Standard Form – www.m4ths.com – Steve B!

(1) Write each of the following ordinary numbers in standard form:
(a) 2500   (b) 93200   (c) 37000000
(d) 18   (e) 78120   (f) One million

(2) Write each of the following ordinary numbers in standard form:
(a) 0.18   (b) 0.0005   (c) 0.108900000
(d) 0.000076   (e) 0.00276   (f) $\frac{3}{1000}$

(3) Write each of the following numbers as ordinary numbers:
(a) 1.8×10^3 (b) 4.78×10^5 (c) 1×10^7
(d) 3.1×10^4 (e) 2.003×10^3 (f) 9×10^1

(4) Write each of the following numbers as ordinary numbers:
(a) 1.3×10^{-4} (b) 8.2×10^{-2} (d) 1.07×10^{-1}
(d) 3×10^{-6} (e) 9.022×10^{-3} (f) 9×10^{-9}

(5) Circle **ALL** the numbers below from the 6 given that are **not** in standard form:
8.7×10^2 12.3×10^4 3×10^6
0.67×10^{-2} 5.8×100^2 7.2×10^{-2}

(6) Put the following numbers in order of size, smallest first:
(a) 8.2×10^6 (b) 9.98×10^5 (c) 8.47×10^5

(7) Put the following numbers in order of size, smallest first:
(a) 1.2×10^6 (b) 1.02×10^5 (c) 1.002×10^7

(8) Put the following numbers in order of size, smallest first:
(a) 1.2×10^{-7} (b) 6.98×10^{-8} (c) 3.8×10^{-7}

(9) Without a calculator, find the value of each. Give your answers in standard form:
(a) $(4 \times 10^5) \times (2 \times 10^2)$
(b) $(1.2 \times 10^4) \times (3 \times 10^8)$
(c) $(5 \times 10^3) \times (4 \times 10^9)$
(d) $(7 \times 10^2) \times (1.2 \times 10^8)$
(e) $(4.3 \times 10^{-8}) \times (4 \times 10^{10})$
(f) $(8 \times 10^{10}) \div (2 \times 10^3)$
(g) $(5.5 \times 10^8) \div (5 \times 10^9)$
(h) $(4.8 \times 10^5) \div (2.2 \times 10^{-12})$
(i) $(6.4 \times 10^{-5}) \div (8 \times 10^9)$
(j) $(4.5 \times 10^{-7}) \div (1.5 \times 10^{-3})$

(k) $\left(\frac{9.6 \times 10^{-7}}{4.8 \times 10^{-12}}\right)$

(l) $\left(\frac{5.4 \times 10^8}{1.35 \times 10^{-2}}\right)$

(10) Given that $N \times (1.8 \times 10^{12}) = (5.4 \times 10^{10})$ write N as an ordinary number.

(11) A circle has radius $0.6cm$.
(a) Show that the area of the circle can be written as $(3.6 \times 10^{-1})\pi \; cm^2$
(b) Find the circumference of the circle in standard form.

(12) A particle travels $(4 \times 10^8)km$ with a speed of $(2 \times 10^6)m/s$. Find the time taken for the particle to complete its journey. Give your answer as a normal number in hours.

(13) Given that $(p \times 10^q)^2 = 4.9 \times 10^{11}$, find the values of p and q.

(14) Fully simplify the ratio
$$(2.4 \times 10^5) : (7.2 \times 10^2)$$

(15) Write the number sixty-two thousand and thirty-four in standard form.

(16) What percentage of nine hundred is the number 1.8×10^3 ?

(17) Write each of the following in standard form without using a calculator:
(a) $(5 \times 10^8) + (4 \times 10^9)$
(b) $(7.1 \times 10^{13}) + (1.2 \times 10^{12})$
(c) $(8.3 \times 10^{10}) - (2.8 \times 10^9)$
(d) $(5.7 \times 10^4) + (1.2 \times 10^3)$
(e) $(5.2 \times 10^{-3}) + (4 \times 10^3)$
(f) $(9.9 \times 10^{12}) + (5.27 \times 10^{10})$
(g) $(6 \times 10^{-2}) - (2 \times 10^{-3})$
(h) $(3 \times 10^{-4}) + (1.2 \times 10^{-6})$
(i) $(8 \times 10^{-5}) - (4 \times 10^{-8})$

(18) Given that, in standard form:
$$(a \times 10^2) \times (b \times 10^5) = (c \times 10^7)$$
Find the set of values of ab.

(18) Given that, in standard form:
$$(p \times 10^2) \times (q \times 10^5) = (r \times 10^6)$$
Find the set of values of pq.

(19) Given that $(k \times 10^n)^6$ is not written in standard form, find the possible set of values of both k and n. Explain your answer fully.