



Rewarding Learning

General Certificate of Secondary Education
2025

Centre Number

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Candidate Number

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Double Award Science: Physics

Unit P2



Foundation Tier

[GDW61]

GDW61

MONDAY 16 JUNE, MORNING

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete questions in black ink and use a dark HB pencil for drawings and graphs.

Do not write with a gel pen.

Answer **all eight** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 70.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use a scientific calculator.

Quality of written communication will be assessed in Question 5.



- 1 (a) (i) Use the words provided in the box to complete the sentences below.

right

vibrate

minute

travel

create

second

transfer

All waves _____ energy from one point to another.

The frequency of a wave is the number of waves that pass a point

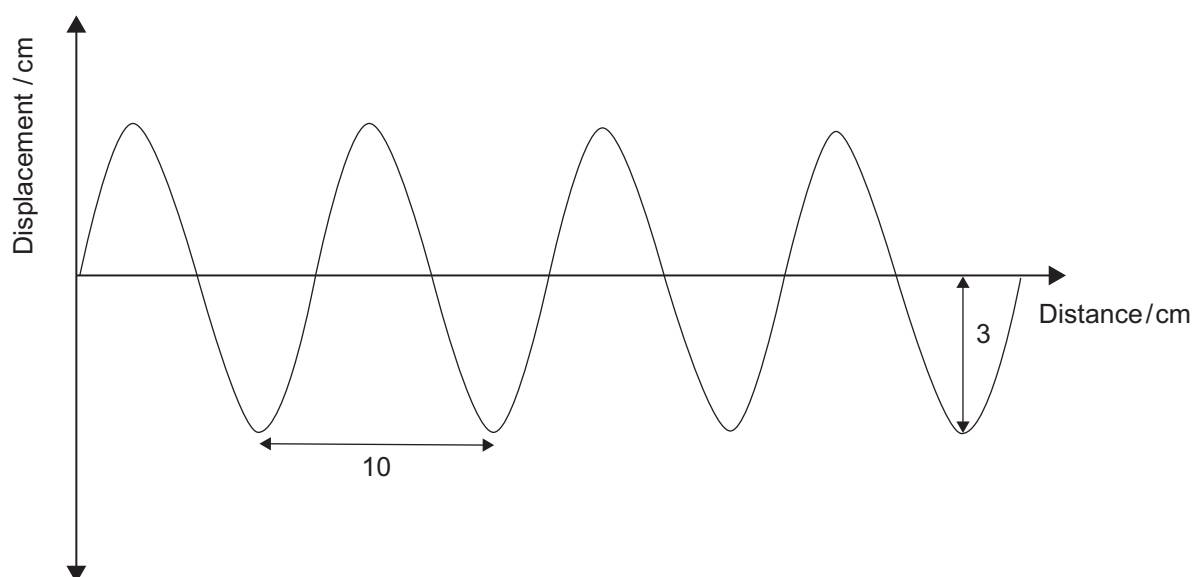
in one _____.

In a transverse wave, the particles _____ at

_____ angles to the direction of travel of the wave.

[4]

- (ii) Use the information on the graph to state the amplitude and wavelength of the wave.



Amplitude = _____ cm

Wavelength = _____ cm [2]





Source: © Getty Images

(b) A lion roars to scare other animals.

The sound wave produced has a frequency of 100 Hz and a wavelength of 3.3 m.

Use this information to calculate the speed of sound.

Show your working out.

Speed of sound = _____ m/s [3]

[Turn over



- 2 The table below shows some of the regions of the electromagnetic spectrum. They are arranged in order of increasing wavelength.

Gamma rays		increasing wavelength
Visible light		
Infrared		
Microwave		

- (a) (i) Complete the table by inserting the missing regions of the electromagnetic spectrum.

[3]

Overexposure to different regions of the electromagnetic spectrum can be dangerous to the human body in different ways.

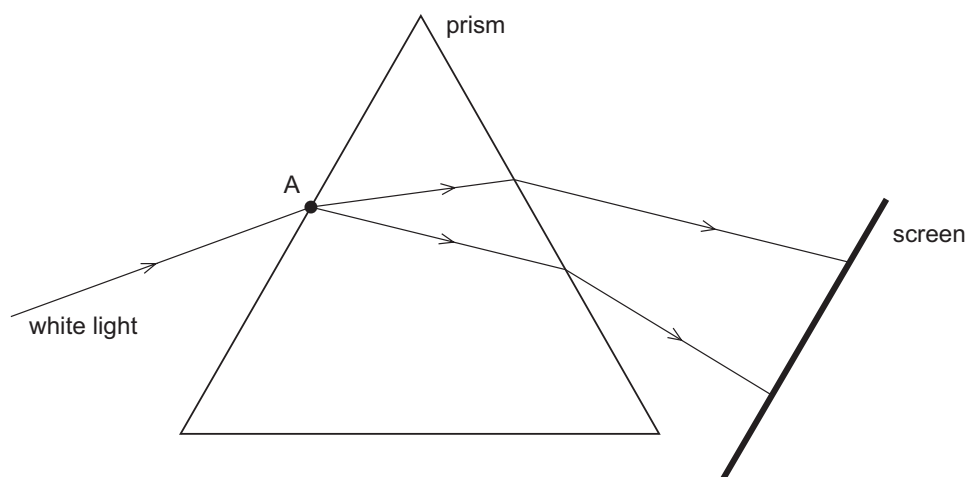
- (ii) Draw a straight line between the points below to link the wave with its main danger.

Wave		Main danger
Gamma rays	●	● Can be felt as heat and burn your skin
Intense visible light	●	● Can heat internal body tissues
Infrared	●	● Can damage cells and cause cancer
Microwave	●	● Can damage your eyes

[4]



(b) The diagram below shows what happens to white light as it passes through a glass prism.



What is the name given to the process of splitting white light up into different colours using a prism?

What is the name given to the range of colours projected onto the screen?

How many colours would you see projected onto the screen?

_____ [3]

[Turn over



3 The focal length of a converging lens can be found in a science laboratory.

(a) Place a tick (✓) in the boxes below to identify the **three** items required to find the focal length of a converging lens.

- | | |
|--------------------------|--------------------|
| ☐ | Metre rule |
| ☐ | Stop clock |
| ☐ | Top-pan balance |
| ☐ | Distant object |
| ☐ | Near object |
| ☐ | Measuring cylinder |
| ☐ | Screen |

[3]



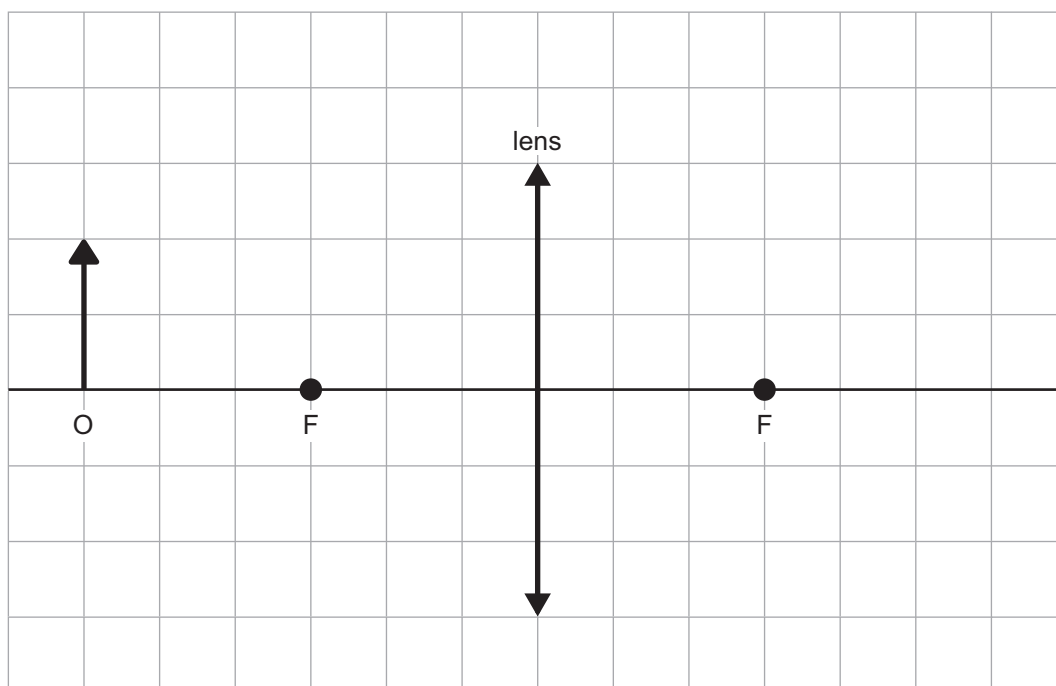
(b) The diagram below shows an object O placed 6 cm from a lens of focal length 3 cm.

Points F represent the focal points.

Complete the diagram to show how the image of O is formed.

Include the following:

- **two rays** from the top of the object;
- arrows to show the directions of the rays; and
- the image produced.



The image produced can be described using **two** of the words below.

Circle the two correct words that can be used to describe the image produced.

Only circle one word from each line.

1. Real or Virtual

2. Inverted or Upright

[6]

[Turn over



4 Materials can be classified as either electrical conductors or insulators.

Complete the following sentence.

(a) Metals are good conductors of electricity because they have

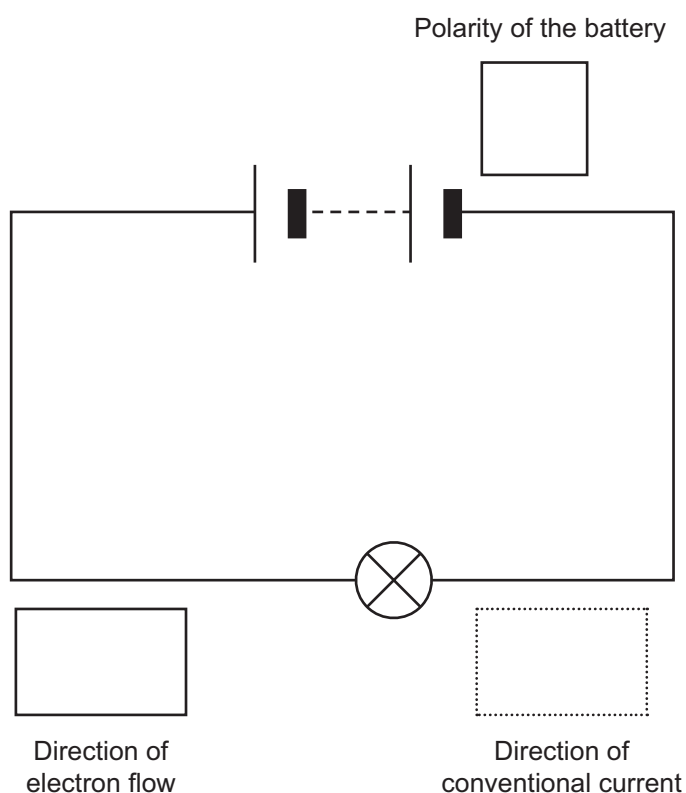
_____ electrons.

[1]

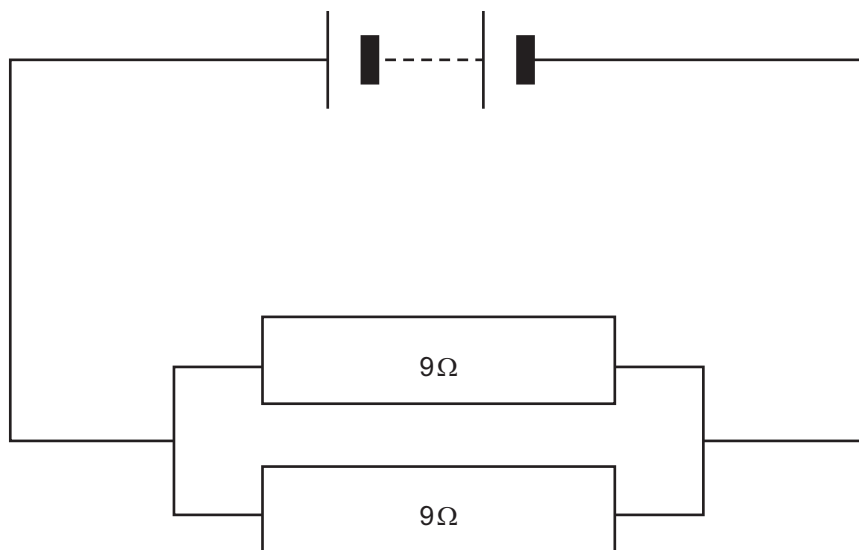
The circuit diagram below shows a lamp connected to a battery.

(b) Label the diagram to include:

- a + or – in the box to show the polarity of the battery;
- an arrow in the box to show the direction of electron flow; and
- an arrow in the dotted box to show the direction of conventional current. [3]



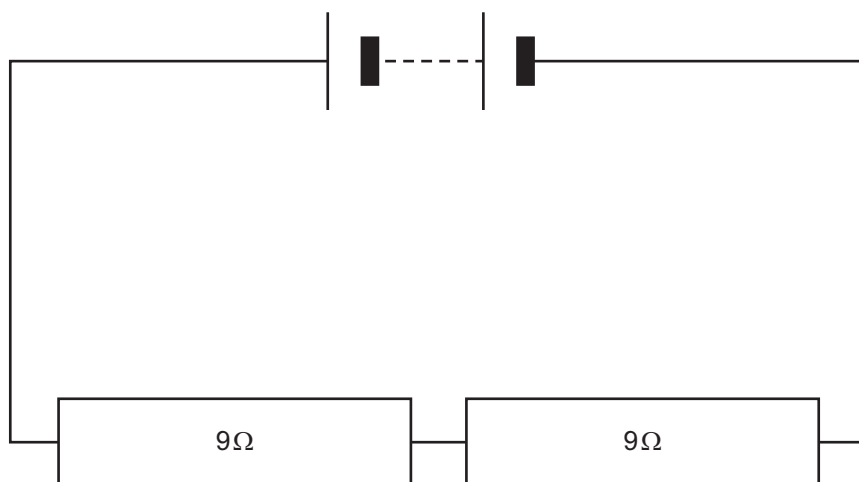
(c) Two equal resistors of 9Ω are connected as shown below.



Calculate the total resistance of this circuit.

Total resistance = _____ Ω

The same two resistors are now arranged as shown below.



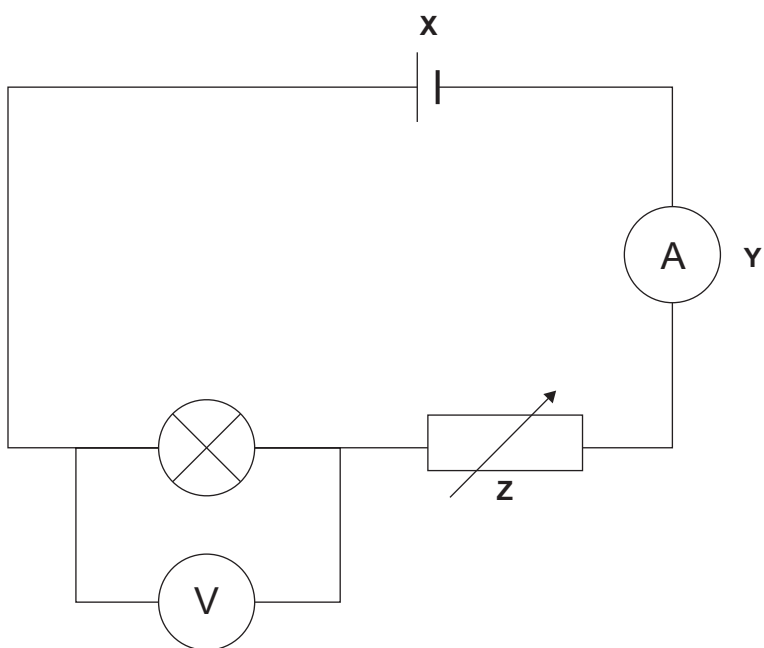
Calculate the total resistance of this circuit.

Total resistance = _____ Ω [2]

[Turn over



(d) State the names of the three components, X, Y and Z, in the circuit below.



X = _____

Y = _____

Z = _____ [3]



5 This question is about stars.

In this question you will be assessed on the quality of your written communication skills, including the use of specialist scientific terms.

Your answer should include the following:

- the materials used to form a star;

- the force involved and how this force helps form the star;

- the name of the nuclear reaction that occurs;

- how scientists know that helium is present in stars.

[6]

[Turn over



6 There are eight planets in our Solar System as shown in the diagram below.

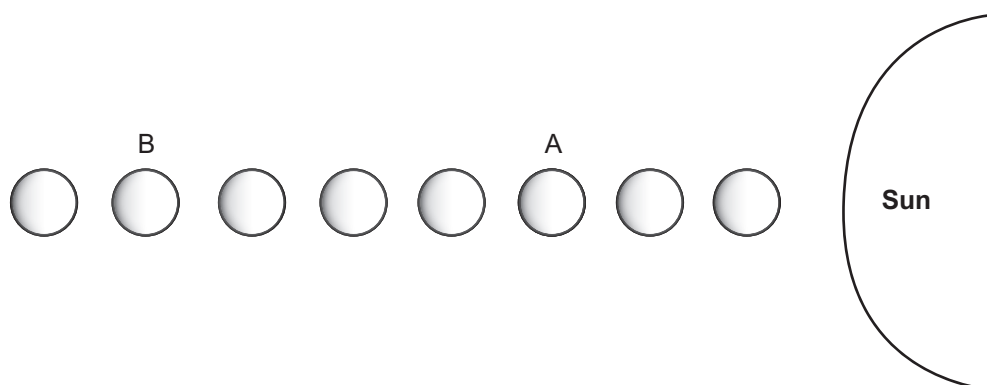


Diagram not to scale

Source: Principal Examiner

(a) What is the name of planet A?

What is the name of planet B?

On the diagram, put a circle around all of the gas planets.

What is the name of the rocky planet furthest from the Sun?

_____ [4]

(b) Give the names of **two** objects, other than planets, that orbit the Sun.

Name the force that keeps the objects in orbit.

_____ [3]





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(Questions continue overleaf)



7 When a current flows through a wire, electrical energy is changed into other forms.

(a) Give the **main** energy form that is produced and describe how it is produced.

Main energy form _____

How it is produced _____

_____ [4]

A boy plays video games for 10 minutes.



Source: © Getty Images

(b) (i) The power rating on the gaming console is 152 W.

Calculate the amount of energy used by the gaming console in the 10 minutes.

Show your working out.

Energy = _____ J [4]



- (ii) The power rating of the screen is 184 W and it is connected to a 230 V mains supply.

Calculate the current flowing to the screen.

Show your working out.

Current = _____ A [3]



Some appliances in the home use direct current (d.c.) and some use alternating current (a.c.).

(c) (i) Explain what is meant by:

Direct current _____

Alternating current _____

_____ [3]

A direct current can be shown on a cathode ray oscilloscope (CRO).

(ii) Sketch what you would see if you connected a CRO to a direct current supply.



[1]





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14721

[Turn over



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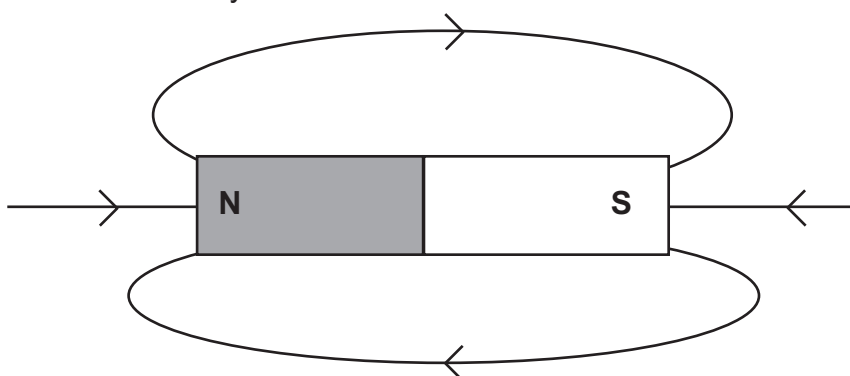
8 The magnetic field lines around a bar magnet can be traced out in a science laboratory.

- (a) What piece of equipment would you need to find the position and direction of the field lines?

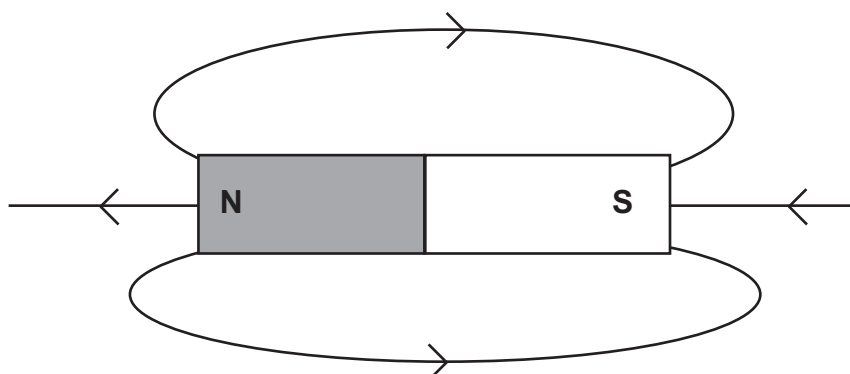
Three students have drawn the magnetic field around a bar magnet as shown.

Place a tick (✓) in the box beside the diagram of the student who has drawn the magnet and field lines correctly.

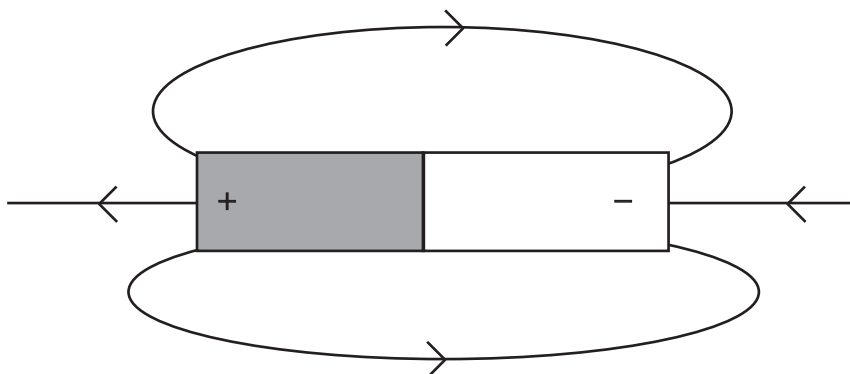
Student A

☐

Student B

☐

Student C

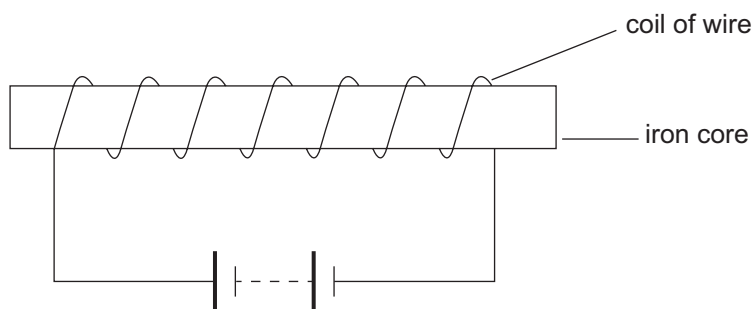
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Source: Principal Examiner

[2]



The students then made an electromagnet using a coil of wire, an iron core and a battery.



(b) State three ways to **decrease** the strength of the electromagnet.

1. _____
2. _____
3. _____ [3]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	

Total Marks	
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Examiner Number

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