Past Papers Worksheet P2 & P4 Standard Form IGCSE Mathematics 0580



[Q1 – Q12]

1. Write the following as an ordinary number
   (a) 2.8×10^2 [1]
   (b) 4.82×10^{-3} [1]

2. Write the following in standard form
   (a) 2016 [1]
   (b) 2760000 [1]
   (c) 72000 [1]
   (d) 23000 [1]
   (e) 15 060 [1]
   (f) 0.00527 [1]
   (g) 0.0018 [1]
   (h) 0.0000574 [1]
   (i) 0.0000523 [1]
   (j) 0.0000387 [1]
   (k) 0.00813 [1]
   (l) 0.0605 [1]
   (m) 52 million [1]
   (n) 0.00567×10^9 [1]
   (o) 8450000×10^{-4} [1]

3. The number 1.467×10^{102} is written as an ordinary number.
   Write down the number of zeros that follow the digit 7.[1]

4. Work out the following, giving your answers in standard form
   (a) $(6.4 \times 10^7) + (9.6 \times 10^6)$ [2]

   (b) $0.1 \times 5.1 \times 10^4$, [1]

   (c) $1.2 \times 10^{40} + 1.2 \times 10^{41}$ [2]

   (d) $2.5 \times 10^8 \times 2 \times 10^{-2}$ [2]

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(e) $4 \times 10^{-5} \times 6 \times 10^{12}$ [2]

(f) $(4.3 \times 10^{8}) + (2.5 \times 10^{7})$ [2]

(g) $2 \times (5.5 \times 10^{4})$ [2]

(h) $(5.5 \times 10^{4}) - (5 \times 10^{4})$ [2]

(i) $600 \div 8000$ [2]

(j) $10^{8} - 7 \times 10^{6}$ [2]

(k) $2(3 \times 10^{8} - 4 \times 10^{6})$ [2]

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(l) $3 \times 10^{199} + 2 \times 10^{201}$

(m) $2.1 \times 10^{p} + 2.1 \times 10^{p-1}$

(n) $2 \times 10^{100} - 2 \times 10^{98}$ [2]

(o) $1.5 \times 10^{x} + 1.5 \times 10^{x-1}$

5. Here are some numbers written in standard form.

   3.4×10^{-1} 1.36×10^{6} 7.9×10^{0} 2.4×10^{5} 5.21×10^{-3} 4.3×10^{-2}

   From these numbers, write down

   (a) the largest number, [1]

   (b) the smallest number. [1]

   0580/22/M/J/18 Q8)

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6. $p = 4 \times 10^5$ $q = 5 \times 10^4$
   Find, giving your answer in standard form
   (a)pq [2]
   (b)q/p [2]
   0580/21/M/J/14 Q12)

7. $w = \frac{1}{\sqrt{LC}}$
   Find w in standard form when $L = 8 \times 10^{-3}$ and $C = 2 \times 10^{-9}$ [3]
   0580/22/O/N/11 Q18)

8. There were 3.08×10^5 passengers that made a journey in 2018.
   This was a 12% decrease in the number of passengers that made this journey in 2017. Find the number of passengers that made this journey in 2017. Give your answer in standard form. [3]
   0580/43/M/J/19 Q1(c)

9. A hummingbird beats its wings 24 times per second.
   (a) Calculate the number of times the hummingbird beats its wings in one hour. [1]
   (b) Write your answer to part (a) in standard form. [1]
   0580/21/M/J/11 Q5)

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10. Change 64 square metres into square millimetres.
    Give your answer in standard form.
    0580/22/M/J/10 Q6)

11. 1 second = 10^6 microseconds.
    Change 3×10^{13} microseconds into minutes. Give your answer in standard form. [2]
    0580/23/M/J/10 Q9)

12. A film costs four million and ninety three thousand dollars to make.
    Write this amount in standard form. [1]
    0580/42/O/N/15 Q1(d)(ii)

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13. S = ut + $\frac{1}{2}at^2$
    Find s when t = 26.5, u = 104.3 and a = -2.2 .
    Give your answer in standard form, correct to 4 significant figures. [4]
    0580/41/M/J/19 Q7(a)(i)



[Q13 – Q17]

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14. Each apple tree produces 16 boxes of apples each year.
One box contains 18kg of apples.
Calculate the total mass of apples produced by the 720 trees in one year.
Give your answer in standard form.
0580/42/O/N/19 Q1(a)

15. The number of spectators at the 2010 World Cup match between Argentina and Mexico was 82 000 correct to the nearest thousand.
If each spectator paid 2600 Rand (R) to attend the game, what is the lower bound for the total amount paid?
Write your answer in standard form.
0580/22/O/N/12 Q7)

16. The distance from Hong Kong to Johannesburg is 10712 km.
The plane uses fuel at the rate of 1 litre for every 59 metres travelled.
Calculate the number of litres of fuel used for the journey from Johannesburg to Hong Kong.
Give your answer in standard form. [4]
0580/42/O/N/13 Q7(c)

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17. Distances from the Sun can be measured in astronomical units, AU.
Earth is a distance of 1 AU from the Sun.
One AU is approximately 1.496×10^8 km.
The table shows distances from the Sun.

Name	Distance from the Sun in AU	Distance from the Sun in kilometres
Earth	1	1.496×10^8
Mercury	0.387	.....
Jupiter	.....	7.79×10^8
Pluto	.....	5.91×10^9

(a) Complete the table. [3]
(b) Light travels at approximately 300 000 kilometres per second.
(i) How long does it take light to travel from the Sun to Earth?
Give your answer in seconds. [2]
(ii) How long does it take light to travel from the Sun to Pluto?
Give your answer in minutes. [2]
(c)One light year is the distance that light travels in one year (365 days).
How far is one light year in kilometres?
Give your answer in standard form. [3]
(d) How many astronomical units (AU) are equal to one light year?
0580/41/O/N/12 Q9

Answers

1. (a)280 (b) 0.00482

2. (a) 2.016×10^3 (b) 2.76×10^6 (c) 7.2×10^4 (d) 2.3×10^4 (e) 1.506×10^4 (f) 5.27×10^{-3} (g) 1.8×10^{-3} (h) 5.74×10^{-5} (i) 5.23×10^{-5} (j) 3.87×10^{-5} (k) 8.13×10^{-3} (l) 6.05×10^{-2} (m) 5.2×10^7 (n) 5.6×10^6 (o) 8.45×10^2

3. 99

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4. (a) 7.36×10^7 (b) 5.1×10^3 (c) 1.32×10^{41} (d) 5.0×10^6 (e) 2.4×10^8 (f) 4.55×10^8
(g) 1.1×10^5 (h) 5.0×10^3 (i) 7.5×10^{-2} (j) 9.30×10^7 (k) 5.92×10^8 (l) 2.03×10^{201}
(m) 2.31×10^p (n) 1.98×10^{100} (o) 1.65×10^x

5. (a) 1.36×10^6 (b) 5.21×10^{-3}

6. (a) 2×10^{10} (b) 1.25×10^{-1}

7. 2.5×10^5

8. 3.5×10^5

9. (a) 86400 (b) 8.64×10^4

10. 6.4×10^7

11. $5(.00) \times 10^5$

12. 4.093000×10^6

13. 1.991×10^3

14. $2.0736[0] \times 10^5$

15. 2.119×10^8

16. 1.82×10^5

17 (a) 5.79×10^7 5.21 39.5 (b) (i) 499 (ii) 328 (c) 9.46×10^{12} (d) 63200

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