STANDARD FORM AND INDICES
YEARS 9 AND 10

1 **$4x^0$ is equal to:**

A 1 B 4
C 40 D the expression cannot be evaluated unless x is specified.

2 **$2ab^5$ means:**

A $2 \times a \times b \times b \times b \times b \times b$ B $10 \times a \times b$
C $2a \times 2b^5$ D $2ab \times 2ab \times 2\ ab \times 2ab \times 2\ ab$

3 **The basic numeral for 2^{-3} is:**

A -6 B -8 C $\frac{1}{8}$ D $\frac{1}{6}$

4 **$(2a^3)^4$ is equal to:**

A $8a^{12}$ B $2a^{12}$ C $16a^{12}$ D $212a^{12}$

5 **540 000 000, when expressed in standard form, is equal to:**

A 5.4×10^7 B 5.4×10^8
C 54×10^7 D 5.4×10^{-8}

6 **$ab^{-5}c^3$ is equal to:**

A $\frac{1}{ab^5c^3}$ B $\frac{b^5}{ac^3}$ C $\frac{c^3}{ab^5}$ D $\frac{ac^3}{b^5}$

7 **The basic numeral for 2.33×10^{-4} is:**

A $\frac{1}{23\,300}$ B 23 300

C 0.000 023 3 D 0.000 233

8 $\frac{a^4}{3b^{-2}}$ **is equal to:**

A $\frac{a^4b^2}{3}$ B $\frac{3b^2}{a^4}$ C $\frac{ab^6}{3}$ D $3a^4b^2$

9 **When expressed with positive indices, $\frac{a^6b^7}{a^3b^{-7}}$ is equal to:**

A a^2 B a^3 C a^2b^{14} D a^3b^{14}

10 **$(4a^{-6})^{-2}$ is equal to:**

A $-8a^{12}$ B $\frac{a^{12}}{16}$ C $-\frac{8}{a^8}$ D $4a^{12}$

11 **$\sqrt{x^{-16}}$ is equal to:**

A $\frac{1}{x^4}$ B $\frac{1}{x^8}$ C $-x^4$ D $-x^8$

12 **The basic numeral for $9^{\frac{1}{2}}$ is:**

A 4 ½ B 3 C $\frac{1}{81}$ D -3

13 **$m^{-2}n^7p^4 \times m^2n^{-9}p$ is equal to:**

A $\frac{p^5}{n^2}$ B $\frac{p^4}{n^2}$ C $\frac{mp^5}{n^2}$ D $\frac{mp^4}{n^2}$

14 **When expressed in simplest form with positive indices, $\frac{a^5}{b^4} \div \frac{b^4}{a^3}$ is:**

A a^2 B a^8 C $\frac{a^8}{b^8}$ D $\frac{a}{b}$

15 **$\frac{30a^6bc^4}{6a^6b^2c^8}$ is equal to:**

A $\frac{24a}{bc^4}$ B $\frac{24}{bc^2}$ C $\frac{5}{bc^2}$ D $\frac{5}{bc^4}$

16 **0.000 010 2 written in standard form is:**

A 1.02×10^{-5} B 1.02×10^{-4}
C 1.02×10^{5} D 1.2×10^{-5}

17 **If a spacecraft travelled at 2×10^4 kph from the Earth to the Moon, which is a distance of 4×10^5 km, the time it would take is:**

A 20 hours B 80 hours C 6×10^9 hours D 8×10^9 hours

18 $\frac{9\times10^{24}\times6\times10^{-12}}{12\times10^{10}}$ **is equal to:**

A 3×10^{2} B 4.5×10^{2}

C 3×10^{22} D 4×10^{22}

19 $\sqrt{2^{-6}}$ **is equal to:**

A 1^{-6} B 1^{-3}

C $\frac{1}{2^{3}}$ D You can't find the square root of a negative number.

20 $125^{\frac{2}{3}}$ **is equal to:**

A 25 B $83\frac{1}{3}$ C $\frac{1}{125}$ D 10

THE NEXT **2** QUESTIONS REFER TO THE FOLLOWING INFORMATION.

The diameter of a red blood cell is about 8×10^{-5}cm.

21 If an artery could accommodate about 4 000 of these cells across its width, its diameter would be approximately.

A 0.000 02 cm B 0.005 cm
C 0.02 cm D 0.32 cm

22 The number of red blood cells which will fit into a line exactly 1 metre long is:

A 1.25×10^{-4} B 1.25×10^{8}

C 1.25^{6} D 1.25×10^{6}

23 The basic numeral for $2^{-2} + 3^{-1}$ is:

A $\frac{1}{125}$ B $\frac{1}{7}$ C $\frac{7}{12}$ D -7

24 The basic numeral for $\frac{(2^{x+1})^{4}}{4^{2x}}$ is:

A 2 B 8
C 16 D Unable to be determined unless the value of x is known.

25 **The basic numeral for $\frac{3a^{-7} \times 2a^{-3} \times a^{7}}{12a^{7} \times (a^{-5})^{2}}$ is:**

A $\frac{5}{12}$

B $\frac{1}{2}$

C -7

D Unable to be determined unless the value of a is known.

26 **The average distance between the Sun and the Earth is 1.5 x 10^{8} km. The distance around the Earth's Equator is 40 000 km. A journey from the Earth to the Sun would be equivalent to travelling around the Equator approximately:**

A 400 times

B 4 000 times

C 25 000 times

D 6 x 10^{12} times

27 **The basic numeral for $\frac{(-10)^{5} \times -10^{20}}{10^{-20} \times (-10^{9})^{5}}$ is:**

A $\frac{1}{9}$

B 1

C -1

D $\frac{1}{1\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$

28 **The only perfect square in the following list is:**

A 4x B x^{9} C x^{6} D $x^{½}$

29 **2^{9} x 5^{9} is equal to:**

A 10^{9} B 10^{18} C 7^{18} D 7^{9}

30 **If $2^{x-5} = 32$, then x equals:**

A 11 B 10 C 21 D 2^{10}

ANSWERS TO STANDARD FORM AND INDICES

1	B	2	A	3	C	4	C	5	B	6	D
7	D	8	A	9	D	10	B	11	B	12	B
13	A	14	C	15	D	16	A	17	A	18	B
19	C	20	A	21	D	22	D	23	C	24	C
25	B	26	B	27	C	28	C	29	A	30	B