)

(b) Solve $3x - 10 = x + 30$

$x =$ (2)

(Total 3 marks)

Q11

12.

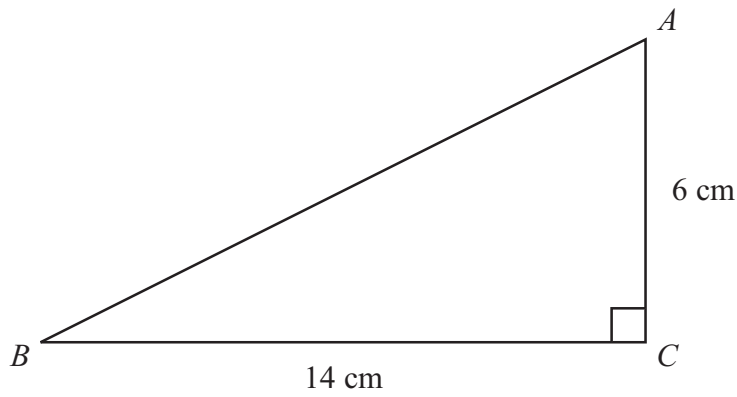


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.

$AC = 6$ cm.

$BC = 14$ cm.

(a) Work out the area of triangle ABC .

..... cm²
(2)

(b) Calculate the length of AB .
Give your answer correct to 2 decimal places.

..... cm
(3)

(Total 5 marks)

Q12

13. The table gives information about the number of CDs sold in a shop during each of the last 30 weeks.

Number of CDs (n)	Frequency		
$0 < n \leq 40$	3		
$40 < n \leq 80$	5		
$80 < n \leq 120$	12		
$120 < n \leq 160$	7		
$160 < n \leq 200$	3		

Calculate an estimate for the mean number of CDs sold each week.
Give your answer correct to 1 decimal place.

.....
(Total 4 marks)

Q13

14. $-4 < n \leq 1$
 n is an integer.

(a) Write down all the possible values of n .

.....
(2)

(b) Solve $3x - 2 > x + 7$

.....
(2)
(Total 4 marks)

Q14

15. Make A the subject of the formula

$$r = \sqrt{\frac{A}{3}}$$

$A = \dots\dots\dots$

(Total 2 marks)

Q15

16. (a) Write 15 500 in standard form.

.....
(1)

(b) Write 2.48×10^{-3} as an ordinary number.

.....
(1)

(c) Work out the value of

$$24\,500 \div (1.25 \times 10^{-4})$$

Give your answer in standard form.

.....
(2)

(Total 4 marks)

Q16

17. (a) Factorise $x^2 - 7x + 10$

.....
(2)

(b) Solve $x^2 - 7x + 10 = 0$

$x =$

or $x =$
(1)

(Total 3 marks)

Q17

18.

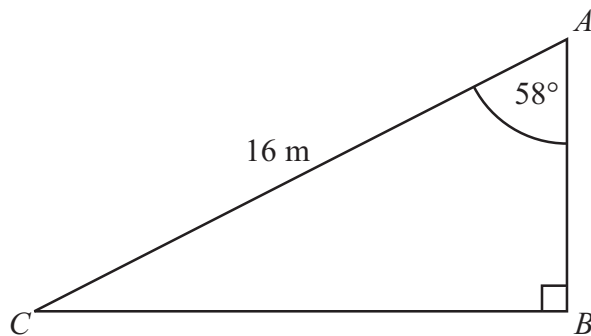


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
 $AC = 16$ m.
 Angle $CAB = 58^\circ$

Calculate the length of AB .
 Give your answer correct to 3 significant figures.

..... m

(Total 3 marks)

Q18