MATHS

BOOKS - UNITED BOOK HOUSE

Variation

Exercise

1. Multiple Choice Questions (MCQ) If $x \propto y$ and $y \propto z$ then which one of the following relation is correct?

A. $xy \propto z$

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

C. $x \propto z$

D. $x \propto yz$

Answer:

2. If $x \propto \dfrac{1}{y}$ and $y \propto \dfrac{1}{z}$ then which one of the following relation is correct?

A. $x \propto \dfrac{1}{z}$

B. $x \propto z$

C. $x \propto yz$

D. none of these.

Answer:

3. If $y \propto x^2$ and y = 9 when x = 9, then the value of x when y = 4 is

A. -6

B. 6

C. ± 6

D. none of these.

Answer:

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4. If $x \propto y$, $y \propto z$, $z \propto t$ and $t \propto x$ where the constants of variation are k, l, m, n then

A. klnm = 1

B. kl = mn

C. kn = lm

D. lkm = n.

Answer:

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5. If a is inversely proportional to b and b is inversely proportional to c then what is proportionality between a and c?

6. If $x^2 \propto yz$, $y^2 \propto zx$ and $z^2 \propto xy$, then the rlation among the three constants of variation is

A. 1

B. $\sqrt{2}$

C. 3

D. 4

Answer:

7. $a \propto b$ and if b = 9 then a = 6, which of the following ratio is equal to a : b

    A. 8 : 9

    B. 9 : 8

    C. 3 : 2

    D. 2 : 3.

Answer:

▶

8. If $\left(ax + \dfrac{b}{y}\right) \propto \left(cx + \dfrac{d}{y}\right)$ and a, b, c, d are non zero constants, then

A. $x \propto y$

B. $x \propto \dfrac{1}{y}$

C. xy = constant

D. none of these.

Answer:

9. If y is directly proportional to x and y=5 when x=2, what is the value of y when x=16?

A. 20

B. 25

C. 35

D. 40

Answer:

10. If $\dfrac{1}{y} - \dfrac{1}{x} \propto \dfrac{1}{x} - \dfrac{1}{y}$ then find the relation between x and y.

A. $x \propto \dfrac{1}{y}$

B. $x \propto y$

C. $x \propto y^2$

D. $y \propto x^2$.

Answer:

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11. If $a \propto b$, $b \propto c$, $c \propto d$ and $d \propto a$, where the variation constants are k, l, m, n respectively then___

A. kl = mn

B. km = ln

C. klm = n

D. klmn =l

Answer:

12. If $x \propto \dfrac{1}{y}$ and $y \propto \dfrac{1}{z}$ then which one of the following relation is correct?

A. $x \propto yz$

B. $x \propto \dfrac{y}{z}$

C. $x \propto \dfrac{1}{z}$

D. $x \propto z$

Answer:

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13. If $(b - c) \propto bc, (c - a) \propto ca$ and $(a - b) \propto ab$ where k,l,m are the respective variation constants, then___

    A. k + l + m = 1

    B. klm = 1

    C. k + l + m = 0

    D. kl + lm + mk = 0

Answer:

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14. Given $V \propto r^3$ and V = 18Pi` when r = 3. Then

relation between V and r is____

A. $V = \dfrac{4}{3}\Pi r^3$

B. $V = \dfrac{1}{3}\Pi r^3$

C. $V = \dfrac{2}{3}\Pi r^3$

D. $V = \Pi r^3$

Answer:

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15. X men can plough Y acres of land in Z days.

Then the correct relation is____

    A. $X \propto YZ$

    B. $X \propto \dfrac{Y}{Z}$

    C. $X \propto \dfrac{Z}{Y}$

    D. $Z \propto XY$

Answer:

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16. $x \propto y + z$, $y \propto z + x$ and $z \propto x + y$ and three variation constants are k, l, m respectively. Then_____

    A. k + 1 + m =1

    B. k/k + 1 + 1/1 + 1 + m/m + 1 = 0

    C. k/k + 1 + 1/1 + 1 + m/m +1 =1

    D. k +1/k + 1 + 1/1 + m + 1/m =1

Answer:

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17. If 20 men can build a wall 56 metres long in 6 days what length of a similar wall can be built by 35 men in 3 days?

    A. 49 metres

    B. 36 metres

    C. 52 metres

    D. 42 metres

Answer:

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18. 120 men had food provisions for 200 days. After 5 days, 30 men died due to an epidemic. The remaining food will last for____

A. 146 1/4 days

B. 150 days

C. 2251/2 days

D. 260 days

Answer:

19. 12 men, working 8 hours a day, complete a piece of work in 10 days. To complete the same work in 8 days, working 15 hours a day, the number of men required is_____

A. 4

B. 5

C. 6

D. 8

Answer:

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20. The resistance of a wire varies directly with its length and inversely with its area. If a certain piece of wire 10 m long and 0.10 cm in diameter has a resistance of 100 ohms, what will its resistance be if its is uniformly srretched so that its length becomes 12 m?

A. 80

B. 90

C. 144

D. 120

Answer:

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21. Given that 'w' varies directly as the product of x and y and inversely as the square of z and that W = 4 when x = 2, y = 6 and z = 3 find the value of w when x =1, y = 4 and z = 2__

A. 3

B. 4

C. 5

D. 6

Answer:

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22. The time required for an elevater to life a weight varies directly with the weight and the distance through which it is to be lifted and inversely as the power of the motor. If its takes

30 seconds for a 10 hp moter to lift 100 lbs through 50 feet, what size of moter is requiered to lift 800 lbs in 40 seconds through 40 feet?

A. 42

B. 44

C. 46

D. 48

Answer:

23. The electic power which a transmission line can transmit is proportional to the product of its design voltage and current capacity, and inversely to the transmission distance. A 115 kilovolt line rated at 100 amperes can transmit 150 meganults over 150 km. How much power, in mega watts can a 230 kilovolt line rated at 150 amperes transmit over100 km?

A. 785

B. 485

C. 675

D. 595

Answer:

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