

Maharashtra Board Solutions Class 8-Maths

(Practice Set 7.3): Chapter 7- Variation



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Maharashtra Board Solutions Class 8-Maths

(Practice Set 7.3): Chapter 7- Variation

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

Maharashtra Board Solutions Class 8-Maths (Practice Set 7.3): Chapter 7- Variation

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

Question 1.

Which of the following statements are of inverse variation?

- i. Number of workers on a job and time taken by them to complete the job.
- ii. Number of pipes of same size to fill a tank and the time taken by them to fill the tank.
- iii. Petrol filled in the tank of a vehicle and its cost.
- iv. Area of circle and its radius.

Solution:

i. Let, x represent number of workers on a job, and y represent time taken by workers to complete the job.

As the number of workers increases, the time required to complete the job decreases.

$$\therefore x \propto \frac{1}{y}$$

ii. Let, n represent number of pipes of same size to fill a tank and t represent time taken by the pipes to fill the tank.

As the number of pipes increases, the time required to fill the tank decreases.

$$\therefore n \propto \frac{1}{t}$$

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iii. Let, p represent the quantity of petrol filled in a tank and c represent the cost of the petrol.

As the quantity of petrol in the tank increases, its cost increases.

$$\therefore p \propto c$$

iv. Let, A represent the area of the circle and r represent its radius.

As the area of circle increases, its radius increases.

$$\therefore A \propto r$$

$\therefore$ Statements (i) and (ii) are examples of inverse variation.

Question 2.

If 15 workers can build a wall in 48 hours, how many workers will be required to do the same work in 30 hours?

Solution:

Let, n represent the number of workers building the wall and t represent the time required.

Since, the number of workers varies inversely with the time required to build the wall.

$$\therefore n \propto \frac{1}{t}$$

$$\therefore n = k \times \frac{1}{t}$$

where k is the constant of variation

$$\therefore n \times t = k \dots (i)$$

15 workers can build a wall in 48 hours,

i.e., when $n = 15$, $t = 48$

$\therefore$ Substituting $n = 15$ and $t = 48$ in (i), we get

$$n \times t = k$$

$$\therefore 15 \times 48 = k$$

$$\therefore k = 720$$

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Substituting $k = 720$ in (i), we get

$$n \times t = k$$

$$\therefore n \times t = 720 \dots (ii)$$

This is the equation of variation.

Now, we have to find number of workers required to do the same work in 30 hours.

i.e., when $t = 30$, $n = ?$

$\therefore$ Substituting $t = 30$ in (ii), we get

$$n \times t = 720$$

$$\therefore n \times 30 = 720$$

$$\therefore n = 720/30$$

$$\therefore n = 24$$

$\therefore$ 24 workers will be required to build the wall in 30 hours.

Question 3.

120 bags of half litre milk can be filled by a machine within 3 minutes find the time to fill such 1800 bags?

Solution:

Let b represent the number of bags of half litre milk and t represent the time required to fill the bags.

Since, the number of bags and time required to fill the bags varies directly.

$$\therefore b \propto t$$

$$\therefore b = kt \dots (i)$$

where k is the constant of variation.

Since, 120 bags can be filled in 3 minutes

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i.e., when $b = 120$, $t = 3$

∴ Substituting $b = 120$ and $t = 3$ in (i), we get

$$b = kt$$

$$∴ 120 = k \times 3$$

$$∴ k = 1203$$

$$∴ k = 40$$

Substituting $k = 40$ in (i), we get

$$b = kt$$

$$∴ b = 40 t \dots(ii)$$

This is the equation of variation.

Now, we have to find time required to fill 1800 bags

∴ Substituting $b = 1800$ in (ii), we get

$$b = 40 t$$

$$∴ 1800 = 40 t$$

$$∴ t = 180040$$

$$∴ t = 45$$

∴ 1800 bags of half litre milk can be filled by the machine in 45 minutes.

Question 4.

A car with speed 60 km/hr takes 8 hours to travel some distance. What should be the increase in the speed if the same distance is

to be covered in 712 hours?

Solution:

Let v represent the speed of car in km/hr and t represent the time required.

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Since, speed of a car varies inversely as the time required to cover a distance.

$$\therefore v \propto \frac{1}{t}$$

$$\therefore v = k \times \frac{1}{t}$$

where, k is the constant of variation.

$$\therefore v \times t = k \dots (i)$$

Since, a car with speed 60 km/hr takes 8 hours to travel some distance.

i.e., when $v = 60$, $t = 8$

$\therefore$ Substituting $v = 60$ and $t = 8$ in (i), we get

$$v \times t = k$$

$$\therefore 60 \times 8 = k$$

$$\therefore k = 480$$

Substituting $k = 480$ in (i), we get

$$v \times t = k$$

$$\therefore v \times t = 480 \dots (ii)$$

This is the equation of variation.

Now, we have to find speed of car if the same distance is to be covered in 7.5 hours.

i.e., when $t = 7.5$, $v = ?$

$\therefore$ Substituting, $t = 7.5$ in (ii), we get

$$v \times t = 480$$

$$\therefore v \times 7.5 = 480$$

$$v = \frac{480}{7.5} = 64$$

$$\therefore v = 64$$

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The speed of vehicle should be 64 km/hr to cover the same distance in 7.5 hours.

∴ The increase in speed = $64 - 60$

= 4km/hr

∴ The increase in speed of the car is 4 km/hr.



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Class 8 Maths

- 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)
- Chapter 3- Indices and Cube Root (Practice Set 3.1)
- 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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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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