Surname	Other Names

Edexcel GCSE

Centre Number	Candidate Number

Mathematics A

Paper 1 (Non-Calculator)

Higher Tier

Practice Paper 1 **Time: 1 hour 45 minutes**	Paper Reference **MissB/Edex/H1**

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  - *there may be more space than you need.*
- **Calculators must not be used.**

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  - *Use this as a guide as to how much time to spend on each question.*
- Questions labelled with an asterisk (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

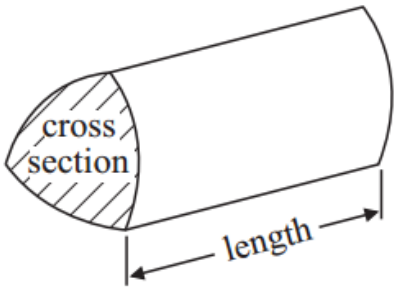
Teacher	Class

GCSE Mathematics

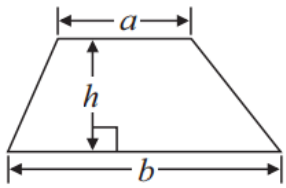
Formulae: Higher Tier

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

Volume of prism = area of cross section × length



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

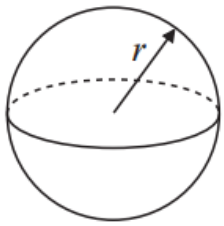


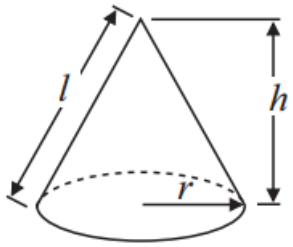
Volume of sphere = $\frac{4}{3}\pi r^3$

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

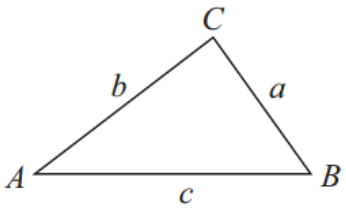
Surface area of sphere = $4\pi r^2$

Curved surface area of cone = πrl





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

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

Answer ALL questions

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1 Using the information that

$$3.8 \times 63 = 239.4$$

find the value of

(i) 3.8×6300

_____

(1)

(ii) $23940 \div 0.63$

_____

(1)

(Total for Question 1 is 2 marks)

2 Paul attends football matches.
The probability his team win is 0.32.

(a) What is the probability that his team will **not** win?

_____

(1)

Paul's team play 50 matches in a season

(b) Estimate the number of grams Paul's team will win.

_____

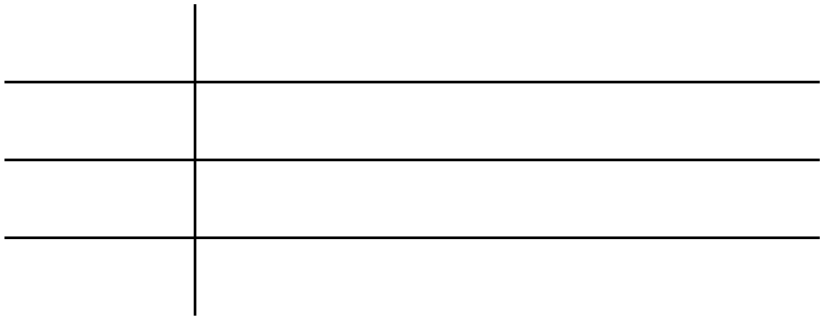
(2)

(Total for Question 2 is 3 marks)

3 (a) Here are the ages of 24 people.

12	37	24	31	35	8
39	15	32	18	26	24
24	6	26	17	33	13
13	22	14	13	29	25

Show this information in an ordered stem and leaf diagram.



(3)

(b) What is the median age?

_____

(1)

(Total for Question 3 is 4 marks)

4 The area of a book is $45cm^2$.
Calculate the area of the book in mm^2.

(Total for Question 4 is 2 marks)

5 Diane, Mia and Alexa are friends.

Diana is x years old.
Mia is double Diane's age.
Alexa is 3 years younger than Mia.

(a) Write an expression for Alexa's age.

_____

(1)

The sum of their ages is 122 years.

(b) Calculate Alexa's age.

_____

(3)

(Total for Question 5 is 4 marks)

6 (a) List all possible integer values for n.

$$-12 < 4n \leq 10$$

_____

(1)

(b) Solve the inequality $7x + 12 > 24 - x$

_____

(2)

(Total for Question 6 is 3 marks)

7* Millie is wants to lay new turf in her garden.

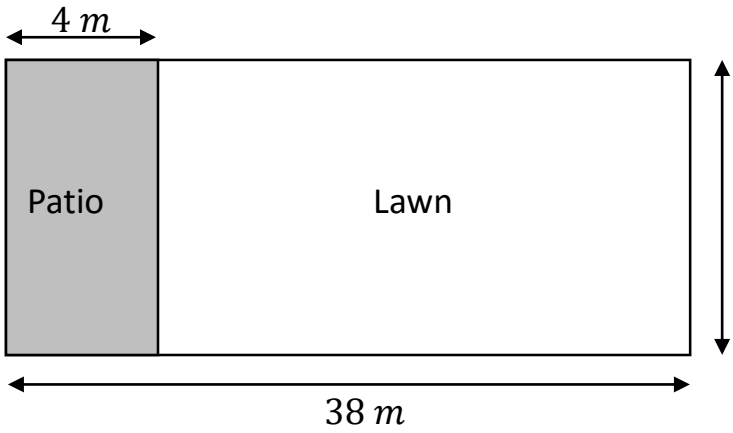


Diagram **NOT** accurately drawn

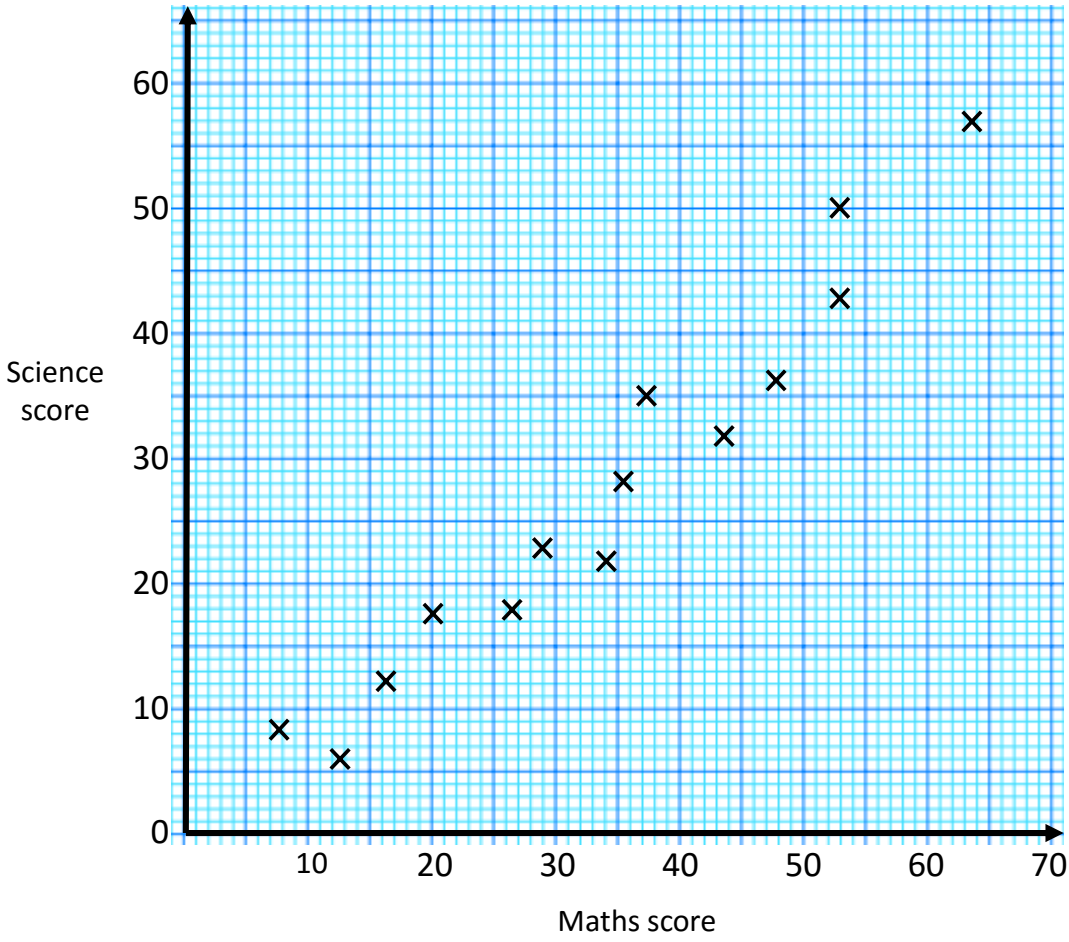
Each roll of turf costs £2.99 and covers $5m^2$.

Millie has £250 to spend on the turf.

Does Millie have enough money to buy all the turf she needs?

(Total for Question 7 is 4 marks)

8 The scatter graph shows information about 14 students maths and science scores on a test.



(a) Describe the relationship between a students maths and science score.

_____

_____

_____

(1)

A student scores 43 marks on her maths test but is off ill for the science test.

(b) Estimate the score the student would gain on the science test.

_____

(2)

(Total for Question 8 is 3 marks)

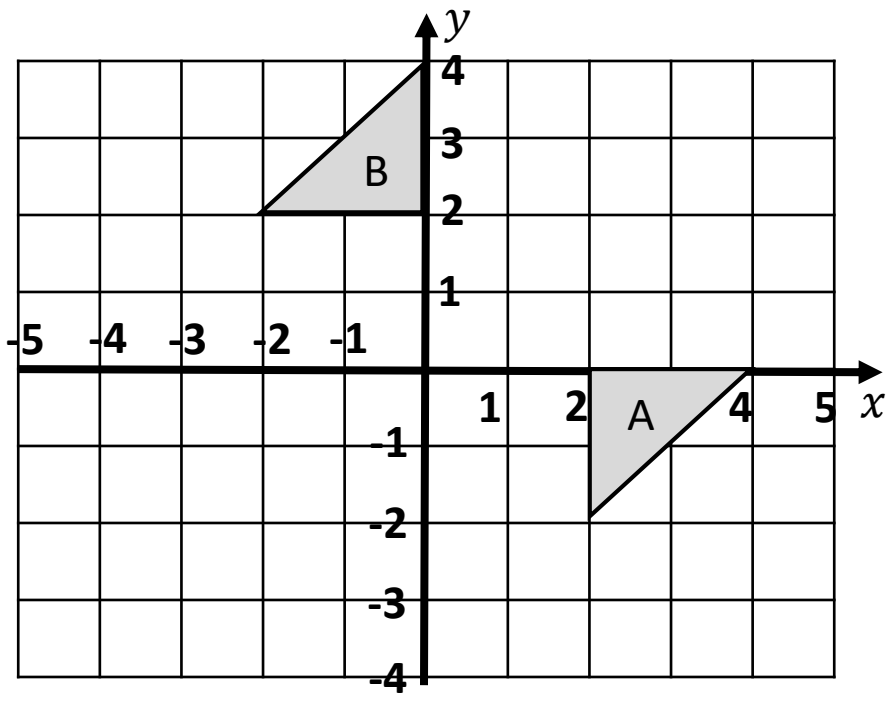
9* Claire wants to buy a computer
The computer Claire wants is on offer in two different shops.

PC World	Staples
	
$\frac{1}{5}$ off £310	15% off £290

Which shop should Claire buy the computer from?

(Total for Question 9 is 3 marks)

10

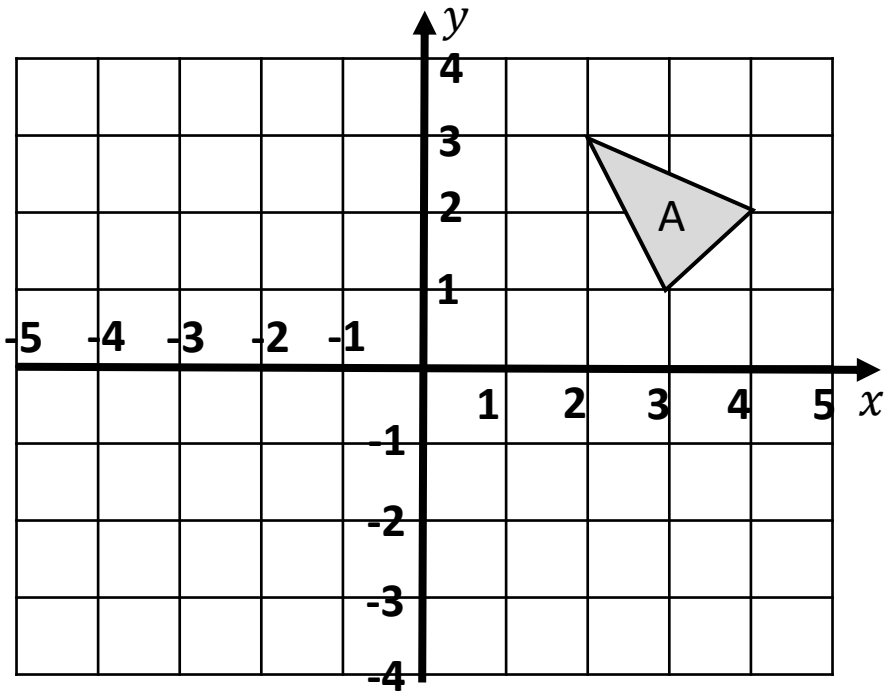


(a) Describe fully the single transformation from A to B.

_____

_____

(2)



(b) Rotate triangle A 90^o anticlockwise with a centre O. (2)

(Total for Question 10 is 4 marks)

11 There where 200 students in year 10 students at Altringham school.
Each student had to choose a language as part of there options.

116 of the 200 students are girls.
38 students chose to study German.
54 out of the 77 students studying French are Girls.
48 of the boys chose to study Spanish.

Work out the percentage of girls in the school who chose to study German at GCSE.

(Total for Question 11 is 4 marks)

12* ABC is a triangle

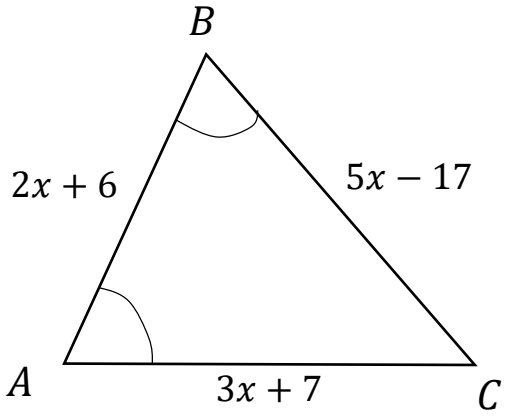


Diagram **NOT** accurately drawn

Angle BAC = angle CBA

The length of side AB is $(2x + 6)cm$.
The length of side AC is $(3x + 7)$cm.
The length of side BC is $(5x - 17)cm$

Work out the perimeter of the triangle.
Give your answer as a number of centimetres.

_____ cm

(Total for Question 12 is 4 marks)

13 (a) Solve $3x^2 = 192$

(2)

(b) Factorise $12x^2y - 8xy$

(2)

(c) Expand and Simplify $6(x + 8) - 3(x - 7)$

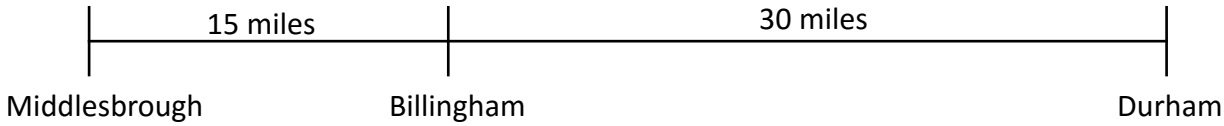
(2)

(d) Expand and simplify $(x + 6)(x - 9)$

(2)

(Total for Question 13 is 8 marks)

14* The distance from Middlesbrough to Billingham is 15 miles.
The distance from Billingham to Durham is 30 miles.



Nyal is going to drive from Middlesbrough to Billingham.
Then he will drive from Billingham to Durham.

Nyal leaves Middlesbrough at 08:49.
He drives from Billingham to Durham at an average speed of 50mph.

Nyal wants to get to Durham by 09:50.

Work out the average speed Nyal must drive at from Middlesbrough to Billingham.

_____ mph

(Total for Question 14 is 3 marks)

15 Melisa is organising a party for 90 children. Each child will leave with a party pack containing a toy.

The toys are sold in two different pack sizes.

Pack A contains 12 toys

Pack B contains 7 toys.

How many of each type of pack does Melisa need to buy?

Pack A _____

Pack B _____

(Total for Question 15 is 2 marks)

16 A and B are sets of three single digit cards.

Set A | 6 | 7 | 8 |

Set A and set B have a mean of 7 .

Set B has double the range of set A.

Complete the cards in set B.

Set B | | | |

(Total for Question 16 is 2 marks)

17

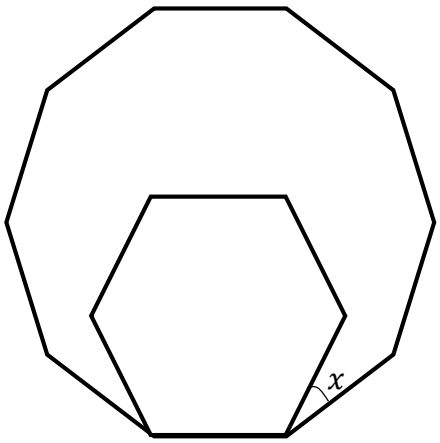


Diagram **NOT** accurately drawn

The diagram shows a regular decagon and a regular hexagon.
Work out the size of the angle marked x.

_____ degrees

(Total for Question 17 is 3 marks)

18 The table shows the weight of 40 females in kg.

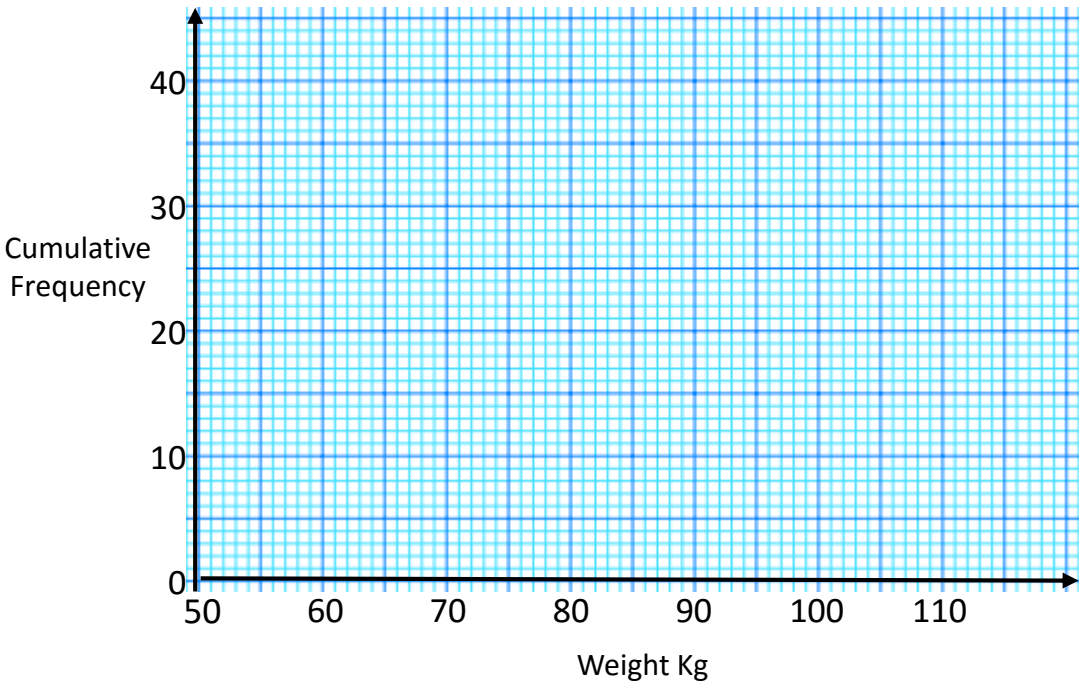
Weight (w) kg	Frequency
$60 < w \leq 70$	4
$70 < w \leq 80$	15
$80 < w \leq 90$	12
$90 < w \leq 100$	6
$100 < w \leq 110$	3

(a) Complete the table

Weight (w) kg	Cumulative Frequency
$60 < w \leq 70$	
$60 < w \leq 80$	
$60 < w \leq 90$	
$60 < w \leq 100$	
$60 < w \leq 110$	

(1)

(b) Draw a cumulative frequency graph



(2)

(c) Estimate the percentage of people who are over 95kg in weight.

_____

(2)

(Total for Question 18 is 5 marks)

19 A road side café sells both tea and coffee.
A cup of tea costs £1 and a cup of coffee costs £1.50
Within 1 hour they sell 350 drinks making a total of £442.50.
How many cups of tea and coffee do they sell?

.

Tea _____

Coffee _____

(Total for Question 19 is 4 marks)

20*

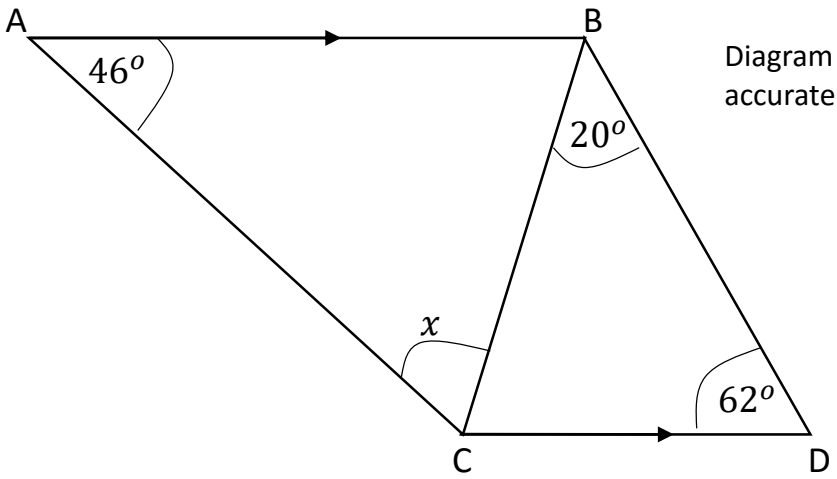


Diagram **NOT** accurately drawn

Line AB and Line CD are parallel to each other.

Angle $BAC = 46^o$
Angle $DBC = 20^o$
Angle $BDC = 62^o$

Calculate the size of angle x.
You must give reasons for your answer.

$x =$ _____

(Total for Question 20 is 3 marks)

21 A and B are two points.

Point A has Coordinates $(-3, 5)$.
Point B has Coordinates $(1, 13)$.

C is the midpoint of the line segment AB.

(a) Find the coordinates of C.

(..... , ...)

(2)

D is the point with coordinates $(20, 51)$

***** (b) Does point D lie on the straight line that passes through A and B?
You must show how you work out your answer.

(3)

(Total for Question 21 is 5 marks)

22 A draw contains a total of 10 socks; some are spotty and the rest are striped socks.

Two socks is chosen at random and **aren't replaced.**

The probability of selecting two spotty socks is $\frac{42}{90}$.

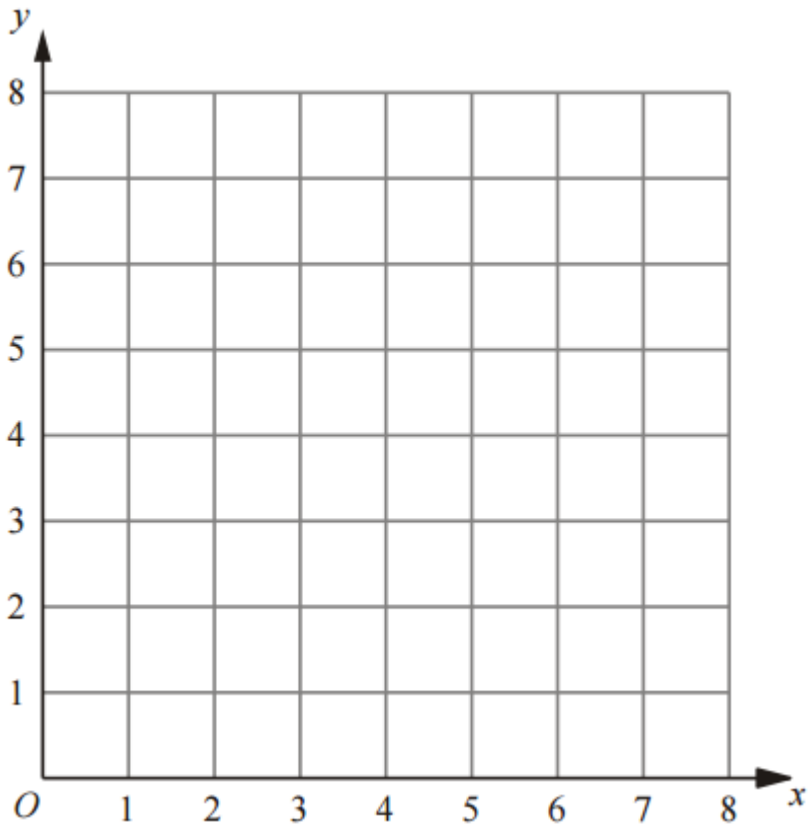
Work out how many striped socks there are.

(Total for Question 22 is 4 marks)

23 The region R satisfies the inequalities

$$x \leq 6 \qquad y < 5 \qquad y + x > 7$$

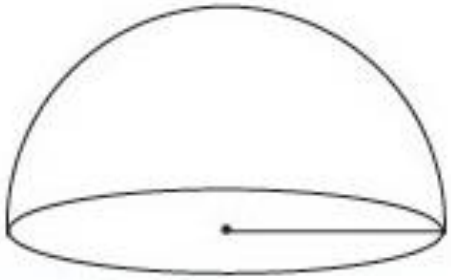
On the grid below, draw straight lines and use shading to show the region **R**.



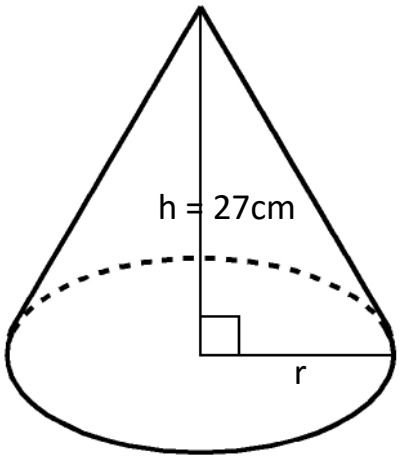
(Total for Question 23 is 3 marks)

24 A hemisphere bowl of radius 6cm has the same volume as a cone of perpendicular height 27cm. Calculate the base radius, r, of the cone.

Diagrams **NOT** accurately drawn



r = 6cm



$x =$ _____

(Total for Question 24 is 4 marks)

25 If 2n is always even for all positive integer values of n,
prove algebraically that the sum of the squares of any two consecutive even numbers is always a multiple of 4.

(Total for Question 25 is 3 marks)

26 Express the recurring decimal $0.4\dot{5}\dot{3}$ as a fraction.

(Total for Question 26 is 3 marks)

27 Expand and simplify

$$(4 + \sqrt{5})(8 - \sqrt{5})$$

Give your answer in the form $a + b\sqrt{(5)}$, where a and b are integers.

(Total for Question 27 is 2 marks)

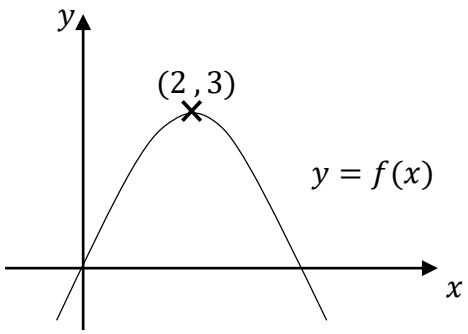
28 Make x the subject of the formula

$$y = \frac{z - wx}{x - z}$$

$x =$ _____

(Total for Question 28 is 4 marks)

29



The diagram shows part of the curve with the equation $y = f(x)$.
The coordinates of the maximum point of the curve are $(2, 3)$.

Write down the coordinates of the maximum point of the curve with equation

(a) $y = f(x) - 3$

(..... , ...)

(1)

(b) $y = f(2x)$

(..... , ...)

(1)

(Total for Question 29 is 2 marks)

TOTAL FOR PAPER 100 MARKS