SAMPLE CONTENT

MATHEMATICS
WORKBOOK

STD. VII
(Eng. Med.)

Target Publications® Pvt. Ltd.

Based on the syllabus prescribed by the Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune.

Mathematics

WORKBOOK

Std. VII (English Medium)

Salient Features

- Includes all textual Problem Sets
- Includes solved Examples for better understanding
- All Intext and Activity/Project based questions from the textbook are included
- Adequate space is provided to write the answers
- 'Mind Test' at the end of the every chapter gives quick revision of the definitions
- Final answers to all the Problem sets are provided at the end of the book

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PREFACE

Target's Mathematics workbook: Std. VII has been prepared as per the new 'Continuous Comprehensive Evaluation' (CCE) system which is more child-centric and focuses on active learning and making the process of education more enjoyable and interesting.

Our **Mathematics Workbook** comes replete with the all textual questions along with the adequate space for writing the answers.

In every chapter, the **Summative Assessment** section includes textual Practice Sets and some intext questions. **Solved Examples** are included for better understanding of the method of solving the problems, which enable students solve problems on their own.

The **Formative Assessment** part of the chapters includes Activity Based Questions along with Project Work. Each chapter comes with an exclusive section called **Mind Test**, which has been prepared for the quick revision of the concepts.

Final answers to all the Problem sets are provided at the end of the book so that students can verify their answers.

We hope this book turns out to be a guiding light for the students of Std. VII and helps them to prepare for their examination.

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we've nearly missed something or want to applaud us for our triumphs, we'd love to hear from you.

Please write to us at : mail@targetpublications.org

A book affects eternity; one can never tell where its influence stops.

Best of luck to all the aspirants!

Publisher

Edition: Third

KEY FEATURES

Mind Test

Mind Test section includes questions that would stimulate the students to think and arrive at an answer based on their understanding of the concepts covered in the chapter

Solved Examples

Solved Examples help students to understand method of solving the problems and boost their confidence to solve similar problems on their own.

Variety of Questions

A variety of questions enables students to get better practice of the lessons and understand the concepts better.

CCE pattern

Latest CCE pattern followed in workbook, dividing the chapter into summative and formative section. This is a more child-centric approach and helps in better overall growth and development of students.

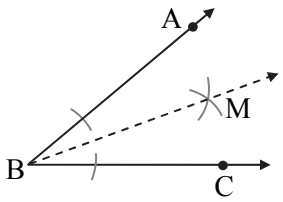
Contents

Note: Intext Questions are represented by # mark.

1. Geometrical Constructions

Summative Assessment

 # In the given figure, is ray BM the bisector of ∠ABC? *(Textbook page no. 1)*



Ans:

 # Draw a line segment PS of length 4cm and draw its perpendicular bisector.

(Textbook page no. 1)

- How will you verify that CD is the perpendicular bisector?
  m ∠ CMS = _____°
- Is l(PM) = l(SM)?

Ans:

 # Activity: Use a ruler to draw an acute angled triangle and an obtuse angled triangle. Draw perpendicular bisectors of each side of the two triangles. Note your observation.

(Textbook page no. 2)

Ans:

Practice Set 1 *(Textbook page no. 2)*

1. Draw line segments of the lengths given below and draw their perpendicular bisectors:

(1) 5.3 cm

Ans:

(2) 6.7 cm

Ans:

(3) 3.8 cm

Ans:

2. Draw angles of the measures given below and draw their bisectors:

(1) 105°

Ans:

(2) 55°

Ans:

(3) 90°

Ans:

3. Draw an obtuse-angled triangle and a right-angled triangle. Find the points of concurrence of the angle bisectors of each triangle. Where do the points of concurrence lie?

Ans:

4. Draw a right-angled triangle. Draw the perpendicular bisectors of its sides. Where does the point of concurrence lie?

Ans:

5. Maithili, Shaila and Ajay live in three different places in the city. A toy shop is equidistant from the three houses. Which geometrical construction should be used to represent this? Explain your answer.

Ans:

 # Activity: Draw ΔABC such that *l*(AB) = 4 cm, and *l*(BC) = 3 cm. *(Textbook page no. 3)*

i. Can this triangle be drawn?

ii. A number of triangles can be drawn to fulfil these conditions. Try it out.

iii. Which further condition must be placed if we are to draw a unique triangle using the above information?

Ans:

Practice Set 2 *(Textbook page no. 4)*

1. Draw triangles with the measures given below:

(a) In ΔABC, $l(AB) = 5.5$ cm, $l(BC) = 4.2$ cm, $l(AC) = 3.5$ cm.

Ans:

(b) In ΔSTU, $l(ST) = 7$ cm, $l(TU) = 4$ cm, $l(SU) = 5$ cm.

Ans:

(c) In ΔPQR, $l(PQ) = 6$ cm, $l(QR) = 3.8$ cm, $l(PR) = 4.5$ cm.

Ans:

2. Draw an isosceles triangle with base 5 cm and the other sides 3.5 cm each.

Ans:

3. Draw an equilateral triangle with side 6.5 cm.

Ans:

4. Choose the lengths of the sides yourself and draw one equilateral, one isosceles and one scalene triangle.

Ans:

Practice Set 3 *(Textbook page no. 5)*

Draw triangles with the measures given below:

1. **In ΔMAT, l(MA) = 5.2 cm, m∠A = 80°, l(AT) = 6 cm.**

Ans:

2. **In ΔNTS, m∠T = 40°, l(NT) = l(TS) = 5 cm.**

Ans:

3. **In ΔFUN, l(FU) = 5 cm, l(UN) = 4.6 cm, m∠U = 110°.**

Ans:

4. **In ΔPRS, l(RS) = 5.5 cm, l(RP) = 4.2 cm, m∠R = 90°.**

Ans:

 # Use your brain power:

1. In ΔABC, m∠A = 60°, m∠B = 40°, *l*(AC) = 6 cm. *(Textbook page no. 5)*

i. Can you draw ΔABC?

ii. What further information is required before it can be drawn?

iii. Which property can be used to get it?

iv. Draw the rough figure to find out.

Ans:

Practice Set 4 *(Textbook page no. 6)*

Construct triangles of the measures given below:

1. In ΔSAT, *l*(AT) = 6.4 cm, m∠A = 45°, m∠T = 105°.

Ans:

2. In ΔMNP, *l*(NP) = 5.2 cm, m∠N = 70°, m∠P = 40°

Ans:

3. In ΔEFG, *l*(EG) = 6 cm, m∠F = 65°, m∠G = 45°.

Ans:

4. In ΔXYZ, l(XY) = 7.3 cm, m∠X = 34°, m∠Y = 95°.

Ans:

Practice Set 5 *(Textbook page no. 6)*

Construct triangles of the measures given below:

1. In ΔMAN, m∠MAN = 90°, l(AN) = 8 cm, l(MN) = 10 cm.

Ans:

2. In the right-angled ΔSTU, hypotenuse SU = 5 cm and l(ST) = 4 cm.

Ans:

3. In ΔABC, l(AC) = 7.5 cm, m∠ABC = 90°, l(BC) = 5.5 cm.

Ans:

4. In ΔPQR, $l(PQ) = 4.5$ cm, $l(PR) = 11.7$ cm, $m\angle PQR = 90°$.

Ans:

5. Students should take examples of their own and practice construction of triangles.

Ans:

 # Activity: Try to draw triangles with the following data. Can you draw these triangles? If not, look for the reasons why you could not draw so. *(Textbook page no. 7)*

1. ΔABC in which $m\angle A = 85°$, $m\angle B = 115°$, $l(AB) = 5$ cm.

Solution:

2. ΔPQR in which $l(QR) = 2$ cm, $l(PQ) = 4$ cm, $l(PR) = 2$ cm.

Solution:

 # An activity for learning something more:

- **Draw ΔABC such that $l(BC) = 8$ cm, $l(CA) = 6$ cm, $m\angle ABC = 40°$.**

  Draw a ray to make an angle of 40° with the base BC, $l(BC) = 8$ cm. We have to obtain point 'A' on the ray. With 'C' as the centre, draw an arc of radius 6 cm to do so. What do we observe? The arc intersects the ray in two different points. Thus, we get two triangles of two different shapes having the given measures. *(Textbook page no. 7)*

Ans:

- **Can a triangle be drawn if the three angles are given, but not any side? How many such triangles can be drawn?** *(Textbook page no. 7)*

Ans:

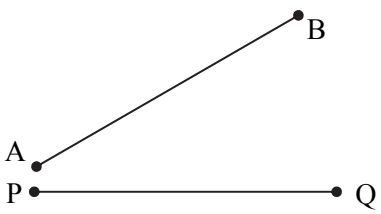
Formative Assessment

 # Activity I: Take a rectangular paper. Place two opposite sides upon each other. What do you observe? *(Textbook page no. 7)*

Ans:

 # Activity II: Using the ruler, measure the lengths of seg AB and seg PQ. Are they of same length? Trace the seg AB on a sheet of transparent paper. Now place this new segment on PQ verify that if point A is placed on point P, then B falls on Q. *(Textbook page no. 7)*

l(AB) = ... l(PQ) = ...



Ans:

Formative Assessment

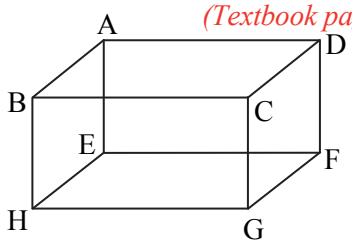
 # Activity I: Take any box. Measure the lengths of each of its edges. Which of them are congruent? *(Textbook page no. 8)*

Ans:

 # Activity II: From the shape shown below, write the names of the pairs of congruent line segments.

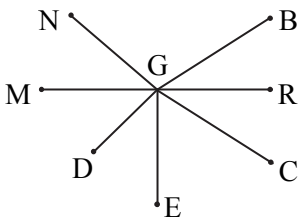
(Textbook page no. 8)

i. seg AB ≅ seg DC
ii. seg AE ≅ seg BH
iii. seg EF ≅ seg .....
iv. seg DF ≅ seg .....



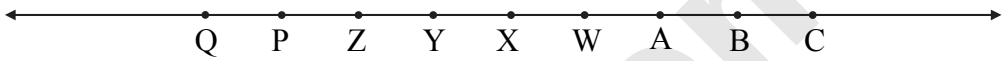
Practice Set 6 *(Textbook page no. 8)*

1. Write the names of pairs of congruent line segments. (Use a divider to find them.)



(i) .....
(ii) .....
(iii) .....
(iv) .....

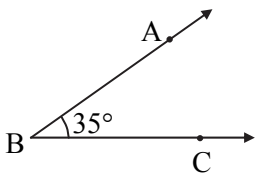
2. On the line below, the distance between any two adjoining points shown on it is equal. Hence, fill in the blanks.

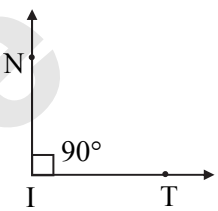


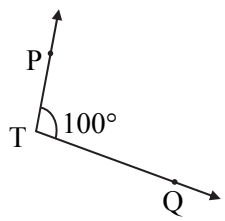
(i) seg AB ≅ seg _____ (ii) seg AP ≅ seg _____ (iii) seg AC ≅ seg _____
(iv) seg _____ ≅ seg BY (v) seg _____ ≅ seg YQ (vi) seg BW ≅ seg _____

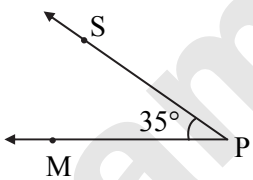
 # Observe the given angles and write the names of those having equal measures.

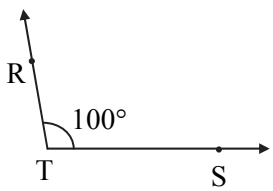
(Textbook pg. no. 8 and 9)

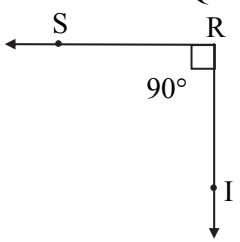












Ans: .....

.....

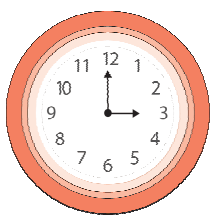
 # Let's Discuss:
Observe the image shown in the adjacent figure and answer the following questions.

(Textbook page. no. 9)

(1) What time does this clock show?

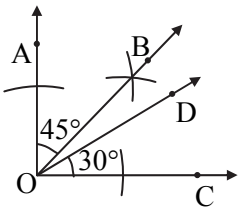
(2) What is the measure of the angle between its two hands?

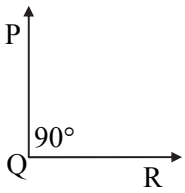
(3) At which other times is the angle between the hands congruent with this angle?

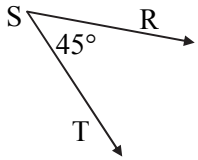


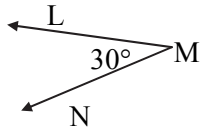
Practice Set 7 *(Textbook page no. 10)*

Some angles are given below. Using the symbol of congruence write the names of the pairs of congruent angles in these figures.









Ans: ----------

Formative Assessment

 # Activity II : Get bangles of different sizes but equal thickness and find the congruent ones among them. *(Textbook page no. 10)*

 # Activity III : Find congruent circles in your surroundings. *(Textbook page no. 10)*

 # Activity IV : Take some round bowls and plates. Place their edges one upon the other to find pairs of congruent edges. *(Textbook page no. 10)*

(Students should attempt the above activities on their own.)

Mind Test

1. Choose the correct option for each of the following question.

(1) The point of concurrence of perpendicular bisectors of which triangle lies outside the triangle?
- (A) Acute angled triangle
- (B) Right angled triangle
- (C) Equilateral triangle
- (D) Obtuse angled triangle

(2) The point of concurrence of perpendicular bisectors of which triangle lies inside the triangle?
- (A) Acute angled triangle
- (B) Right angled triangle
- (C) any scalene
- (D) Obtuse angled triangle

(3) The point of concurrence of _____ of a triangle is equidistant from the vertices of that triangle.
- (A) angle bisectors
- (B) perpendiculars of sides
- (C) perpendicular bisectors of sides
- (D) none of these

2. Fill in the blanks.

(1) A ray which divides an angle in two equal parts is called as angle _____ of that angle.

(2) A line which divides a line segment in two equal parts and is perpendicular to it is called the perpendicular _____ of that line segment.

(3) The point of concurrence of angle bisectors of a triangle is called the _____.

(4) The point of concurrence of perpendicular bisectors of a triangle is called _____.

ANSWERS

1. (1) (D) (2) (A) (3) (C)
2. (1) bisector (2) bisector (3) incentre (4) Circumcenter

Teacher's Remark: ---------- Date: ----------

Page no.**13** to **114** are purposely left blank.

To see complete chapter buy **Target Notes** or **Target E-Notes**

Answer Key

1. Geometrical Constructions

Practice Set 1

3. In the interior of the triangle
4. On the hypotenuse of right-angled triangle
5. To draw circumcentre of the triangle

Practice Set 6

1. (i) Seg MG ≅ Seg GR
   (ii) Seg MG ≅ Seg NG
   (iii) Seg GC ≅ Seg GB
   (iv) Seg GE ≅ Seg GR
2. (i) Seg AB ≅ Seg WA
   (ii) Seg AP ≅ Seg YC
   (iii) Seg AC ≅ Seg PY
   (iv) Seg PW ≅ Seg BY
   (v) Seg YA ≅ Seg YQ
   (vi) Seg BW ≅ Seg ZX

(There may be many correct answers for each of the above questions.)

Practice Set 7

∠AOB ≅ ∠BOC ∠AOB ≅ ∠RST
∠AOC ≅ ∠PQR ∠DOC ≅ ∠LMN
∠BOC ≅ ∠RST

2. Multiplication and Division of Integers

Practice Set 8

(i) 35 (ii) –54
(iii) –36 (iv) –56
(v) 124 (vi) 84
(vii) 441 (viii) –105

Practice Set 9

1. (i) –6 (ii) $\frac{-7}{2}$
   (iii) $\frac{-3}{4}$ (iv) $\frac{-2}{3}$
   (v) $\frac{-17}{4}$ (vi) 6
   (vii) $\frac{5}{3}$ (viii) $\frac{-1}{6}$
   (ix) $\frac{6}{5}$ (x) $\frac{1}{63}$
2. 24 ÷ 5, 48 ÷ 10, (–240) ÷ (–50) etc.
3. (–10) ÷ 14, 25 ÷ (–35), (–35) ÷ 49 etc.

[**Note:** Problems 2 and 3 have many answers students may write answers other than ones given.]

3. HCF and LCM

Practice Set 10

1. 1
2. 4, 5 and 17,19
3. 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
   Total prime numbers 16
4. 59 and 61, 71 and 73
5. (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43)
6. 2

Practice Set 11

(i) 2 × 2 × 2 × 2 × 2
(ii) 3 × 19
(iii) 23
(iv) 2 × 3 × 5 × 5
(v) 2 × 2 × 2 × 3 × 3 × 3
(vi) 2 × 2 × 2 × 2 × 13
(vii) 3 × 3 × 5 × 17
(viii) 2 × 3 × 3 × 19
(ix) 13 × 29
(x) 13 × 43

Practice Set 12

1. (i) 5 (ii) 8 (iii) 5
   (iv) 1 (v) 2 (vi) 7
   (vii) 3 (viii) 3 (ix) 1
   (x) 21
2. (i) HCF 25, Simplest form $\frac{11}{21}$
   (ii) HCF 19, Simplest form $\frac{4}{7}$
   (iii) HCF 23, Simplest form $\frac{7}{3}$

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