MATHS

BOOKS - SWAN PUBLICATION

EXPONENTS AND POWERS

Exercise 3 1

1. Fill in the blank

In the expression 3^7, base =............ And exponent = ...

2. Fill in the blank

In the expression $\left(\dfrac{2}{5}\right)^{11}$, base = ... And exponent = ...

3. Find the value of:

2^6

4. Find the value of the

9^3

5. Find the value of the

5^5

6. Find the value of the

$$(-6)^4$$

7. Find the value of the

$$\left(-\frac{2}{3}\right)^5$$

8. Express the in the exponential form :

$6 \times 6 \times 6$

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9. Express the following in exponential form:

$b \times b \times b \times b$

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10. Express the following in exponential form:

5 × 5× 7 × 7 × 7

11. Simplify the

2×10^3

12. Simplify the

$$5^2 \times 3^2$$

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13. Simplify the

$$3^2 \times 10^3$$

▶ Watch Video Solution

14. Simplify :

$$(- 3) \times (- 2)^3$$

15. Simplify :

$$(- 4)^3 \times 5^2$$

16. Simplify :

$$(-1)^{99}$$

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17. Simplify :

$$(-3)^2 \times (-5)^2$$

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18. Simplify :

$$(-1)^{132}$$

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19. Identify the greater number in each of the

$$4^3 \ \text{or} \ 3^4$$

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20. Identify the greater number in each of the

5^3 or 3^2

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21. Identify the greater number in each of the

2^3 or 8^2

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22. Identify the greater number in each of the

4^5 or 5^4

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23. Identify the greater number in each of the

2^{10} or 10^2

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24. Write the number as power of 2 :

8

25. Write the number as power of 2 :

256

26. Write the number as power of 2 :

1024

27. Write the number as power of 3 :

27

28. Write the number as power of 3 :

2187

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29. Find the value of x in each of the

$$7^x = 343$$

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30. Find the value of x in each of the

$$9^x = 729$$

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31. Find the value of x in each of the

$$(-8)^x = -512$$

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32. To what power (-2) should be raised to get 16 ?

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33. Write the prime factorization of the number in the exponential form :

72

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34. Write the prime factorization of the number in the exponential form :

360

35. Write the prime factorization of the number in the exponential form :

405

36. Write the prime factorization of the number in the exponential form :

648

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37. Write the prime factorization of the number in the exponential form :

3600

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1. Using laws of exponents, simplify and write the in the exponential form.

$$2^7 \times 2^4$$

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2. Using laws of exponents, simplify and write the in the exponential form.

$$p^5 \times p^3$$

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3. Using laws of exponents, simplify and write the in the exponential form.

$$(- 7)^5 \times (- 7)^{11}$$

4. Using laws of exponents, simplify and write the in the exponential form.

$$20^{18} \div 20^{14}$$

5. Using laws of exponents, simplify and write the in the exponential form.

$20^{15} \div 20^{13}$

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6. Using laws of exponents, simplify and write the in the exponential form.

$7^x \times 7^3$

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7. Simplify and write the in exponential form :

$$5^3 \times 5^7 \times 5^{12}$$

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8. Simplify and write the in exponential form :

$$a^5 \times a^3 \times a^7$$

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9. Simplify and write the in the exponential form :

$$\left(2^2\right)^{100}$$

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10. Simplify and write the in the exponential form :

$$\left(5^3\right)^7$$

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11. Simplify and write in the exponential form :

$$\left(2^3\right)4 \div 2^5$$

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12. Simplify and write in the exponential form :

$$2^3 \times 2^2 \times 5^5$$

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13. Simplify and write in the exponential form :

$$\left[\left(2^2\right)^3 \times 3^6\right] \times 5^6$$

14. Simplify and write in the exponential form :

$$5^4 \times 8^4$$

15. Simplify and write in the exponential form :

$$(- 3)^6 \times (- 5)^6$$

16. Simplify and express each of the in the exponential form :

$$\frac{\left(3^2\right) \times (-2)^5}{(-2)^3}$$

17. Simplify and express each of the following in exponential form:

$$\frac{3^7}{3^4 \times 3^3}$$

18. Simplify and express each of the in the exponential form :

$$\frac{2^8 \times a^5}{4^3 \times a^3}$$

19. Simplify and express each of the in the exponential form :

$$3^0 \times 4^0 \times 5^0$$

20. Express each of the rational number in the exponential form :

$$\frac{25}{64}$$

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21. Express each of the rational number in the exponential form :

$$\frac{-64}{125}$$

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22. Express each of the rational number in the exponential form :

$$\frac{-125}{216}$$

23. Express each of the rational number in the exponential form :

$$\frac{-343}{729}$$

24. Simplify :

$$\frac{\left(2^5\right)^2 \times 7}{8^3 \times 7}$$

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25. Simplify :

$$\frac{2 \times 3^4 \times 2^5}{9 \times 4^2}$$

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26. Express each of the as a product of prime factors in the exponential form

384×147

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27. Express each of the following as a product of prime factors only in exponential form:

729×64

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28. Express each of the as a product of prime factors in the exponential form

108×92

29. Simplify and write the in the exponential form :

$3^3 \times 2^2 + 2^2 \times 5^0$

30. Simplify and write the in the exponential form :

$$\frac{3^7}{3^2} \times 3^5$$

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31. Simplify and write the in the exponential form :

$$8^2 \div 2^3$$

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32. Multiple choice question :

$\left(\dfrac{-5}{8}\right)^0$ is equal

A. 0

B. 1

C. $\dfrac{-5}{8}$

D. $\dfrac{-8}{5}$

Answer: B

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33. Multiple choice question :

$\left(5^2\right)^3$ is equal to

    A. 5^6

    B. 5^5

    C. 5^9

    D. 10^3

Answer: A

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34. Multiple choice question :

$a \times a \times a \times b \times b \times b$ is equal to

A. $a^3 b^2$

B. $a^2 b^3$

C. $(ab)^3$

D. $a^6 b^6$

Answer: C

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35. Multiple choice question :

$(- 5)^2 \times (- 1)^1$ is equal to

    A. 25

    B. -25

    C. 10

    D. -10

Answer: C

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1. Write the number in the expanded exponential form :

104278

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2. Write the number in the expanded exponential form :

20068

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3. Write the number in the expanded exponential form :

120719

4. Write the following numbers in expanded forms :

3006194

5. Write the following numbers in expanded forms :

2806196

6. Find the number from each of the expanded form :

$$4 \times 10^4 + 7 \times 10^3 + 5 \times 10^2 + 6 \times 10^1 + 1 \times 10^0$$

7. Find the number from each of the following expanded forms:

$$3 \times 10^4 + 7 \times 10^2 + 5 \times 10^\circ$$

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8. Find the number from each of the following expanded forms:

$$4 \times 10^5 + 5 \times 10^3 + 3 \times 10^2 + 2 \times 10^\circ$$

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9. Find the number from each of the expanded

form :

$$8 \times 10^7 + 3 \times 10^4 + 7 \times 10^3 + 5 \times 10^2 + 8 \times 10^1$$

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10. Express the number in standard form :

$3, 43, 000$

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11. Express the following numbers in standard form:

70,00,000

12. Express the following numbers in standard form:

3,18,65,00,000

13. Express the number in standard form :

5307

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14. Express the following numbers in the standard form:

5985.3

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15. Express the following numbers in standard form:
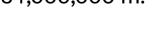
3908.78

16. Express the number appearing in the following statements in standard form

The distance between Earth and Moon is 384,000,000 m.

17. Express the number appearing in the following statements in standard form

Diameter of the Earth is 1,27,56,000 m.

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18. Express the number appearing in the following statements in standard form

Diameter of the Sun is 1,400,000,000 m

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19. Express the number appearing in the following statements in standard form

The universe is estimated to be about 12,000,000,000 years old.

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20. Express the number appearing in the statement in standard form :

Mass of uranis is $86, 800, 000, 000, 000, 000, 000, 000, 000kg$

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21. Compare the following numbers

$4 \times 10^{14}, 3 \times 10^{17}$

22. Compare the number

$1.439 \times 10^{12}, 1.4335 \times 10^{12}$

1. What is value of $(-5)^4$?

    A. 125

    B. -125

    C. 625

    D. -625

Answer: C

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2. What is exponential form of $a \times a \times a \times c \times c \times c \times d$?

A. $a^4 c^4 d$

B. $a^4 c^3 d$

C. $a^3 c^4$

D. $a^3 c^4 d$

Answer: D

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3. Solve $9^{11} \div 9^7$ and what will be its exponential form ?

    A. 9^{18}

    B. 9^{77}

    C. 9^4

    D. $\dfrac{1}{9^4}$

Answer: C

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4. What is value of $(-1)^{99}$?

A. 1

B. 0

C. -1

D. None of these

Answer: C

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5. What is exponential form of $\dfrac{-32}{243}$?

A. $\left(\dfrac{2}{3}\right)^{-5}$

B. $\left(\dfrac{2}{3}\right)^{6}$

C. $\left(\dfrac{-2}{3}\right)^{5}$

D. None of these

Answer: C

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6. $2^{x} \times 2^{y} \times 2^{x} = \text{..........}$

A. $2^{x \times y \times z}$

B. $2^{xy + xz}$

C. $2^{y(x+z)}$

D. 2^{x+y+z}

Answer: D

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7. What is value of $\left(2^{-1} - 2\right)^2$?

A. $\dfrac{-3}{2}$

B. $\dfrac{-9}{4}$

C. $\dfrac{9}{4}$

D. $\dfrac{3}{2}$

Answer: C

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8. What is value of $2^{\circ} \times 3^{\circ} \times 4^{\circ}$?

A. 14

B. 9

C. 1

D. 24

Answer: C

9. What is value of $2° + 5° + 6°$?

A. 13

B. 60

C. 3

D. 1

Answer: C

10. What is value of $\left(\dfrac{a^5}{a^3} \right) \times a^8$?

A. $a^{40/a}$

B. a^{10}

C. a^{16}

D. a^6

Answer: B

11. Which of the following statement is true ?

    A. $10 \times 10^{11} = 100^{11}$

    B. $2^3 > 5^2$

    C. $2^3 \times 3^2 = 6^5$

    D. $3^\circ = (1000)^\circ$

Answer: D

12. What is value of $\dfrac{6^\circ \times 5^\circ + 4^\circ \times 3^\circ}{18^\circ}$?

A. 1

B. $\dfrac{1}{2}$

C. 2

D. 3

Answer: C

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13. Whiche one is greatest 3^2, 2^3 or 3^3 ?

A. 2^3

B. 3^2

C. 3^3

D. None of these

Answer: C

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14. What is value of $\left[\left(5^3\right)^2 \times 5\right] \div 5^{10}$?

A. 5^2

B. 5^{26}

C. 5^1

D. 5^{-2}

Answer: A

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15. What is value of $\left(\dfrac{1}{2}\right)^{-2} + \left(\dfrac{1}{3}\right)^{-2} + \left(\dfrac{1}{4}\right)^{-2}$?

A. $\dfrac{16}{144}$

B. $\dfrac{144}{16}$

C. 29

D. $\dfrac{1}{29}$

Answer: C

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16. Which of the following statement is not true ?

A. $a^m \times a^n = a^{m+n}$

B. $a^m \times b^m = (ab)^m$

C. $a^m + b^n = \left(\dfrac{a}{b}\right)^{m-n}$

D. $(a^m)^n = a^{mn}$

Answer: C

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17. Which of the following statement is true ?

Standard form of 39087.8 is ....

A. 3.90878×10^4

B. 2.90878×10^4

C. 2.90878×10^3

D. 2.90878×10^2

Answer: B

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Other Important Questions Fill In The Blanks

1. In expression $(-5)^7$ Base : .... And exponent ....

2. $(-1)^{\text{odd natural number}} = $ ....

3. $5^0 + 7^0 + 9^0 = $ ....

4. Exponential form

$$3 \times 3 \times 3 \times 5 \times 5 \times 5x = \text{....................}$$

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5. $(10000)^0 = \text{....................}$

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6. $a^m \div a^n = \text{..............}$

7. $a^{-n} = $ ....

8. $(a^m)^n = $ ....

9. Standard form of 47000000 = ...

10. $a \times a \times a \times a \times \ldots\ldots\ldots n$ times $=$

....

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Other Important Questions True False

1. Which of the statement is true and which is false

If a any non zero rational number then

$$a^0 = a.$$

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2. Which of the statement is true and which is false

$$(-1)^{\text{even natural number}} = -1$$

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3. Which of the statement is true and which is false

Value of $(-3)^4$ is -81

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4. Which of the statement is true and which is false

$a^m \div a^n = a^{m+n}$

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5. Which of the statement is true and which is false

$$\left(5^0 + 7^0\right) \times 2^0 = 2$$

6. Which of the statement is true and which is false

$$5^2 + 5^4 = 5^6$$

7. Which of the statement is true and which is false

If a is any non zero rational number and n is an iteger then $\dfrac{1}{a^n} = a^{-n}$

8. Which of the statement is true and which is false

Standard form of 03576 is 0.3576×10^4