Marking Scheme strictly Confidential **(For Internal and Restricted use only) Secondary School Examination, 2025)** **SUBJECT NAME MATHEMATICS (BASIC)** **(For Visually Impaired Candidates Only)(Q.P. CODE 430(B))**	

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	**"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, evaluation done and several other aspects. It's leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc. may invite action under various rules of the Board and IPC."**
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.**
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark (✓) wherever answer is correct. For wrong answer CROSS 'X" be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note **"Extra Question"**.
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____ (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).This is in view of the reduced syllabus and number of questions in question paper.

13	Ensure that you do not make the following common types of errors committed by the Examiner in the past:-
	● Leaving answer or part thereof unassessed in an answer book.
	● Giving more marks for an answer than assigned to it.
	● Wrong totaling of marks awarded on an answer.
	● Wrong transfer of marks from the inside pages of the answer book to the title page.
	● Wrong question wise totaling on the title page.
	● Wrong totaling of marks of the two columns on the title page.
	● Wrong grand total.
	● Marks in words and figures not tallying/not same.
	● Wrong transfer of marks from the answer book to online award list.
	● Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.)
	● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.

14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the "**Guidelines for spot Evaluation**" before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

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MARKING SCHEME

MATHEMATICS (BASIC)

In this section, there are **20** Multiple Choice Questions (MCQs), each of **1** mark :

1. The sum of first five prime numbers is

   (A) 18   (B) 26

   (C) 28   (D) 39

Ans : (C) 28	1

2. A quadratic polynomial, the sum and product of whose zeroes are −1 and −2 respectively, is

   (A) $x^2 - x - 2$ (B) $2x^2 + x - 1$

   (C) $x^2 + x - 2$ (D) $\frac{1}{2}x^2 + x - 4$

Ans: (C) $x^2 + x - 2$	1

3. The graph of the polynomial $ax^2 + bx + c$ is a downward parabola if

   (A) a > 0   (B) a < 0

   (C) a = 0   (D) a > 1

Ans: (B) a < 0	1

4. If α and β are zeroes of the polynomial $x^2 - x - 4$, then the value of $\left(\frac{1}{\alpha} + \frac{1}{\beta}\right)$ is

   (A) −4   (B) $-\frac{1}{4}$

   (C) $\frac{1}{4}$ (D) 4

Ans: (B) $-\frac{1}{4}$	1

5. For what value of p, pair of equations $2x + 3y = 4$, $(p + 2)x + 6y = (3p + 2)$ will have infinitely many solutions ?

   (A) 1   (B) 4

   (C) 5   (D) 2

Ans: (D) 2	1

6. The pair of equations $7x - 14y = -7$ and $3x - 6y = 21$ has

   (A) unique solution. (B) two solutions.

   (C) no solution. (D) infinitely many solutions.

Ans: (C) no solution   1

7. The value of k for which the quadratic equation

   $x^2 + k(2x + k - 1) + 2 = 0$ has real and equal roots of x is

   (A) 2 (B) 3

   (C) 4 (D) 5

Ans: (A) 2   1

8. The number of possible solutions of a quadratic equation are

   (A) exactly two (B) atmost two

   (C) atleast two (D) atleast one

Ans: (B) atmost two   1

9. The sum of three terms in A.P. is 30. If the greatest term is 13, then the common difference is

   (A) 2 (B) 3

   (C) -2 (D) -3

Ans: Both (B) 3 and (D) -3 are correct options   1

10. The 8th term from the end of the A.P. 3, 7, 11, 15, ..., 143 is

    (A) 135 (B) 125

    (C) 115 (D) 111

Ans: (C) 115   1

11. The distance of point P(3, 4) from the *x*-axis is

(A) 3 units   (B) 4 units

(C) 5 units   (D) 7 units

Ans: (B) 4 units	1

12. The ratio in which the line segment joining the points A(–4, 8) and B(5, –10) is divided by the point P(–2, 4) is

(A) 1 : 3   (B) 3 : 4

(C) 2 : 7   (D) 2 : 5

Ans: (C) 2 : 7	1

13. The coordinates of the point where the line $\frac{x}{a} + \frac{y}{b} = 5$ intersects y-axis are

(A) (0, a)   (B) (0, b)

(C) (0, 5a)   (D) (0, 5b)

Ans: (D) (0, 5b)	1

14. If $\triangle ABC \sim \triangle PQR$, PQ = 3 AB and BC = 2 cm, then QR is equal to

(A) 2 cm   (B) 6 cm

(C) $\frac{2}{3}$ cm   (D) 12 cm

Ans: (B) 6 cm	1

15. Line ST is drawn parallel to the base QR of a $\triangle PQR$, meeting PQ at S and PR at T. If $\frac{PQ}{QS} = 3$ and TR = 3 cm, then the length of PT is

(A) 9 cm   (B) 12 cm

(C) 6 cm   (D) 3 cm

Ans: (C) 6 cm	1

16. If PA and PB are two tangents to the circle with centre O such that ∠APB = 50°, then ∠OAB is equal to

(A) 25° (B) 30°

(C) 40° (D) 50°

Ans: (A) 25°   1

17. The total surface area of a solid hemisphere of radius 7 cm is

(A) $98\,\pi\,cm^2$ (B) $196\,\pi\,cm^2$

(C) $147\,\pi\,cm^2$ (D) $174\,\pi\,cm^2$

Ans: (C) $147\,\pi\,cm^2$ 1

18. For the following distribution :

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	10	12	15	20	9

The sum of lower limits of the median class and modal class is

(A) 30 (B) 50

(C) 40 (D) 60

Ans: (B) 50   1

For question number **19** to **20**, two statements are given – one labelled as Assertion (A) and the other labelled as Reason (R). Each question has **1** mark. Select the correct answer to these questions from the options (A), (B), (C) and (D) as given below :

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

19. **Assertion (A) :** In a ΔABC, D and E are points on the sides AB and AC respectively such that DE ‖ BC, then $\dfrac{AD}{AB} = \dfrac{AE}{AC}$.	
Reason (R) : If a line is drawn parallel to one side of a triangle, intersecting the other two sides, then it divides the two sides in the same ratio.	
Ans: (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1
20. **Assertion (A) :** If the difference of the mode and median of a data is 24, then the difference of the median and mean is 12. **Reason (R)** : Mode = 3 mean − 2 median.	
Ans: (C) Assertion (A) is true, but Reason (R) is false.	1

SECTION – B

This section consists of **5** Very Short Answer (VSA) questions of **2** marks each :

21. Find the greatest number which divides 285 and 1249 leaving remainders 9 and 7 respectively.	

Solution: 285 – 9 = 276 ,   1249 – 7 = 1242
            HCF(276,1242) = 138
            Greatest number which divides 276 and 1242 is 138
	1
	
	1

22. Solve the following system of linear equations for x and y :
 	
     3x + 2y = 11
 	
     2x + 3y = 4	

Solution: Solving the given equations to get , x = 5 and y = − 2	1 +1

23. (a) Prove that diagonals of a trapezium divide each other proportionally.

OR

(b) S is a point on the side QR of a $\triangle$PQR such that $\angle$PSR = $\angle$QPR. Prove that $PR^2 = QR \times SR$.
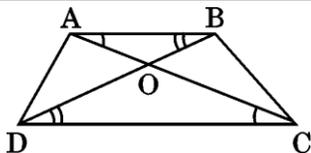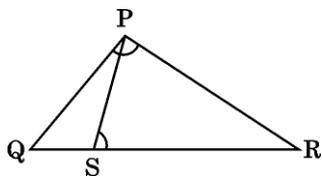
Solution: Proving $\triangle AOB \sim \triangle COD$ [By AA similarity criterion]		1
$\therefore \dfrac{AO}{CO} = \dfrac{OB}{OD}$		1
OR		
Proving $\triangle PSR \sim \triangle QPR$ [By AA similarity criterion]		1
Hence, $\dfrac{SR}{PR} = \dfrac{PR}{QR}$ $\Rightarrow PR^2 = QR \times SR$		½ +½

24. (a) A card is drawn at random from a pack of 50 cards numbered 1 to 50. Find the probability of drawing a number which is a perfect square.

OR

(b) A piggy bank contains fifty ₹ 1 coins, hundred ₹ 2 coins and one hundred and fifty ₹ 5 coins. If it is equally likely any one of the coins will fall out when the bank is turned upside down, find the probability that ₹ 2 coin has not fallen out, when the bank is turned upside down.

Solution : (a) Favourable outcomes are 1,4,9,16,25,36,49	
$\therefore$ P(Perfect square < 50) = $\dfrac{7}{50}$	2
OR	
(b) No. of ₹ 2 coins = 100 Total no. of coins = 50 + 100 + 150 = 300	
$\therefore$ P (not getting a ₹ 2 coin) = $\dfrac{200}{300}$ = $\dfrac{2}{3}$	2

25. A die is thrown twice. Find the probability that 5 will come up atleast once.

Solution : Total outcomes = 36
      Favourable outcomes : (1,5) (2, 5) (3,5) (4,5) (5,5) (6,5) (5,1) (5,2) (5,3) (5,4) (5,6)
 	
      P (5 will come at least once) $= \dfrac{11}{36}$
	2

SECTION – C

This section consists of **6** short answer questions of **3** marks each :

26. Prove that $\dfrac{\sqrt{3}+5}{2}$ is an irrational number, where it is given that $\sqrt{3}$ is irrational.

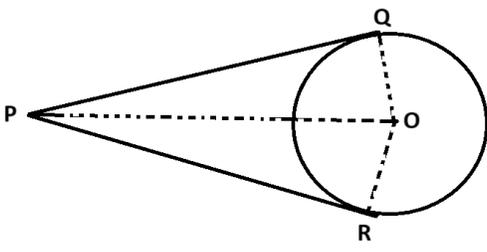|	
Solution: Let $\dfrac{\sqrt{3}+5}{2} = a$, where 'a' is a rational number	½
$\Rightarrow \sqrt{3} = 2a - 5$	1
Here LHS is an irrational number but RHS is a rational number So, our assumption is wrong	1
Hence, $\dfrac{\sqrt{3}+5}{2}$ is an irrational number	½

27. Find the value of p for which the following system of linear equations has infinitely many solutions :
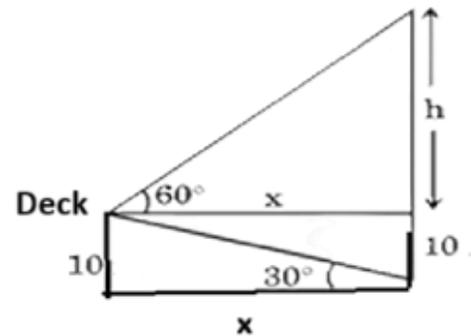
    $x + (p + 1)y = 5;\ (p + 1)x + 9y = 8p - 1$

Solution: For infinitely many solutions, we have	
$\dfrac{1}{p+1} = \dfrac{p+1}{9} = \dfrac{5}{8p-1}$	1
$\Rightarrow (p+1)^2 = 9$ and $5\,(p+1) = 8p - 1$	½
$p+1 = \pm\,3$ $\Rightarrow$ $p = 2, -4$ .... (i)	½
Also, $5p + 5 = 8p - 1$ $\Rightarrow p = 2$ .... (ii)	½
From (i) and (ii) $p = 2$	½

28. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish the work in 4 days, find the time taken by B alone to finish the work.

Solution :   If time taken by B be x days, then A takes (x – 6) days
      A.T.Q. $\dfrac{1}{x-6}+\dfrac{1}{x}=\dfrac{1}{4}$
 	
            $\Rightarrow x^2 - 14x + 24 = 0$
            $\Rightarrow (x-12)(x-2) = 0$
            $\Rightarrow x = 12$
             x = 2 (rejected)
       $\therefore$ B will take 12 days to finish the work
	1
	
	1
	
	1

29. Find the middle term(s) of the A.P. 9, 15, 21,…., 243.

Solution : $a_n = 9 + (n-1)\,6 = 243$
       $\Rightarrow n = 40$
       $a_{20} = 9 + 19 \times 6 = 123$
       $a_{21} = 9 + 20 \times 6 = 129$
    $\therefore$ The two middle terms are 123 and 129
	½
	
	½
	
	1
	1

30. (a) Prove that P(3, –3), Q(5, –2), R(6, 0) and S(4, –1) are the vertices of a rhombus PQRS. Also, find if it is a square or not.

<div align="center">OR</div>

    (b) Find the ratio in which the point (–5, p) divides the line segment joining (–7, –2) and (–4, 5). Hence, find the value of p.

Solution : (a) $RS = \sqrt{(6-4)^2 + (0-(-1))^2} = \sqrt{5}$
         $SP = \sqrt{(4-3)^2 + (-1+3)^2} = \sqrt{5}$
         $PQ = \sqrt{(5-3)^2 + (-2+3)^2} = \sqrt{5}$
         $QR = \sqrt{(6-5)^2 + (0+2)^2} = \sqrt{5}$
         $\Rightarrow$ PQRS is a rhombus
         $PR = \sqrt{(6-3)^2 + (0+3)^2} = \sqrt{18} = 3\sqrt{2}$
         $QS = \sqrt{(5-4)^2 + (-2+1)^2} = \sqrt{2}$
         $\Rightarrow PR \neq QS$ So, PQRS is not a square
 	
 OR
	½
	½
	½
	½
	
	½
	
	½

$$\overline{ \underset{k \; : \; 1}{\bullet} }$$

$(-7,-2)$ $\qquad$ $(-5,p)$ $\qquad$ $(-4,5)$

(b) $\qquad -5 = \dfrac{-4k-7}{k+1}$ $\qquad\qquad\qquad\qquad\qquad$ 1½

$\qquad\qquad \Rightarrow k = 2$ $\qquad\qquad\qquad\qquad\qquad\qquad$ ½

$\qquad\qquad \therefore$ Ratio is $2:1$

$\qquad\qquad p = \dfrac{2(5)+1(-2)}{3} = \dfrac{8}{3}$ $\qquad\qquad\qquad\qquad$ 1

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31. (a) Evaluate :

$\dfrac{2}{3}(\cos^4 30° - \sin^4 45°) - 3(\sin^2 60° - \sec^2 45°) + \dfrac{1}{4}\cot^2 30°.$

OR

(b) Prove that $\dfrac{\sin A + \cos A}{\sin A - \cos A} + \dfrac{\sin A - \cos A}{\sin A + \cos A} = \dfrac{2}{1-2\cos^2 A}.$

Solution : (a) $\dfrac{2}{3}\left[\left(\dfrac{\sqrt{3}}{2}\right)^4 - \left(\dfrac{1}{\sqrt{2}}\right)^4\right] - 3\left[\left(\dfrac{\sqrt{3}}{2}\right)^2 - \left(\sqrt{2}\right)^2\right] + \dfrac{1}{4}\left(\sqrt{3}\right)^2$ $\qquad$ 2

$\qquad = \dfrac{113}{24}$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ 1

OR

(b) LHS $= \dfrac{(\sin A + \cos A)^2 + (\sin A - \cos A)^2}{\sin^2 A - \cos^2 A}$ $\qquad\qquad\qquad$ 1

$\qquad\quad = \dfrac{2(\sin^2 A + \cos^2 A)}{1 - \cos^2 A - \cos^2 A}$ $\qquad\qquad\qquad\qquad\qquad$ 1

$\qquad\quad = \dfrac{2}{1 - 2\cos^2 A} = \text{RHS}$ $\qquad\qquad\qquad\qquad\qquad$ 1

SECTION – D

In this section, there are **4** long answer questions of **5** marks each :

32. (a) Prove that the lengths of two tangents drawn from an external point to a circle are equal.

OR

(b) If all the sides of a parallelogram touch a circle, show that the parallelogram is a rhombus.

Solution: (a)   Given: PQ and PR are tangents to a circle with centre O

To prove: PQ = PR.

Construction: Join OP, OQ and OR.   2

Proof :In Δ OQP and Δ ORP

∠OQP =∠ORP =90º

OQ = OR (Radii)   2

OP = OP (Common side)

⇒ Δ OQP ≅ Δ ORP [By RHS congruence criterion]   ½

PQ = PR   [CPCT]   ½

OR

(b)   As lengths of tangents drawn from an external point to a circle are equal
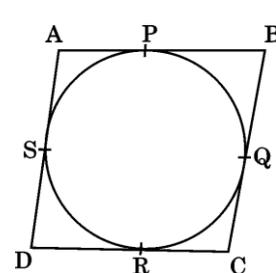
AP = AS   …………(i)

BP = BQ   …………(ii)   2

DR = DS   …………(iii)

CR = CQ   …………(iv)

Adding the above equations we get, AB + CD = AD + BC   1

⇒ 2AB = 2 AD   1

[∵ Opp. Sides of a Parallelogram are equal]

⇒ AB = AD ⇒ ‖gm ABCD is a rhombus.   1

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33. A man standing on the deck of a ship, which is 10 m above
water level, observes the angle of elevation of the top of a hill
as 60° and the angle of depression of the base of the hill as 30°.
Calculate the distance of the hill from the ship and the height
of the hill.

Solution: Let (h +10) be the height of the hill and x be the distance between base of the hill and the ship

$\dfrac{h}{x}$= tan 60° ⇒ h = $\sqrt{3}$x ………….. (i)   1 ½

$\dfrac{10}{x}$ = tan 30° = $\dfrac{1}{\sqrt{3}}$ ⇒ x = $10\sqrt{3}$ …..(ii)   1 ½

∴ h = 30   [from (i) and (ii)]   1

Height of the hill = 30 +10 = 40 m   1

Distance between the hill and the ship =$10\sqrt{3}$m

34. (a) A hemispherical bowl of internal diameter 42 cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3 cm and height 8 cm. How many bottles are required to empty the bowl ?

OR

(b) A solid is composed of a cylinder with hemispherical ends. If the total height of the solid is 16.2 cm and the diameter of the cylinder is 4.2 cm, find the volume and total surface area of solid. $\left[\pi = \frac{22}{7}\right]$

Solution :   (a) Volume of hemisphere $= \frac{2}{3} \times \pi \times 21 \times 21 \times 21$ 1½

Volume of cylinder $= \pi \times 3 \times 3 \times 8$ 1½

$\therefore$ Numbers of bottles $= \dfrac{\text{volume of hemisphere}}{\text{volume of cylinder}} = 85.75$ 1½

Hence, 86 bottles are required to empty the bowl   ½

OR

(b) r = 2·1 cm and h = 16·2 – 4·2 = 12 cm
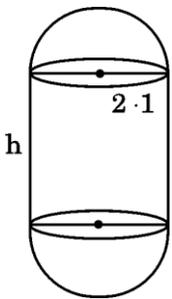
Volume of the solid $= \pi r^2 h + \frac{4}{3}\pi r^3$

$= \frac{22}{7} \times \frac{21}{10} \times \frac{21}{10} \times 12 \ + \ \frac{4}{3} \times \frac{22}{7} \times \frac{21}{10} \times \frac{21}{10} \times \frac{21}{10}$ 2

$= 205\cdot13$ cu.cm   ½

Total surface area of the solid $= 2\pi r h + 4\pi r^2$

$= 2 \times \frac{22}{7} \times \frac{21}{10} \times 12 + 4 \times \frac{22}{7} \times \frac{21}{10} \times \frac{21}{10}$ 2

$= 213\cdot84$ sq.cm   ½

35. Find the mode and the mean of the following frequency distribution :

Class	0 – 8	8 – 16	16 – 24	24 – 32	32 – 40
Frequency	6	7	10	8	9

Solution :

C.I	Frequency	x_i	$f_i x_i$
0 – 8	6	4	24
8 – 16	7	12	84
16 – 24	10	20	200
24 – 32	8	28	224
32 – 40	9	36	324
Total	40		856

Correct table

1½

$$\text{Mean} = \frac{856}{40} = 21{\cdot}4$$

Modal class : 16 – 24

$$\text{Mode} = 16 + \frac{10-7}{2(10)-7-8} \times 8$$

$$= 20{\cdot}8$$

1½

1½

½

SECTION – E

This section consists of **3** case study based questions of **4** marks each :

36. Raghu is trying to find the height of a tower near his house, using the properties of similar triangles. The height of Raghu's house is 12 m. When Raghu's house casts a shadow 6 m long on the ground, the tower casts a shadow 40 m long on the ground. At the same time, the house of his friend Ramesh casts 12 m long shadow on the ground.

    Based on the above information, answer the following :

    (i)   What is the height of the tower ?

    (ii) What is the height of Ramesh's house ?

    (iii) (a) When the tower casts a shadow of 60 m long, what will be the length of shadow of Ramesh's house ?

    OR

    (iii) (b) When the tower casts a shadow of 48 m long, what will be the length of shadow of Raghu's house ?

Solution :

Raghu's house · Tower · Ramesh's house

12 · x · y

6 · 40 · 12

80 · 24

60 · a
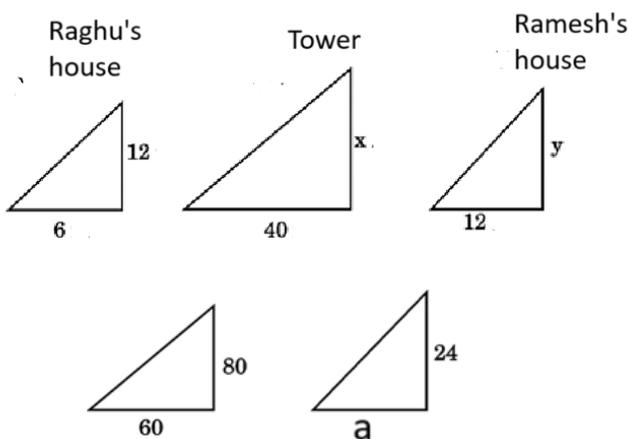
Using similarity of triangles:

(i) $\dfrac{x}{40} = \dfrac{12}{6}$ ⇒ x = 80

i.e Height of the tower = 80 m

(ii) $\dfrac{12}{6} = \dfrac{y}{12}$ ⇒ y = 24

i.e. Height of the Ramesh's house = 24m

(iii) (a) $\dfrac{80}{60} = \dfrac{24}{a}$

⇒ a = 18m

i.e length of shadow of Ramesh's house = 18 m

OR

1

1

1

1

430(B)

(iii) (b)Let b be the length of Raghu's house $$\frac{80}{48} = \frac{12}{b}$$ $$\Rightarrow \quad b = 7 \cdot 2 \text{ m}$$ i.e length of shadow of Raghu's house =7.2 m	1 1

37. A teacher asked his students to draw a right triangle ABC with

    AB = 8 cm, ∠B = 90° and BC = 15 cm. Based on the above,

    answer the following :

    (i)   Evaluate $(\sin^2 A - \cos^2 A)$

    (ii) Evaluate $\left(\dfrac{1}{\cos^2 A} - \dfrac{1}{\cot^2 A} \right)$

    (iii) (a) Evaluate $\dfrac{2 \tan A}{1 + \tan^2 A}$ and prove that it is equal to

              $2 \sin A \cos A$.

OR

    (iii) (b) Evaluate : $\dfrac{\tan^2 A - \sec^2 A}{\cot^2 A - \operatorname{cosec}^2 A}.$

Solution: (i) Hypotenuse AC = 17 cm	
$\Rightarrow \sin^2 A - \cos^2 A = \left(\dfrac{15}{17}\right)^2 - \left(\dfrac{8}{17}\right)^2 = \dfrac{161}{289}$	1
(ii) $\dfrac{1}{\cos^2 A} - \dfrac{1}{\cot^2 A} = \dfrac{17^2}{8^2} - \dfrac{15^2}{8^2} = 1$	1
(iii) (a) $\dfrac{2\tan A}{1+\tan^2 A} = \dfrac{2 \times \frac{15}{8}}{1 + \frac{15^2}{8^2}} = \dfrac{240}{289}$	1
$2 \sin A \cos A = 2 \times \dfrac{15}{17} \times \dfrac{8}{17} = \dfrac{240}{289}$ Hence they are equal	1
Note : Marks should be awarded to the alternate solution as well :	
$\dfrac{2 \tan A}{\sec^2 A}$	1
$= \dfrac{2 \times \frac{\sin A}{\cos A}}{\frac{1}{\cos^2 A}}$	½
$= 2 \sin A \cos A$	½
OR	
(iii) (b) $\dfrac{\tan^2 A - \sec^2 A}{\cot^2 A - \operatorname{cosec}^2 A} = \dfrac{\left(\frac{15}{8}\right)^2 - \left(\frac{17}{8}\right)^2}{\left(\frac{8}{15}\right)^2 - \left(\frac{17}{15}\right)^2} = 1$	2

38. Deepak has to cut the circular pizza into 8 equal slices such that all 8 of them get a slice. The pizza is 35 cm in diameter. Using the information, answer the following :

(i) How many times will he have to make cut along the diameter to make 8 slices ?

(ii) What is the radius of each sector type slice ?

(iii) (a) Find the area of each slice of pizza.

OR

(iii) (b) Find the area of a slice, if only four equal pieces are cut.

Solution : (i) 4 times	1
(ii) radius $= \frac{35}{2}$ or 17·5 cm	1
(iii) (a) Area of each slice $= \frac{22}{7} \times \frac{35}{2} \times \frac{35}{2} \times \frac{1}{8} = 120\cdot31$ sq. cm	2
OR	
(iii) (b) Area of each slice $= \frac{22}{7} \times \frac{35}{2} \times \frac{35}{2} \times \frac{1}{4} = 240\cdot63$ sq. cm	2