Maharashtra Board Solutions Class 7-Maths (Practice Set 48): Chapter 13- Pythagoras Theorem

For any clarifications or questions you can write to **info@indcareer.com**

Postal Address

IndCareer.com, 52, Shilpa Nagar, Somalwada Nagpur - 440015
Maharashtra, India

WhatsApp: +91 9561 204 888, **Website:** https://www.indcareer.com

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

IndCareer

Maharashtra Board Solutions Class 7-Maths (Practice Set 48): Chapter 13- Pythagoras Theorem

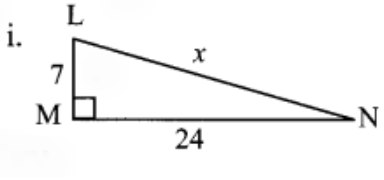
Class 7: Maths Chapter 13 solutions. Complete Class 7 Maths Chapter 13 Notes.

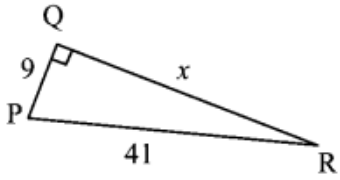
Maharashtra Board Solutions Class 7-Maths (Practice Set 48): Chapter 13- Pythagoras Theorem

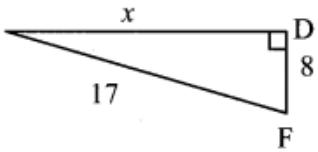
Maharashtra Board 7th Maths Chapter 13, Class 7 Maths Chapter 13 solutions

Question 1.

In the figures below, find the value of 'x'.

i. 

ii. 

iii. 

Solution:

i. In ΔLMN, ∠M = 90°.

Hence, side LN is the hypotenuse.

According to Pythagoras' theorem,

$l(LN)^2 = l(LM)^2 + l(MN)^2$

$\therefore x^2 = 72 + 24^2$

$\therefore x^2 = 49 + 576$

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

∴ $x^2 = 625$

∴ $x^2 = 25^2$

∴ x = 25 units

ii. In ΔPQR, ∠Q = 90°.

Hence, side PR is the hypotenuse.

According to Pythagoras' theorem,

$l(PR)^2 = l(PQ)^2 + l(QR)^2$

∴ $412 = 92 + x^2$

∴ $1681 = 81 + x^2$

∴ $1681 – 81 = x^2$

∴ $1600 = x^2$

∴ $x^2 = 1600$

∴ $x^2 = 40^2$

∴ x = 40 units

iii. In AEDF, ∠D = 90°.

Hence, side EF is the hypotenuse.

According to Pythagoras' theorem,

$l(EF)^2 = l(ED)^2 + l(DF)^2$

∴ $17^2 = x^2 + 8^2$

∴ $289 = x^2 + 64$

∴ $289 – 64 = x^2$

∴ $225 = x^2$

∴ $x^2 = 225$

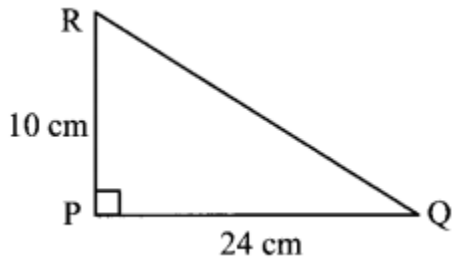
∴ $x^2 = 15^2$

∴ x = 15 units

Question 2.

In the right-angled ΔPQR, ∠P = 90°. If l(PQ) = 24 cm and l(PR) = 10 cm, find the length of seg QR.

Solution:



In ΔPQR, ∠P = 90°.

Hence, side QR is the hypotenuse.

According to Pythagoras' theorem,

$l(QR)^2 = l(PR)^2 + l(PQ)^2$

∴ $l(QR)^2 = 10^2 + 24^2$

∴ $l(QR)^2 = 100 + 576$

∴ $l(QR)^2 = 676$

∴ $l(QR)^2 = 26^2$

∴ l(QR) = 26 cm

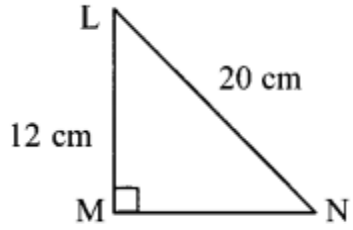
∴ The length of seg QR is 26 cm.

Question 3.

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

In the right-angled ∆LMN, ∠M = 90°. If l(LM) = 12 cm and l(LN) = 20 cm, find the length of seg MN.

Solution:



In ∆LMN, ∠M = 90°.

Hence, side LN is the hypotenuse.

According to Pythagoras' theorem,

$l(LN)^2 = l(LM)^2 + l(MN)^2$

$\therefore 20^2 = 12^2 + l(MN)^2$

$\therefore l(MN)^2 = 20^2 - 12^2$

$\therefore l(MN)^2 = 400 - 144$

$\therefore l(MN)^2 = 256$

$\therefore l(MN)^2 = 16^2$

$\therefore l(MN) = 16$ cm

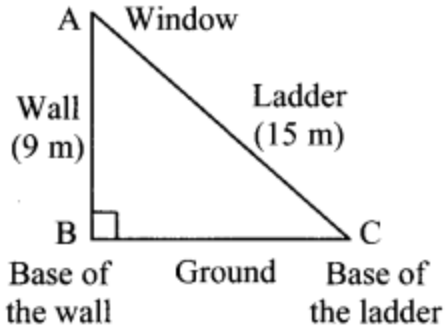
$\therefore$ The length of seg MN is 16 cm.

Question 4.

The top of a ladder of length 15 m reaches a window 9 m above the ground. What is the distance between the base of the wall and that of the ladder?

Solution:

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/



The wall and the ground are perpendicular to each other. Hence, the ladder leaning against the wall forms a right-angled triangle.

In ΔABC, ∠B = 90°

According to Pythagoras' theorem,

l(AC)² = l(AB)² + l(BC)²

∴ 15² = l(BC)² + 9²

∴ 225 = l(BC)² + 81

∴ 225 – 81 = l(BC)²

∴ 144 = l(BC)²

∴ 12² = l(BC)²

∴ l(BC) = 12

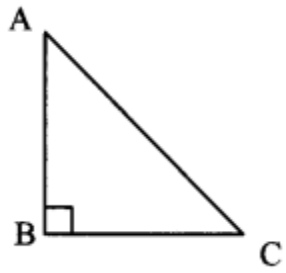
∴ The distance between the base of the wall and that of the ladder is 12 m.

Intext Questions and Activities

Question 1.

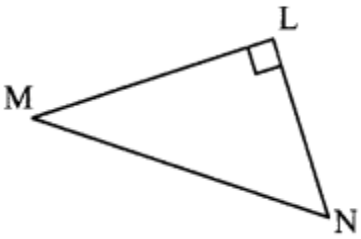
Write the name of the hypotenuse of each of the right angled triangles shown below.

i.



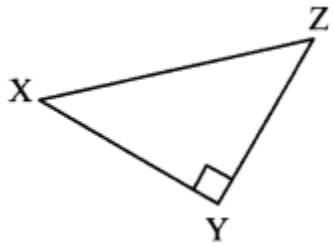
The hypotenuse of ΔABC is__

ii.



The hypotenuse of ΔLMN is__

iii.



The hypotenuse of ΔXYZ is__

Solution:

i. AC

ii. MN

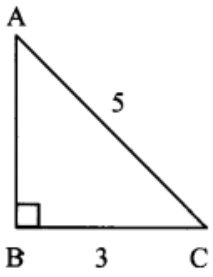
iii. XZ

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

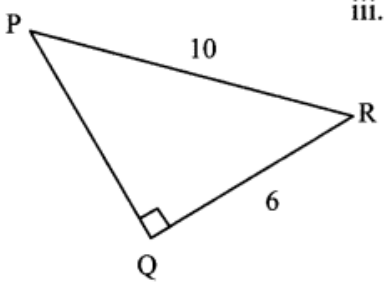
Question 2.

Draw right-angled triangles with the lengths of hypotenuse and one side as shown in the rough figures below. Measure the third side. Verify the Pythagoras' theorem. (Textbook pg. no. 87)

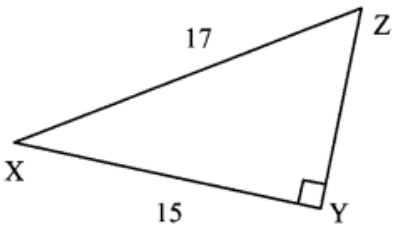
i.



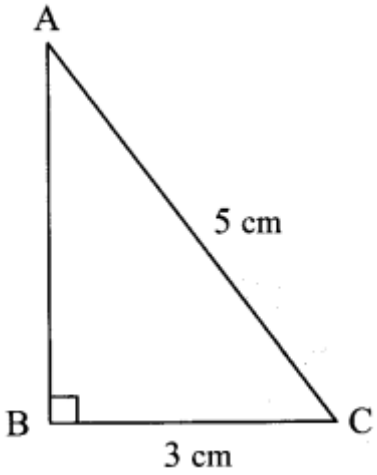
ii.



iii.



Solution:



i. From the figure, by measurement,

l(AB) = 4 cm

Now, in right-angled triangle ABC,

$l(AB)^2 + l(BC)^2 = (4)^2 + (3)^2$

$= 16 + 9$

$\therefore l(AB)^2 + l(BC)^2 = 25$ …. (i)

https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

l(AC)² = (5)² = 25 ….(ii)

∴ From (i) and (ii),

l(AC)² = l(AB)² + l(BC)²

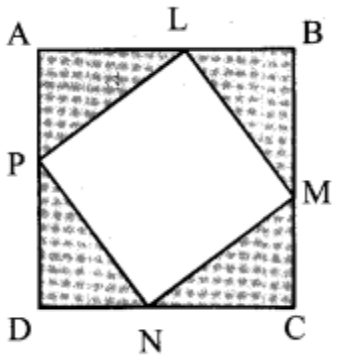
∴ Pythagoras' theorem is verified.

(Students should draw the triangles PQR and XYZ and verify the Pythagoras ' theorem)

Question 3.

Without using a protractor, can you verify that every angle of the vacant quadrilateral in the adjacent figure is a right angle? (Textbook pg. no. 89)

Solution:



In the square ABCD the shaded triangles are right-angled and are the same.

In ∆LBM,

m∠BLM + m∠BML + m∠LBM = 180° …. (Sum of the measures of the angles of a triangles is 180°)

∴ m∠BLM + m∠BML + 90° = 180°

∴ m∠BLM + m∠BML = 90° …. (i)

Now, ∆LBM and ∆LAP are same.

∴ m∠BML = m∠ALP …. (ii)

∴ m∠BLM + m∠ALP = 90° …. IFrom (i) and (ii)I

Now, m∠ALP + m∠PLM + m∠BLM = 180° …. (The measure of a straight angle is 180°)

∴ m∠ALP + m∠BLM + m∠PLM = 180°

∴ 90° + m∠PLM = 180°

∴ m∠PLM = 180°- 90° = 90°

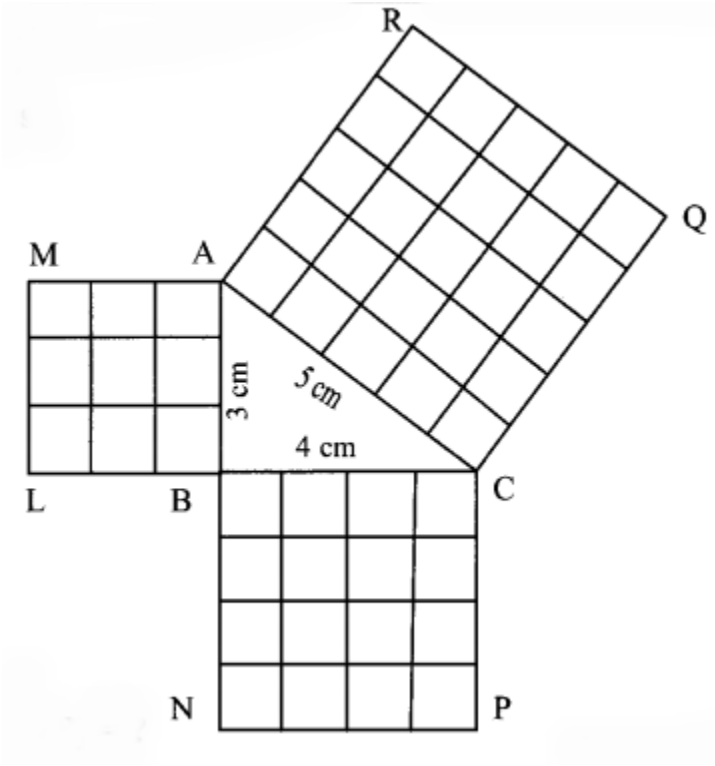
∴ m∠PLM is a right angle.

Similarly, we can prove that the other angles of the vacant quadrilateral are right angles.

Question 4.

On a sheet of card paper, draw a right-angled triangle of sides 3 cm, 4 cm and 5 cm. Construct a square on each of the sides. Find the area of each of the squares and verify Pythagoras' theorem. (Textbook pg. no. 89)

Solution:



https://www.indcareer.com/schools/maharashtra-board-solutions-class-7-maths-practice-set-48-chapter-13-pythagoras-theorem/

Area of square ABLM = l(AB)² = 32 = 9 sq.cm

Area of square BCPN = l(BC)²= 42 = 16 sq.cm

Area of square ACQR = l(AC)² = 52 = 25 sq.cm

Now, 25 = 16 + 9

i.e. $5^2 = 4^2 + 3^2$

∴ $l(AC)^2 = l(BC)^2 + l(AB)^2$

∴ $(\text{hypotenuse})^2 = (\text{base})^2 + (\text{height})^2$

Maharashtra Board Solutions Class 7 Maths

- Chapter 1- Geometrical Constructions (Practice Set 1)
- Chapter 1- Geometrical Constructions (Practice Set 2)
- Chapter 1- Geometrical Constructions (Practice Set 3)
- Chapter 1- Geometrical Constructions (Practice Set 4)
- Chapter 1- Geometrical Constructions (Practice Set 5)
- Chapter 1- Geometrical Constructions (Practice Set 6)
- Chapter 1- Geometrical Constructions (Practice Set 7)
- Chapter 2- Multiplication and Division of Integers (Practice Set 8)
- Chapter 2- Multiplication and Division of Integers (Practice Set 9)
- Chapter 3- HCF and LCM (Practice Set 10)
- Chapter 3- HCF and LCM (Practice Set 11)
- Chapter 3- HCF and LCM (Practice Set 12)
- Chapter 3- HCF and LCM (Practice Set 13)
- Chapter 3- HCF and LCM (Practice Set 14)
- Chapter 4- Angles and Pairs of Angles (Practice Set 15)
- Chapter 4- Angles and Pairs of Angles (Practice Set 16)
- Chapter 4- Angles and Pairs of Angles (Practice Set 17)
- Chapter 4- Angles and Pairs of Angles (Practice Set 18)
- Chapter 4- Angles and Pairs of Angles (Practice Set 19)
- Chapter 4- Angles and Pairs of Angles (Practice Set 20)
- Chapter 4- Angles and Pairs of Angles (Practice Set 21)

- Chapter 5- Operations on Rational Numbers (Practice Set 22)
- Chapter 5- Operations on Rational Numbers (Practice Set 23)
- Chapter 5- Operations on Rational Numbers (Practice Set 24)
- Chapter 5- Operations on Rational Numbers (Practice Set 25)
- Chapter 6- Indices (Practice Set 26)
- Chapter 6- Indices (Practice Set 27)
- Chapter 6- Indices (Practice Set 28)
- Chapter 6- Indices (Practice Set 29)
- Chapter 6- Indices (Practice Set 30)
- Chapter 7- Joint Bar Graph (Practice Set 31)
- Chapter 8- Algebraic Expressions and Operations on them (Practice Set 32)
- Chapter 8- Algebraic Expressions and Operations on them (Practice Set 33)
- Chapter 8- Algebraic Expressions and Operations on them (Practice Set 34)
- Chapter 8- Algebraic Expressions and Operations on them (Practice Set 35)
- Chapter 8- Algebraic Expressions and Operations on them (Practice Set 36)
- Chapter 9- Direct Proportion and Inverse Proportion (Practice Set 37)
- Chapter 9- Direct Proportion and Inverse Proportion (Practice Set 38)
- Chapter 9- Direct Proportion and Inverse Proportion (Practice Set 39)
- Chapter 10- Bank and Simple Interest (Practice Set 40)
- Chapter 10- Bank and Simple Interest (Practice Set 41)
- Chapter 11- Circle (Practice Set 42)

- Chapter 11- Circle (Practice Set 43)
- Chapter 12- Perimeter and Area (Practice Set 44)
- Chapter 12- Perimeter and Area (Practice Set 45)
- Chapter 12- Perimeter and Area (Practice Set 46)
- Chapter 12- Perimeter and Area (Practice Set 47)
- Chapter 13- Pythagoras Theorem (Practice Set 48)
- Chapter 13- Pythagoras Theorem (Practice Set 49)
- Chapter 14- Algebraic Formulae - Expansion of Squares (Practice Set 50)
- Chapter 14- Algebraic Formulae - Expansion of Squares (Practice Set 51)
- Chapter 14- Algebraic Formulae - Expansion of Squares (Practice Set 52)
- Chapter 14- Algebraic Formulae - Expansion of Squares (Practice Set 53)
- Chapter 15- Statistics (Practice Set 54)
- Chapter 14- Statistics (Practice Set 55)

IndCareer

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.

FAQs

Where do I get the Maharashtra State Board Books PDF For free download?

You can download the Maharashtra State Board Books from the eBalbharti official website, i.e. cart.ebalbharati.in or from this article.

Add image

How to Download Maharashtra State Board Books?

Students can get the Maharashtra Books for primary, secondary, and senior secondary classes from here. You can view or download the Maharashtra State Board Books from this page or from the official website for free of cost. Students can follow the detailed steps below to visit the official website and download the e-books for all subjects or a specific subject in different mediums.

Step 1: Visit the official website *ebalbharati.in*

Step 2: On the top of the screen, select "Download PDF textbooks"

Step 3: From the "Classes" section, select your class.

Step 4: From "Medium", select the medium suitable to you.

Step 5: All Maharashtra board books for class 11th will now be displayed on the right side.

Step 6: Click on the "Download" option to download the PDF book.

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.

About IndCareer

IndCareer.com is a leading developer of online career guidance resources for the Indian marketplace. Established in 2007, IndCareer.com is currently used by over thousands of institutions across India, including schools, employment agencies, libraries, colleges and universities.

IndCareer.com is designed to assist you in making the right career decision - a decision that meets your unique interests and personality.

For any clarifications or questions you can write to **info@indcareer.com**

Postal Address

IndCareer.com
52, Shilpa Nagar,
Somalwada
Nagpur - 440015
Maharashtra, India

WhatsApp: +91 9561 204 888

Website: https://www.indcareer.com