

Maharashtra Board Solutions Class 8-Maths

(Practice Set 7.1): Chapter 7- Variation



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Maharashtra Board Solutions Class 8-Maths

(Practice Set 7.1): Chapter 7- Variation

Class 8: Maths Chapter 7 solutions. Complete Class 8 Maths Chapter 7 Notes.

Maharashtra Board Solutions Class 8-Maths (Practice Set 7.1): Chapter 7- Variation

Maharashtra Board 8th Maths Chapter 7, Class 8 Maths Chapter 7 solutions

Question 1.

Write the following statements using the symbol of variation.

1. Circumference (c) of a circle is directly proportional to its radius (r).
2. Consumption of petrol (l) in a car and distance traveled by that car (d) are in direct variation.

Solution:

1. $c \propto r$
2. $l \propto d$

Question 2.

Complete the following table considering that the cost of apples and their number are in direct variation.

	1	4	___	12	___
Number of apples (x)					
Cost of apples (y)	8	32	56	___	160

Solution:

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The cost of apples (y) and their number (x) are in direct variation.

$$\therefore y \propto x$$

$$\therefore y = kx \dots (i)$$

where k is the constant of variation

i. When, $x = 1$, $y = 8$

$\therefore$ Substituting, $x = 1$ and $y = 8$ in (i), we get $y = kx$

$$\therefore 8 = k \times 1$$

$$\therefore k = 8$$

Substituting $k = 8$ in (i), we get

$$y = kx$$

$$\therefore y = 8x \dots (ii)$$

This the equation of variation

ii. When, $y = 56$, $x = ?$

$\therefore$ Substituting $y = 56$ in (ii), we get

$$y = 8x$$

$$\therefore 56 = 8x$$

$$\therefore x = \frac{56}{8}$$

$$\therefore x = 7$$

iii. When, $x = 12$, $y = ?$

$\therefore$ Substituting $x = 12$ in (ii), we get

$$y = 8x$$

$$\therefore y = 8 \times 12$$

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$$\therefore y = 96$$

iv. When, $y = 160$, $x = ?$

$\therefore$ Substituting $y = 160$ in (ii), we get

$$y = 8x$$

$$\therefore 160 = 8x$$

$$\therefore x = \frac{160}{8}$$

$$\therefore x = 20$$

	1	4	7	12	20
Number of apples (x)					
Cost of apples (y)	8	32	56	96	160

Question 3.

If $m \propto n$ and when $m = 154$, $n = 7$. Find the value of m , when $n = 14$.

Solution:

Given that,

$$m \propto n$$

$$\therefore m = kn \dots (i)$$

where k is constant of variation.

When $m = 154$, $n = 7$

$\therefore$ Substituting $m = 154$ and $n = 7$ in (i), we get

$$m = kn$$

$$\therefore 154 = k \times 7$$

$$\therefore k = \frac{154}{7}$$

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$$\therefore k = 22$$

Substituting $k = 22$ in (i), we get

$$m = kn$$

$$\therefore m = 22n \dots (ii)$$

This is the equation of variation.

When $n = 14$, $m = ?$

$\therefore$ Substituting $n = 14$ in (ii), we get

$$m = 22n$$

$$\therefore m = 22 \times 14$$

$$\therefore m = 308$$

Question 4.

If n varies directly as m , complete the following table.

m	3	5	6.5	___	1.25
-----	---	---	-----	-----	------

n	12	20	___	28	___
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Solution:

Given, n varies directly as m

$$\therefore n \propto m$$

$$\therefore n = km \dots (i)$$

where, k is the constant of variation

i. When $m = 3$, $n = 12$

$\therefore$ Substituting $m = 3$ and $n = 12$ in (i), we get

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$$n = km$$

$$\therefore 12 = k \times 3$$

$$\therefore k = \frac{12}{3}$$

$$\therefore k = 4$$

Substituting, $k = 4$ in (i), we get

$$n = km$$

$$\therefore n = 4m \dots (ii)$$

This is the equation of variation.

ii. When $m = 6.5$, $n = ?$

$\therefore$ Substituting, $m = 6.5$ in (ii), we get

$$n = 4m$$

$$\therefore n = 4 \times 6.5$$

$$\therefore n = 26$$

iii. When $n = 28$, $m = ?$

$\therefore$ Substituting, $n = 28$ in (ii), we get

$$n = 4m$$

$$\therefore 28 = 4m$$

$$\therefore 28 = 4m$$

$$\therefore m = \frac{28}{4}$$

$$\therefore m = 7$$

iv. When $m = 1.25$, $n = ?$

$\therefore$ Substituting $m = 1.25$ in (ii), we get

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$$n = 4m$$

$$\therefore n = 4 \times 1.25$$

$$\therefore n = 5$$

	3	5	6.5	7	1.25
m					

n	12	20	26	28	5
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Question 5.

y varies directly as square root of x. When $x = 16$, $y = 24$. Find the constant of variation and equation of variation.

Solution:

Given, y varies directly as square root of x.

$$\therefore y \propto \sqrt{x}$$

$$\therefore y = k\sqrt{x} \dots (i)$$

where, k is the constant of variation.

When $x = 16$, $y = 24$.

$\therefore$ Substituting, $x = 16$ and $y = 24$ in (i), we get

$$y = k\sqrt{x}$$

$$\therefore 24 = k\sqrt{16}$$

$$\therefore 24 = 4k$$

$$\therefore k = \frac{24}{4}$$

$$\therefore k = 6$$

Substituting $k = 6$ in (i), we get

$$y = 6\sqrt{x}$$

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$$\therefore y = 6\sqrt{x}$$

This is the equation of variation

$\therefore$ The constant of variation is 6 and the equation of variation is $y = 6\sqrt{x}$.

Question 6.

The total remuneration paid to laborers, employed to harvest soybean is in direct variation with the number of laborers. If remuneration of 4 laborers is Rs 1000, find the remuneration of 17 laborers.

Solution:

Let, m represent total remuneration paid to laborers and n represent number of laborers employed to harvest soybean.

Since, the total remuneration paid to laborers, is in direct variation with the number of laborers.

$$\therefore m \propto n$$

$$\therefore m = kn \dots (i)$$

where, k = constant of variation

Remuneration of 4 laborers is Rs 1000.

i. e., when $n = 4$, $m = \text{Rs } 1000$

$\therefore$ Substituting, $n = 4$ and $m = 1000$ in (i), we get $m = kn$

$$\therefore 1000 = k \times 4$$

$$\therefore k = \frac{1000}{4}$$

$$\therefore k = 250$$

Substituting, $k = 250$ in (i), we get

$$m = kn$$

$$\therefore m = 250n \dots (ii)$$

This is the equation of variation

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Now, we have to find remuneration of 17 laborers.

i. e., when $n = 17$, $m = ?$

∴ Substituting $n = 17$ in (ii), we get

$$m = 250 n$$

$$∴ m = 250 \times 17$$

$$∴ m = 4250$$

∴ The remuneration of 17 laborers is Rs 4250.

Intext Questions and Activities

Question 1.

If the rate of notebooks is Rs 240 per dozen, what is the cost of 3 notebooks?

Also find the cost of 9 notebooks, 24 notebooks and 50 notebooks and complete the following table. (Textbook pg. no. 35)

	12	3	9	24	50	1
Number of notebooks (x)						
Cost (In Rupees) (y)	240	—	—	—	—	20

Solution:

As the number of notebooks increases their cost also increases.

∴ Number of notebooks and cost of notebooks are in direct proportion.

i.

$$\frac{12}{240} = \frac{3}{y}$$

$$\therefore \frac{12}{12 \times 20} = \frac{3}{y}$$

$$\therefore \frac{1}{20} = \frac{3}{y}$$

$$\therefore y = 3 \times 20$$

$$\therefore y = 60$$

ii.

$$\frac{12}{240} = \frac{9}{y}$$

$$\therefore \frac{1}{20} = \frac{9}{y}$$

$$\therefore y = 9 \times 20$$

$$\therefore y = 180$$

iii.

$$\frac{12}{240} = \frac{24}{y}$$

$$\therefore \frac{1}{20} = \frac{24}{y}$$

$$\therefore y = 24 \times 20$$

$$\therefore y = 480$$

iv.

$$\frac{12}{240} = \frac{50}{y}$$

$$\therefore \frac{1}{20} = \frac{50}{y}$$

$$\therefore y = 50 \times 20$$

$$\therefore y = 1000$$

	12	3	9	24	50	1
Number of notebooks (x)						
Cost (In Rupees) (y)	240	60	180	480	1000	20



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- Chapter 1- Rational and Irrational Numbers (Practice Set 1.1)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.2)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.3)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.4)
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- Chapter 2- Parallel Lines and Transversals (Practice Set 2.2)
- Chapter 2- Parallel Lines and Transversals (Practice Set 2.3)
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- Chapter 3- Indices and Cube Root (Practice Set 3.2)
- Chapter 3- Indices and Cube Root (Practice Set 3.3)
- Chapter 4- Altitudes and Medians of a Triangle (Practice Set 4.1)
- Chapter 5- Expansion Formulae (Practice Set 5.1)
- Chapter 5- Expansion Formulae (Practice Set 5.2)
- Chapter 5- Expansion Formulae (Practice Set 5.3)
- Chapter 5- Expansion Formulae (Practice Set 5.4)
- Chapter 6- Factorisation of Algebraic Expressions (Practice Set 6.1)
- Chapter 6- Factorisation of Algebraic Expressions (Practice Set 6.2)
- Chapter 6- Factorisation of Algebraic Expressions (Practice Set 6.3)
- Chapter 6- Factorisation of Algebraic Expressions (Practice Set 6.4)
- Chapter 7- Variation (Practice Set 7.1)

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- Chapter 7- Variation (Practice Set 7.2)
- Chapter 7- Variation (Practice Set 7.3)
- Chapter 8- Quadrilateral: Constructions and Types (Practice Set 8.1)
- Chapter 8- Quadrilateral: Constructions and Types (Practice Set 8.2)
- Chapter 8- Quadrilateral: Constructions and Types (Practice Set 8.3)
- Chapter 9- Discount and Commission (Practice Set 9.1)
- Chapter 9- Discount and Commission (Practice Set 9.2)
- Chapter 10- Division of Polynomials (Practice Set 10.1)
- Chapter 10- Discount and Commission (Practice Set 10.2)
- Chapter 11- Statistics (Practice Set 11.1)
- Chapter 11- Statistics (Practice Set 11.2)
- Chapter 11- Statistics (Practice Set 11.3)
- Chapter 12- Equations in One Variable (Practice Set 12.1)
- Chapter 12- Equations in One Variable (Practice Set 12.2)
- Chapter 13- Congruence of Triangles (Practice Set 13.1)
- Chapter 13- Congruence of Triangles (Practice Set 13.2)
- Chapter 14- Compound Interest (Practice Set 14.1)
- Chapter 14- Compound Interest (Practice Set 14.2)
- Chapter 15- Area (Practice Set 15.1)
- Chapter 15- Area (Practice Set 15.2)
- Chapter 15- Area (Practice Set 15.3)
- Chapter 15- Area (Practice Set 15.4)
- Chapter 15- Area (Practice Set 15.5)
- Chapter 15- Area (Practice Set 15.6)
- Chapter 16- Surface Area and Volume (Practice Set 16.1)

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- Chapter 16- Surface Area and Volume (Practice Set 16.2)
- Chapter 16- Surface Area and Volume (Practice Set 16.3)
- Chapter 17- Factorisation of Algebraic Expressions (Practice Set 17.1)
- Chapter 17- Factorisation of Algebraic Expressions (Practice Set 17.2)

About About Maharashtra State Board (MSBSHSE)

The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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FAQs

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Who developed the Maharashtra State board books?

As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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