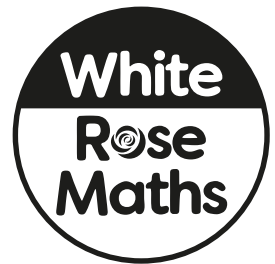


For: Pearson Edexcel GCSE (9–1)

# GCSE

## Practice Paper 1MA1



# Mathematics

## Paper 3H (Calculator) Higher Tier



Surname

Other names

### You should have:

- A pen, pencil, ruler, eraser and a scientific calculator.
- Tracing paper may be used.
- A formula sheet.

### Information

- The total mark for this paper is 80
- The marks for each question are shown in brackets.
- Answer all questions in the spaces provided – *there may be more space than you need.*
- You must show all your working.
- Diagrams are not accurately drawn, unless otherwise indicated.
- Check your answers if you have time at the end.

**1 a)** Expand and simplify  $3(g + 5) + 7(g - 2)$ .

---

(2 marks)

**b)** Factorise fully  $5xy + 15x$ .

---

(2 marks)

**2** A box of 12 chocolate bars costs £3.20

Amir buys 96 chocolate bars.

How much does Amir spend?

\_\_\_\_\_

(3 marks)

**3**  $a = 2.5$  and  $b = -5$

**a)** Work out  $4a - b$ .

\_\_\_\_\_

(2 marks)

**b)** Work out  $b^2 - \frac{1}{2}a$ .

\_\_\_\_\_

(2 marks)

**4** There are 18 giraffes and 24 elephants in a wildlife park.

**a)** Write the ratio of giraffes to elephants in its simplest integer form.

\_\_\_\_\_

(2 marks)

**b)** Write the ratio of elephants to giraffes in the form  $1 : n$ .

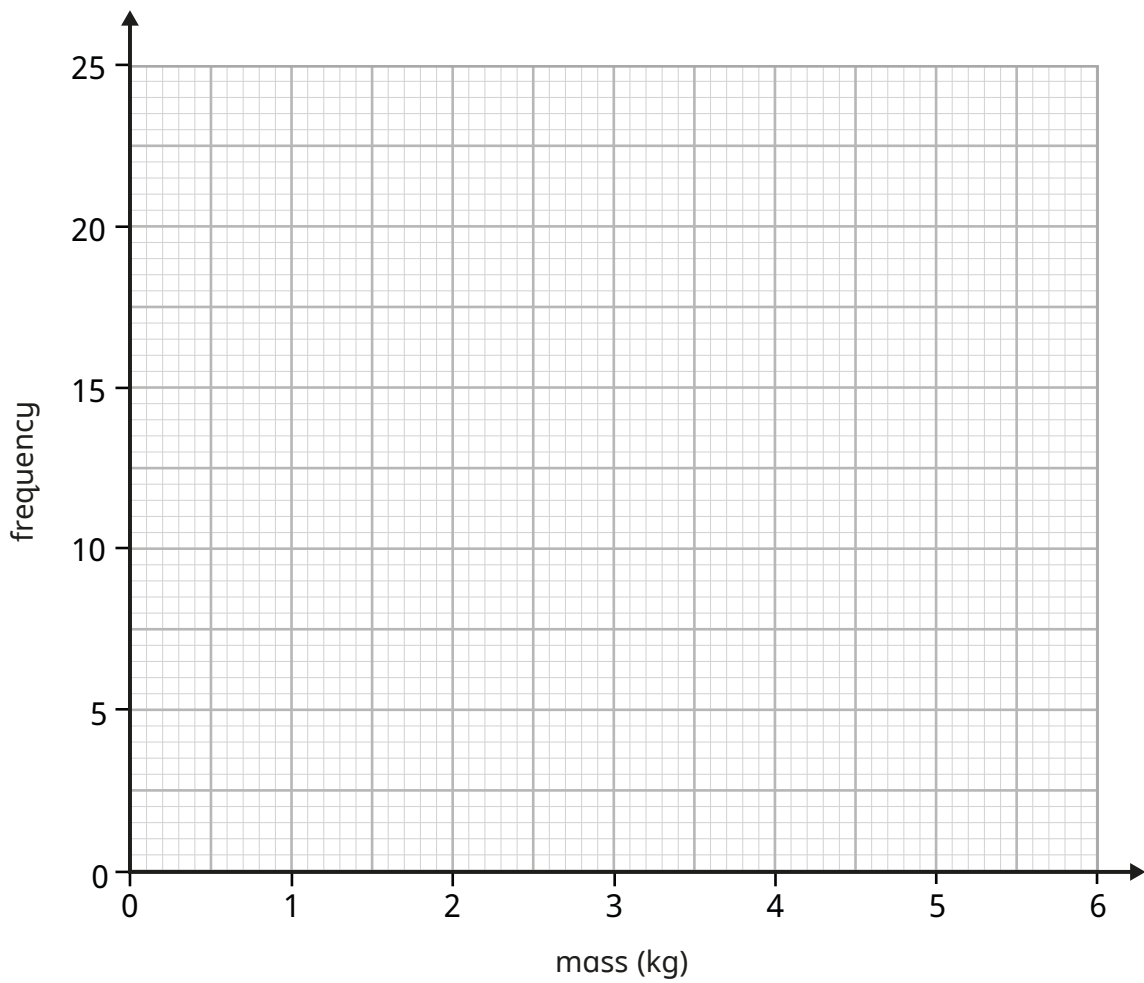
\_\_\_\_\_

(1 mark)

5 The table shows the mass, in kilograms, of some dogs.

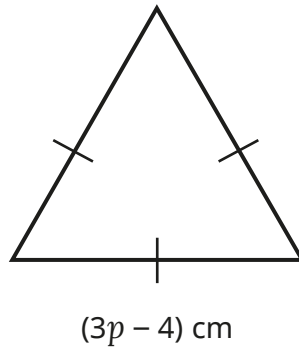
Mass (kg)	Frequency
$0 < m \leq 1$	4
$1 < m \leq 2$	6
$2 < m \leq 3$	17
$3 < m \leq 4$	10
$4 < m \leq 5$	13
$5 < m \leq 6$	23

Draw a frequency polygon to show this information.



(2 marks)

- 6** An equilateral triangle has a base length of  $(3p - 4)$  cm.



- a)** Write an expression for the perimeter of the triangle.

---

(1 mark)

- b)** The perimeter of the triangle is 141 cm.  
Work out the value of  $p$ .

---

(2 marks)

**7** A cheetah runs 330 metres in 15 seconds.

**a)** Work out the cheetah's average speed.

Give your answer in metres per second (m/s).

\_\_\_\_\_ m/s

(2 marks)

**b)** Convert your answer to part a) to kilometres per hour (km/h).

\_\_\_\_\_ km/h

(2 marks)

A panther runs 100 metres in 11.5 seconds.

The time the panther takes is correct to 3 significant figures.

**c)** Work out the upper bound of the panther's speed, in metres per second, giving your answer correct to 3 significant figures.

\_\_\_\_\_ m/s

(2 marks)

**8** The value of a car decreases by 15% in the first year after it is bought.

**a)** Miss Fisher buys a car for £18 000

Find the value of Miss Fisher's car after one year.

---

(2 marks)

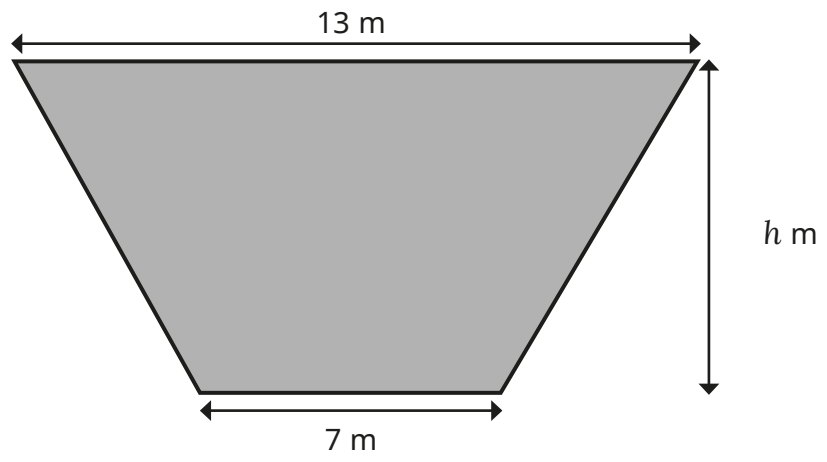
**b)** One year after purchase, Mr Patel's car is worth £17 850

How much did Mr Patel pay for the car?

---

(2 marks)

- 9 The area of the trapezium is  $40 \text{ m}^2$   
Work out the height,  $h$ , of the trapezium.

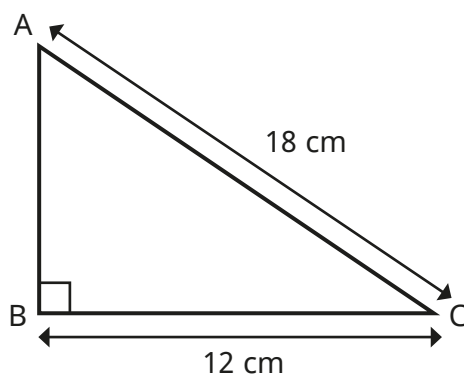


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(3 marks)



**10** Work out the length of AB, giving your answer to 3 significant figures.



---

(3 marks)

**11** Rearrange  $q = \frac{w^3}{2} - 7$  to make  $w$  the subject.

---

(3 marks)

**12** Here are some digit cards.



How many even numbers greater than 50 000 can be made using these cards?

---

(2 marks)

**13 a)** Simplify  $\frac{2t^5 \times 9t^4}{4t^3}$

\_\_\_\_\_  
(2 marks)

**b)** Annie writes  $(2x - 3)^2 \equiv 4x^2 - 9$   
Show that Annie is wrong.

\_\_\_\_\_  
(2 marks)

**c)** Factorise  $49 - 4y^2$

\_\_\_\_\_  
(2 marks)

**14** Mrs Trent and Mr Khan set up a business.

Mrs Trent invests £12 600 and Mr Khan invests £7000

The business makes £23 100 profit.

Mrs Trent and Mr Khan share the profit in the ratio of the amount they invested.

How much of the profits does Mr Khan receive?

---

(3 marks)

**15**  $\mathbf{a} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

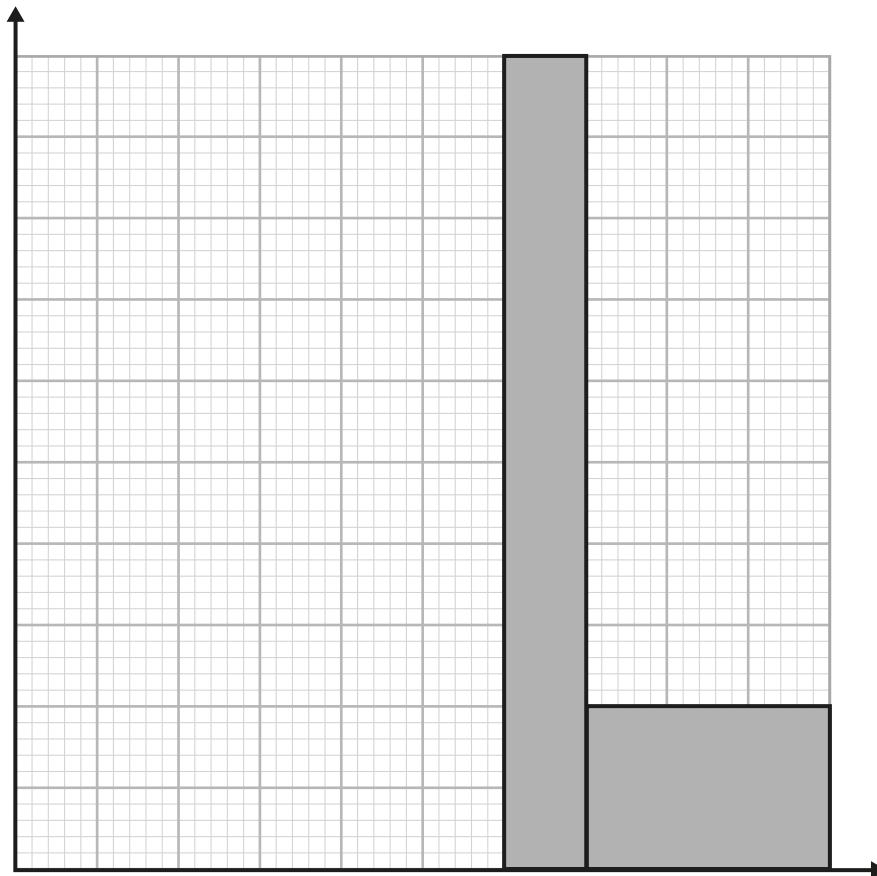
Write  $4\mathbf{a} + 2\mathbf{b}$  as a column vector.

---

(2 marks)

16 The table and the histogram show information about the age of some office workers.

Age (years)	Frequency
$16 < a \leq 24$	12
$24 < a \leq 30$	15
$30 < a \leq 40$	33
$40 < a \leq 45$	
$45 < a \leq 60$	15



Complete the table and the histogram.

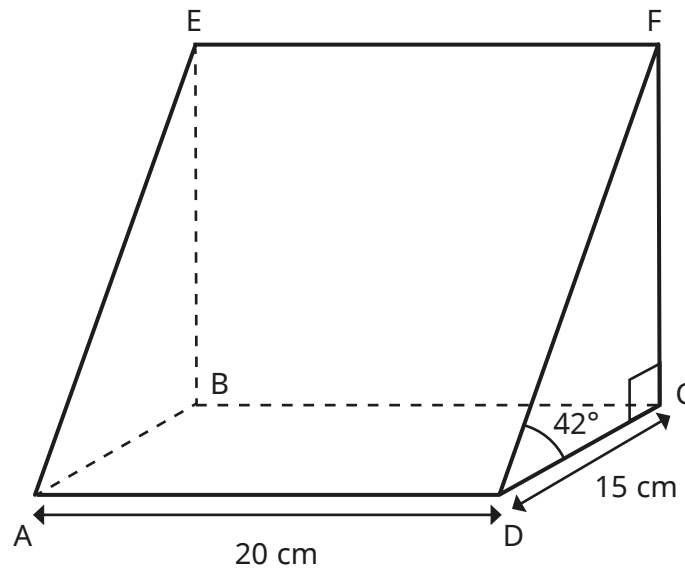
(4 marks)

**17** The diagram shows a triangular prism.

$CD = 15 \text{ cm}$

$AD = 20 \text{ cm}$

Angle  $CDF = 42^\circ$



Calculate the size of the angle that line  $AF$  makes with the plane  $ABCD$ .

Give your answer correct to 3 significant figures.

\_\_\_\_\_ (4 marks)

**18** The number of fish in a large lake  $t$  years from now is  $P_t$ , where

$$P_0 = 600\,000$$

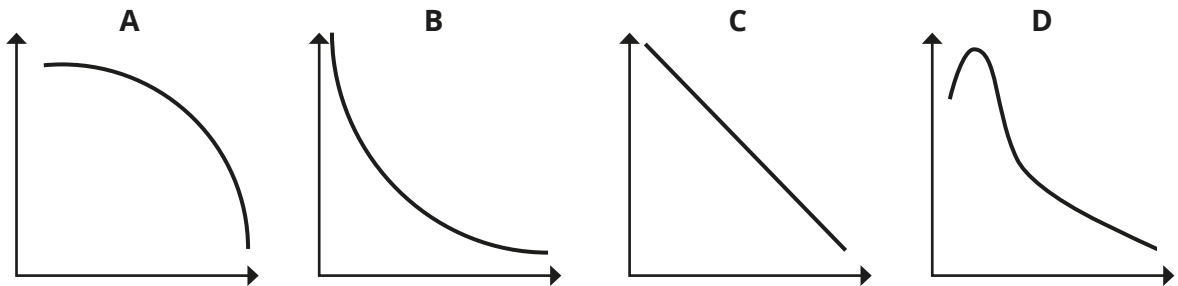
$$P_{t+1} = 1.02(P_t - 5000)$$

**a)** Work out the number of fish in the lake three years from now.

\_\_\_\_\_ (2 marks)

In a second lake, the number of fish is decreasing by 8% every year.

**b)** Which graph represents how the number of fish in the second lake changes over time?



\_\_\_\_\_ (1 mark)

**c)** At the start of 2022, there were 100 000 fish in the second lake.  
How many fish will there be in the second lake at the start of 2025?

\_\_\_\_\_ (2 marks)

**19** A, B and C are points on the circumference of a circle, centre O.

DCE is a tangent to the circle.

BC is parallel to FG.

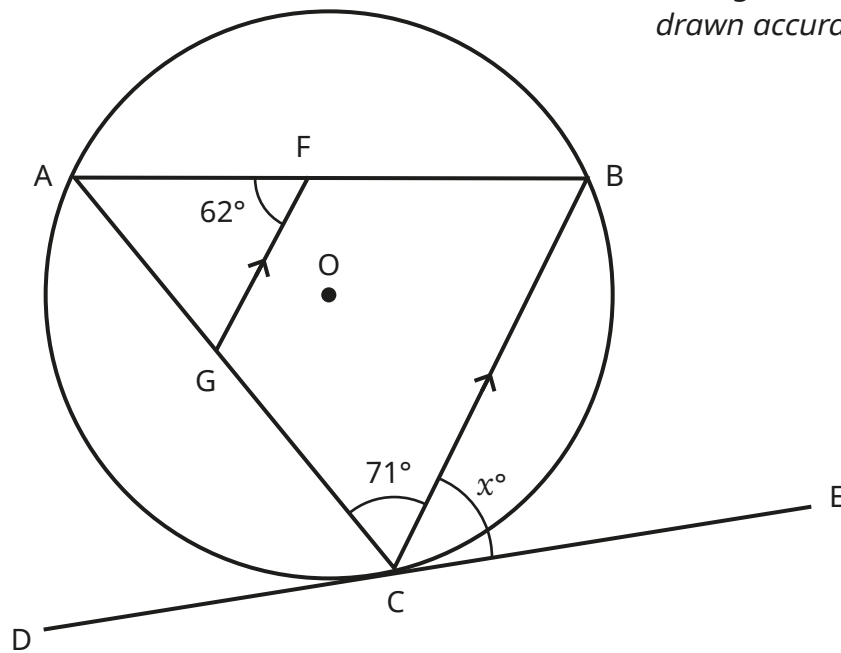
Angle AFG =  $62^\circ$

Angle ACB =  $71^\circ$

Angle BCE =  $x^\circ$

Find the value of  $x$ . Give reasons for each stage of your working.

*diagram not  
drawn accurately*



(4 marks)

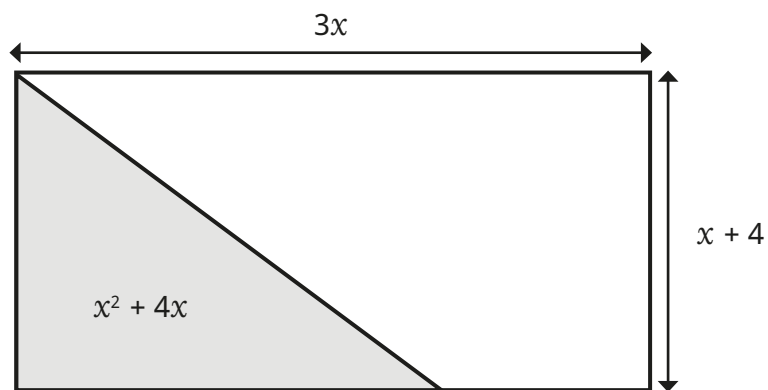


- 20** The line AB passes through the points (1, 2) and (p, 17).  
The gradient of the line AB is 5  
Work out the value of p.

---

(3 marks)

- 21** The area of the shaded triangle in the rectangle is  $x^2 + 4x$ .



Find the fraction of the rectangle that is shaded, giving your answer in its simplest form.  
You must show your working.

---

(2 marks)

**22** There are  $n$  counters in a bag.

3 of the counters are red.

Two counters are taken from the bag.

Find, in terms of  $n$ , the probability that both counters are red.

---

(3 marks)

**23** Solve the simultaneous equations.

$$x^2 + y^2 = 29$$

$$x - y = 3$$

$x = \underline{\hspace{10em}}$

$y = \underline{\hspace{10em}}$

(4 marks)

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