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MENTOR IN REARRANGED & CLASSIFIED • MUHAMMAD RASHED CHOWDHURY •

CLASSIFIED

International Examinations Papers

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MATHEMATIC A

TOPIC- Standard form

10 2.2×10^7 passengers passed through Beijing Capital International Airport in 2014.

(a) Write 2.2×10^7 as an ordinary number.

950 000 tonnes of cargo traffic passed through Tokyo International Airport in 2014.

(b) Write 950 000 as a number in standard form.

.... (1)

(Total for Question 10 is 2 marks)

11 Mabintou invested $7500 for 3 years at 4% per year compound interest.

Calculate the value of her investment at the end of 3 years.

$ ....

(Total for Question 11 is 3 marks)

13 (a) Write 7.9×10^{-4} as an ordinary number.

(b) Work out $(6.5 \times 10^5) \times (3.1 \times 10^4)$
Give your answer in standard form.

(Total for Question 13 is 3 marks)

14 Amil invests £9000 for 3 years in a savings account.
He gets 1.8% per year compound interest.

How much money will Amil have in his savings account at the end of 3 years?

£.......................................

(Total for Question 14 is 3 marks)

22 $m = 8 \times 10^{9n}$ where n is an integer.

Express $m^{-\frac{1}{3}}$ in standard form.
Give your answer, in terms of n, as simply as possible.
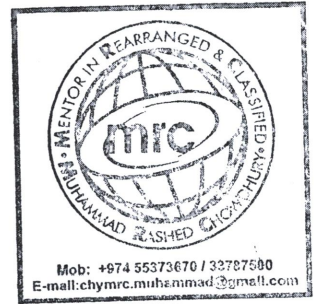
(Total for Question 22 is 3 marks)

7 (a) $x = 9 \times 10^{2m}$ where m is an integer.

Find, in standard form, an expression for $\sqrt{x}$

(b) $y = 9 \times 10^{2n}$ where n is an integer.

Find, in standard form, an expression for $y^{\frac{3}{2}}$

Give your answer as simply as possible.

(Total for Question 7 is 5 marks)

10 (a) Write 1.2×10^{-5} as an ordinary number.

<div align="right">.............................

(1)</div>

(b) Work out $7.9 \times 10^5 + 6 \times 10^4$

Give your answer in standard form.

<div align="right">.............................

(2)</div>

<div align="right">**(Total for Question 10 is 3 marks)**</div>

11 (a) Write 0.000 076 in standard form.

....

(1)

The area covered by the Pacific Ocean is 1.6×10^8 km^2
The area covered by the Arctic Ocean is 1.4×10^7 km^2

(b) Write 1.6×10^8 as an ordinary number.

....

(1)

The area covered by the Pacific Ocean is k times the area covered by the Arctic Ocean.

(c) Find, correct to the nearest integer, the value of k.

$k =$ ....

(2)

(Total for Question 11 is 4 marks)

1 $x = a \times 10^n$ where n is an integer and $\sqrt{10} \leqslant a < 10$

Find, in standard form, an expression for x^2.
Give your expression as simply as possible.

(Total for Question 1 is 3 marks)

2 The table gives the diameters, in metres, of four planets.

Planet	Diameter (metres)
Mercury	4.88×10^6
Venus	1.21×10^7
Earth	1.28×10^7
Mars	6.79×10^6

(a) Which planet has the largest diameter?

(1)

(b) Write 6.79×10^6 as an ordinary number.

....

(1)

(c) Calculate the difference, in metres, between the diameter of Venus and the diameter of Mercury.
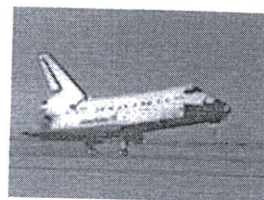
Give your answer in standard form.

.... metres

(2)

(Total for Question 2 is 4 marks)

3 The mass of the Space Shuttle is 7.8×10^4 kilograms.

(a) Write 7.8×10^4 as an ordinary number.

....

(1)

The Space Shuttle docks with the International Space Station.
The mass of the International Space Station is 4.62×10^5 kilograms.

(b) Calculate the total mass of the Space Shuttle and the International Space Station.
Give your answer in standard form.

.... kg

(2)

(Total for Question 3 is 3 marks)

5 (a) Write as an ordinary number

   (i) 4.2×10^6

   (ii) 3.82×10^{-4}

(b) Here are three numbers written in standard form.
Arrange these numbers in order of size.
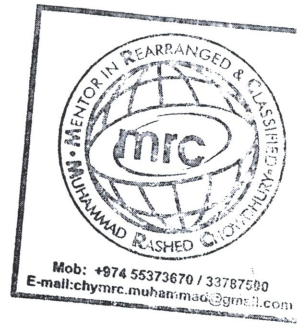Start with the smallest number.

5.6×10^{-7} $\qquad$ 8.6×10^{-9} $\qquad$ 5.64×10^{-8}

(Total for Question 5 is 4 marks)

4 The table shows the diameters, in kilometres, of five planets.

Planet	Diameter (km)
Venus	1.2×10^4
Jupiter	1.4×10^5
Neptune	5.0×10^4
Mars	6.8×10^3
Saturn	1.2×10^5

(a) Which of these planets has the smallest diameter?

....

(1)

(b) Calculate the difference, in kilometres, between the diameter of Saturn and the diameter of Neptune.
Give your answer in standard form.

.... km

(2)

The diameter of the Moon is 3.5×10^3 km.
The diameter of the Sun is 1.4×10^6 km.

(c) Calculate the ratio of the diameter of the Moon to the diameter of the Sun.
Give your answer in the form $1 : n$

....

(2)

(Total for Question 4 is 5 marks)

6 The table shows the surface areas, in km², of five oceans.

Ocean	Surface area (km²)
Atlantic	7.68×10^7
Indian	6.86×10^7
Pacific	1.56×10^8
Southern	2.03×10^7
Arctic	1.41×10^7

(a) Which of these oceans has the largest surface area?

....

(1)

(b) Work out the total surface area, in km², of all five oceans.
     Give your answer in standard form.

.... km²

(2)

The total surface area of the Earth is 5.10×10^8 km².
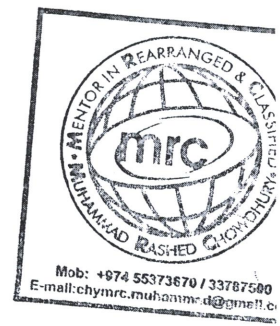
(c) Express the total surface area of the five oceans as a percentage of the total surface
     area of the Earth.
     Give your answer correct to 1 decimal place.

.... %

(2)

(Total for Question 6 is 5 marks)

8 The table shows the land areas, in km², of four countries.

Country	Land area (km²)
Ethiopia	1.13×10^6
Algeria	2.38×10^6
Nigeria	9.24×10^5
Kenya	5.83×10^5

(a) Which country has the largest land area?

....

(1)

(b) Calculate the total land area, in km², of all four countries.
Give your answer in standard form.

.... km²

(2)

Population density is calculated by the formula

> Population density = Population ÷ Land area

(c) In one year, the population of Ethiopia was 7.91×10^7
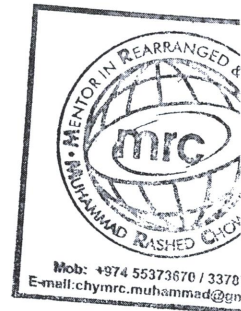Calculate the population density of Ethiopia for that year.

.... people / km²

(2)

(Total for Question 8 is 5 marks)

9 The table shows the population of each of three countries in 2012.

Country	Population
India	1.21×10^9
Turkey	7.48×10^7
Singapore	5.2×10^6

(a) Find the total population of India, Turkey and Singapore in 2012.
Give your answer in standard form.

....

(2)

Population density is calculated by the formula

Population density = Population ÷ Land area

The land area of India is 3.29×10^6 km^2

(b) Calculate the population density of India in 2012.
Give your answer correct to 3 significant figures.

.... people/km^2

(2)

(Total for Question 9 is 4 marks)

12 The table shows some information about the five Great Lakes in North America.

Name	Surface area (m²)	Volume of water (m³)
Lake Erie	2.57×10^{10}	4.80×10^{11}
Lake Huron	6.01×10^{10}	3.52×10^{12}
Lake Michigan	5.80×10^{10}	4.87×10^{12}
Lake Ontario	1.91×10^{10}	1.64×10^{12}
Lake Superior	8.21×10^{10}	1.22×10^{13}

(a) Work out the total surface area of the five Great Lakes.
   Give your answer in standard form.

.... m²

(2)

Loch Ness is the largest lake in Scotland.
The lake has a volume of water of 7.45×10^9 m³

The volume of water in Lake Superior is k times the volume of water in Loch Ness.

(b) Work out the value of k.
   Give your answer correct to 3 significant figures.

$k = $ ....

(2)

(Total for Question 12 is 4 marks)