MATHS

BOOKS - SWAN PUBLICATION
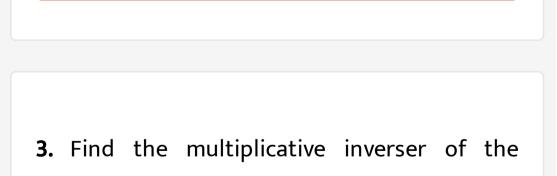
EXPONENTS AND POWERS

Try These

1. Find the multiplicative inverse of the following :

2^{-4}

2. Find the multiplicative inverser of the following :

10^{-5}

3. Find the multiplicative inverser of the following :

7^{-2}

4. Find the multiplicative inverse of the following :

5^{-3}

5. Find the multiplicative inverser of the following :

$10^{-(100)}$

6. Expand the following numbers using exponents:

$1025 \cdot 63$

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7. Expand the following numbers using exponents:

$1256 \cdot 249$

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8. Simplify and write in exponential form:

$$(- 2)^{-3} \times (- 2)^{-4}$$

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9. Simplify and write in exponential form:

$$p^3 \times p - (10).$$

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10. Simplify and write in exponential form:

$$3^2 \times 3^{-5} \times 3^6.$$

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11. Write the following numbers in standard form:

$0.000000564.$

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12. Write the following numbers in standard form:

0.0000021

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13. Write the following numbers in standard form:

21600000

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14. Write the following number in standard form :

15240000

15. Observe the following facts :

(1) The distance from the Earth to the Sun is 149,600,000,000m

(2)The speed of light is 300,000,000 m/sec.

(3) Thickness of class VII Mathematics book is 20mm

(4) The average diameter of a Red Blood cell is 0.00007mm.

(5) The thickness of human hair is in the range of 0.005 cm to 0.01 cm.

(6) The distance of moon from the Earth is 384,467,000 m. (approx.)

(7) The size of a plant cell is 0.00001275m.

(8) Average radius of the Sun is 695000km.

(9) Mass of propellant in a space shuttle solid rocket booster is 503600kg

(10) Thickness of a piece or paper is 0.0016cm.

(11) Diameter of a wire on a computer chip is 0.000003m.

(12) The height of Mount Everest is 8848m.

There some large number like 150,000,000,000m and some every small numbers like 0.000007m.

Identify very large and very small numbers from the above facts and write them in the adjacent table.

Very large numbers	Very small numbers
150,000,000,000m	0.000007m

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

Speed of light in vacuum is 300,000,000 m/s.

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17. Write all the facts given in the standard form .

Thickness of class VII Mathematics book = 20 mm

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18. Write all the facts given in the standard form .

Average diameter of a Red Blood Cell = 0.000007 mm

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19. Observe the following facts :

(1) The distance from the Earth to the Sun is 149,600,000,000m

(2)The speed of light is 300,000,000 m/sec.

(3) Thickness of class VII Mathematics book is 20mm

(4) The average diameter of a Red Blood cell is 0.00007mm.

(5) The thickness of human hair is in the range of 0.005 cm to 0.01 cm.

(6) The distance of moon from the Earth is 384,467,000 m. (approx.)

(7) The size of a plant cell is 0.00001275m.

(8) Average radius of the Sun is 695000km.

(9) Mass of propellant in a space shuttle solid rocket booster is 503600kg

(10) Thickness of a piece or paper is 0.0016cm.

(11) Diameter of a wire on a computer chip is 0.000003m.

(12) The height of Mount Everest is 8848m. There some large number like 150,000,000,000m and some every small numbers like 0.000007m.

Identify very large and very small numbers from the above facts and write them in the adjacent table.

Very large numbers	Very small numbers
150,000,000,000m	0.000007m

20. Write all the facts given in the standard form .

Distance of Moon from the Earth = 384,467,000 m

21. Express the number appearing in the following : Size of a plant cell is 0.00001275 m

22. Observe the following facts :

(1) The distance from the Earth to the Sun is 149,600,000,000m

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(5) The thickness of human hair is in the range of 0.005 cm to 0.01 cm.

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23. Observe the following facts :

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150,000,000,000m	0.000007m

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25. Observe the following facts :

(1) The distance from the Earth to the Sun is 149,600,000,000m

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Very large numbers	Very small numbers
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26. Observe the following facts :

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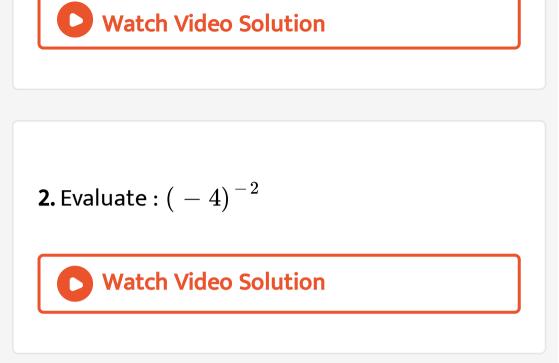
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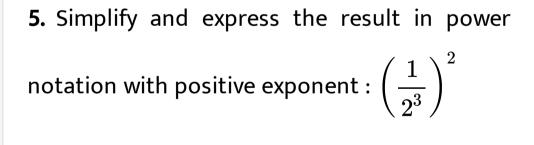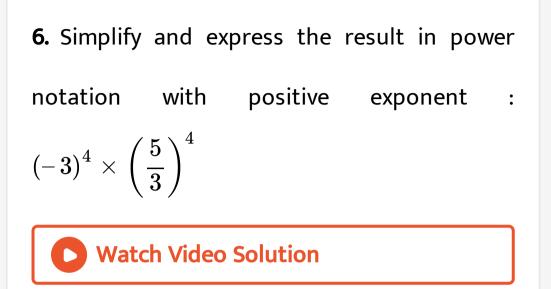
Exercise 12 1

1. Evaluate : 3^{-2}

2. Evaluate : $(-4)^{-2}$

3. Evaluate : $\left(\dfrac{1}{2}\right)^{5}$

4. Simplify and express the result in power notation with positive exponent :

$(-4)^5 \div (-4)^8$

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5. Simplify and express the result in power notation with positive exponent : $\left(\dfrac{1}{2^3}\right)^2$

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6. Simplify and express the result in power notation with positive exponent :

$$(-3)^4 \times \left(\frac{5}{3}\right)^4$$
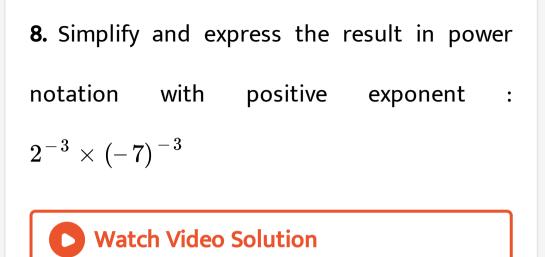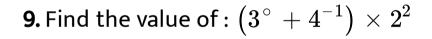
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7. Simplify and express the result in power notation with positive exponent :

$$\left(3^{-7} \div 3^{-10}\right) \times 3^{-5}$$

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8. Simplify and express the result in power notation with positive exponent :

$2^{-3} \times (-7)^{-3}$

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9. Find the value of : $\left(3^{\circ} + 4^{-1}\right) \times 2^{2}$

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10. Find the value of : $\left(2^{-1} \times 4^{-1}\right) \div 2^{-2}$

11. Find the value of :

$$\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2}$$

12. Find the value of : $\left(3^{-1} + 4^{-1} + 5^{-1}\right)^{\circ}$

13. Find the value of

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

14. Evaluate : $\dfrac{8^{-1} \times 5^{3}}{2^{-4}}$

15. Evaluate : $\left(5^{-1} \times 2^{-1} \right) \times 6^{-1}$

16. Find the value of m for which

$$5^m \div 5^{-3} = 5^5$$

17. Evaluate : $1\left\{\left(\dfrac{1}{3}\right)^{-1} - \left(\dfrac{1}{4}\right)^{-1}\right\}^{-1}$

18. Evaluate : $\left(\dfrac{5}{8}\right)^{-7} \times \left(\dfrac{8}{5}\right)^{-4}$

19. Simplify : $\dfrac{25 \times t^{-4}}{5^{-3} \times 10 \times t^{-8}} \ (t \neq 0)$

20. Simplify : $\dfrac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$

1. Express the following numbers in standard form : 0.00000000000085

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2. Express the following numbers in standard form : 0.00000000000942

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3. Express the following numbers in standard form : 60200000000000000
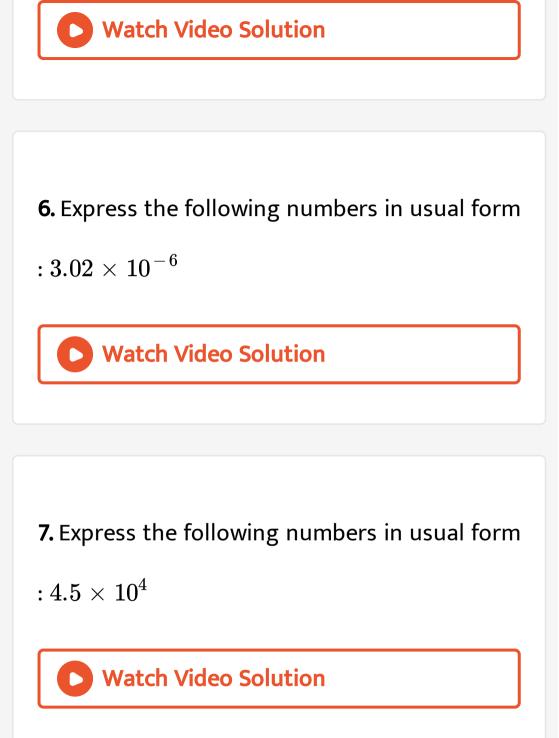
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4. Express the following numbers in standard form : 0.00000000837

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5. Express the following numbers in standard form : 31860000000

6. Express the following numbers in usual form

: 3.02×10^{-6}

7. Express the following numbers in usual form

: 4.5×10^{4}

8. Express the following numbers in usual form

$: 3 \times 10^{-8}$

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9. Express the following numbers in usual form

$: 1.0001 \times 10^{9}$

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10. Express the following numbers in usual form : 5.8×10^{12}

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11. Express the following numbers in usual form : 3.61492×10^{6}

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12. Express the number appearing in the following : statements in standard form : 1 micron is equal to $\dfrac{1}{1000000} m$

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

Charge of an electron is 0.000,000,000,000,000,000,16 coulomb.

14. Express the number appearing in the following statements in standard form:

Size of Red blood cell is 0.000007 m.

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15. Express the number appearing in the following statements in standard form:

Size of Red blood cell is 0.000007 m.

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16. Express the number appearing in the following : Thickness of a thick paper is 0.07 mm

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17. In a stack there are 5 books each of thickness 20mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stack.

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