IMP MCQs Lecture 9

Chp2 Equations
Chp3 Linear Inequalities

CA. Pranav Popat

Schedule

Date	Day	Chapter to be Covered
05-Aug-25	Tue	Chp4 Math for Finance
07-Aug-25	Thu	Chp13 Statistical Description of Data
09-Aug-25	Sat	Chp14 Central Tendency & Dispersion
11-Aug-25	Mon	Chp17 Correlation and Regression
13-Aug-25	Wed	Chp12 Blood Relations and Chp10 Direction Test
15-Aug-25	Fri	Chp11 Seating Arrangements & Chp9 Number Series…
17-Aug-25	Sun	Chp1 Ratio Proportion Indices Logarithm
19-Aug-25	Tue	Chp18 Index Numbers and Chp6 Sequence and Series
21-Aug-25	Thu	Chp2 Equations & Chp3 Linear Inequalities
23-Aug-25	Sat	Chp5 Permutations & Combinations
25-Aug-25	Mon	Chp7 Set Relation Functions
27-Aug-25	Wed	Chp15 Probability and Chp16 Theoretical Distribution

24 Days Challenge

telegram

@ learnwith pranav

24 DAYS QA CHALLENGE

QA (Math, LR and Stats)

CA FOUNDATION SEP 2025

BY CA. PRANAV POPAT

Day Numbe	Date	Day	Title	Video Link	PDF Link	Duration (Hours)
8	11-Aug-25	Mon	IMP MCQs of Chp17 (Live on YT)	Play	PDF	0:50:36
9	12-Aug-25	Tue	Revision of Chp12 Blood Relations (Self/ One Shot)	Play	PDF	1:24:49
			Revision of Chp10 Direction Test (Self/ One Shot)	Play	PDF	1:01:11
10	13-Aug-25	Wed	IMP MCQs of Chp12 and Chp10 (Live on YT)	Play	PDF	1:02:11
11	14-Aug-25	Thu	Revision of Chp11 Seating Arrangements (Self/ One Shot)	Play	PDF	1:48:40
			Revision of Chp9 Number Series, Coding, Decoding (Self/ One Shot)	Play	PDF	1:15:49
12	15-Aug-25	Fri	IMP MCQs of Chp11 and Chp9 (Live on YT)	Play	PDF	1:01:49
13	16-Aug-25	Sat	Revision of Chp1 Ratio Proportion Indices Logarithm (Self/ One Shot)	Play	PDF	1:30:59
14	17-Aug-25	Sun	IMP MCQs of Chp1 Ratio Proportion Indices Logarithm (Live on YT)	Play	PDF	0:39:19
15	18-Aug-25	Mon	Revision of Chp18 Index Numbers (Self/ One Shot)	Play	PDF	1:43:42
			Revision of Chp6 Sequence and Series (Self/ One Shot)	Play	PDF	1:45:37
16	19-Aug-25	Tue	IMP MCQs of Chp18 and Chp6 (Live on YT)	coming soon	coming soon	

let’s get started.

Chp2 Equations

PYQ May 2025

PYQ May 2025

(86) *Puru gets on the elevator at the 11th floor of building and rides up at the rate of 57 floors per minute. At the same time, Ishu gets on elevator at the 51st floor of same building and rides down at rate of 63 floor per minute. If they continue travelling at these rates, then at which floor will their paths cross?*

a. 17 b. 19

c. 27 d. 30

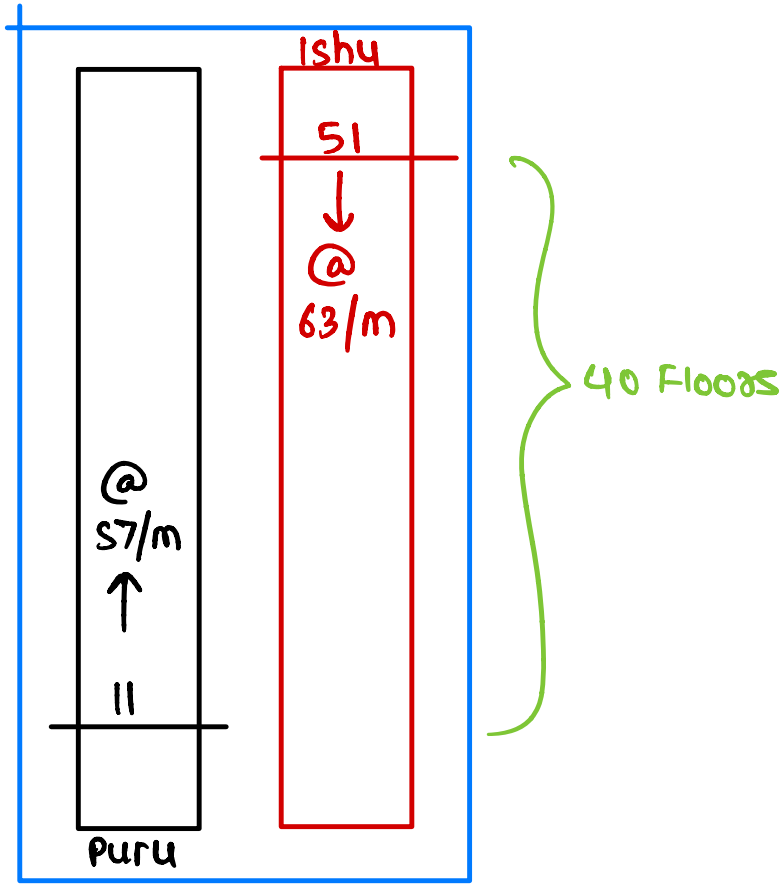
PYQ May 2025

PYQ May 2025

(86) *Puru gets on the elevator at the 11th floor of building and rides up at the rate of 57 floors per minute. At the same time, Ishu gets on elevator at the 51st floor of same building and rides down at rate of 63 floor per minute. If they continue travelling at these rates, then at which floor will their paths cross?*

a. 17 b. 19

c. 27 d. 30 ✓



both will cross each other when sum of distance travelled by both is equal to 40 floors and time taken to reach there is same

let t is that time in minutes

distance = speed x time

Puru: D = 57t Ishu: D = 63t

Total distance = 40 floors

57t + 63t = 40

t = 1/3 min

Puru will reach to: 11 floor + 57 x 1/3 = 30th

Ishu " : 51 − 63 x 1/3 = 30th

PYQ May 2025

	PYQ May 2025
(85)	*The longest side of a triangle is 2 times the shortest side and the third side is 4 cm shorter then longest side. If the perimeter of triangle is at least 61 cm, find the minimum length of shortest side.*
	a. 7 cm b. 9 cm
	c. 11 cm d. 13 cm

PYQ May 2025

PYQ May 2025

(85) *The longest side of a triangle is 2 times the shortest side and the third side is 4 cm shorter then longest side. If the perimeter of triangle is at least 61 cm, find the minimum length of shortest side.*

a. 7 cm b. 9 cm

c. 11 cm d. 13 cm ✓

let S, L, T be the shortest side, longest side and third side respectively

$L = 2S$, $T = L - 4$

$L + S + T \geq 61 \Rightarrow 2S + S + L - 4 \geq 61$

$2S + S + 2S - 4 \geq 61$

$5S \geq 65$

$S \geq 13$ cm

PYQ May 2025

		PYQ May 2025
(82)	The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has	
	a. Two distinct real roots	b. Two equal real roots
	c. No real roots	d. More than two real roots

PYQ May 2025

PYQ May 2025

(82) The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has

a. Two distinct real roots

b. Two equal real roots

c. ✓ No real roots

d. More than two real roots

$b^2 - 4ac = [-\sqrt{5}]^2 - 4(2)(1)$

$= 5 - 8 = -3$ (negative)

↓

unreal

MTP 2 – May 2025

MTP 2 May 2025

(8) *The point of intersection between the straight line* $3x+2y=6$ *and* $3x-y=12$ *lie in*

a. 1^{st} *quadrant*

b. 2^{nd} *quadrant*

c. 3^{rd} *quadrant*

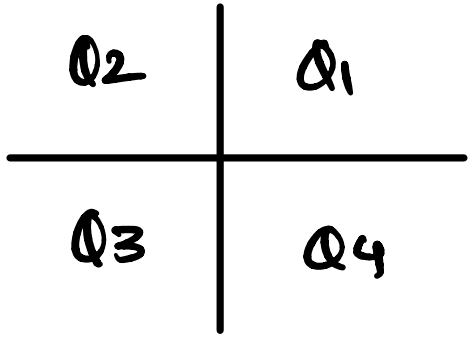
d. 4^{th} *quadrant*

MTP 2 – May 2025

MTP 2 May 2025

(8) *The point of intersection between the straight line* $3x+2y=6$ *and* $3x-y=12$ *lie in*

a. 1^{st} *quadrant*
b. 2^{nd} *quadrant*
c. 3^{rd} *quadrant*
d ✓ 4^{th} *quadrant*



$3x+2y=6$
$3x-y=12$
$3y=-6$
$y=-2$

$3x+2(-2)=6$
$3x=10$, $x=10/3$

$x \rightarrow$ +ve
$y \rightarrow$ −ve
} quadrant 4

MTP 1 – May 2025

MTP 1 - May 2025

(9) If $2+\sqrt{3}$ is a root of a quadratic $x^2+px+q=0$ then find the value of p and q.

a. (4,-1) b. (4,1)

c. (-4,1) d. (2,3)

MTP 1 – May 2025

MTP 1 - May 2025

(9) *If* $2+\sqrt{3}$ *is a root of a quadratic* $x^2+px+q=0$ *then find the value of p and q.*

a. (4,-1) b. (4,1)

c. (-4,1) d. (2,3)

$\alpha = 2+\sqrt{3} \quad \beta = 2-\sqrt{3}$

$a=1, b=p, c=q$

$\alpha+\beta = \frac{-b}{a}$ $\qquad \alpha\beta = \frac{c}{a}$

$2+\sqrt{3}+2-\sqrt{3} = \frac{-p}{1}$ $\qquad (2+\sqrt{3})(2-\sqrt{3}) = \frac{q}{1}$

$4 = -p$ $\qquad 4-3 = q$

$p = -4$ $\qquad q = 1$

c. $(-4,1)$

PYQ Jan 2025

PYQ Jan 2025

(46) *Suppose a father had a sum of ₹ 3,600 and he decided to divide his amount among his three sons Anil Sunil and Nimal in such a way that 3 times Anil's share, 6 times Sunil's share, and 8 times Nimal's share are all equal. Then Anil's share is*

a. ₹ 1,920 *b.* ₹ 960

c. ₹ 720 *d.* ₹ 1860

PYQ Jan 2025

PYQ Jan 2025

(46) *Suppose a father had a sum of ₹ 3,600 and he decided to divide his amount among his three sons Anil Sunil and Nimal in such a way that 3 times Anil's share, 6 times Sunil's share, and 8 times Nimal's share are all equal. Then Anil's share is*

a. ₹ 1,920 ✓ b. ₹ 960

c. ₹ 720 d. ₹ 1860

$$A + S + N = 3600$$

$$3A = 6S = 8N$$

$$A + \frac{3}{6}A + \frac{3}{8}A = 3600$$

$$A\left[1 + \frac{3}{6} + \frac{3}{8}\right] = 3600$$

$$A = 1920$$

PYQ Jan 2025

PYQ Jan 2025

(50) If α and β are roots of the equation $2x^2-4x+6=0$ then quadratic equation with roots $\frac{\alpha^2}{\beta}$ and $\frac{\beta^2}{\alpha}$ is

a. $3x^2-10x+9=0$

b. $3x^2+10x+9=0$

c. $x^2-13x+3=0$

d. $x^2+10x+9=0$

PYQ Jan 2025

PYQ Jan 2025

(50) If α and β are roots of the equation $2x^2-4x+6=0$ then quadratic equation with roots $\frac{\alpha^2}{\beta}$ and $\frac{\beta^2}{\alpha}$ is

a. $3x^2-10x+9=0$

b. ✓ $3x^2+10x+9=0$

c. $x^2-13x+3=0$

d. $x^2+10x+9=0$

For new eq., first root $\frac{\alpha^2}{\beta}$ second $\frac{\beta^2}{\alpha}$

sum of roots $= \frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha} = \frac{\alpha^3+\beta^3}{\alpha\beta}$

$= \frac{(\alpha+\beta)^3-3\alpha\beta(\alpha+\beta)}{\alpha\beta}$

$= \frac{2^3-3(3)(2)}{3} = \frac{-10}{3}$

product of roots $= \frac{\alpha^2}{\beta}\times\frac{\beta^2}{\alpha} = \alpha\beta = \frac{6}{2} = 3$

Solve eq, $a=2, b=-4, c=6$

$\frac{-(-4)\pm\sqrt{(-4)^2-4(2)(6)}}{2(2)}$

$\frac{4\pm\sqrt{-32}}{4}$ } unreal

New eq. $x^2-\left(\frac{-10}{3}\right)x+3=0$

$3x^2+10x+9=0$

$\alpha+\beta = -\frac{b}{a} = -\frac{(-4)}{2} = +2, \quad \alpha\beta = \frac{c}{a} = \frac{6}{2} = 3$

MTP 2 – Jan 2025

	MTP 2 - Jan 2025
(47)	*The sum of two numbers is 62 and their product is 960. The sum of their reciprocals is*
	a. 31/480 *b.* 29/480
	c. 61/960 *d.* 41/480

MTP 2 – Jan 2025

MTP 2 - Jan 2025			
(47)	The sum of two numbers is 62 and their product is 960. The sum of their reciprocals is		
	a. 31/480	b. 29/480	
	c. 61/960	d. 41/480	

$a+b = 62$

$ab = 960$

$$\frac{1}{a}+\frac{1}{b} = \frac{a+b}{ab} = \frac{62}{960} = \frac{31}{480}$$

MTP 1 – Jan 2025

MTP 1 - Jan 2025

(4) *For a certain commodity the demand equation giving "y" units for price "p" in rupees per unit is y = 100 (10 – p). The supply equation giving the supply z unit for price "p" in rupees per unit is z = 75 (p – 3). The market price is such at which demand equals supply. Find the market price and quantity that will be bought and sold.*

a. ₹7; 300 units b. ₹8; 400 units

c. ₹5; 200 units d. None

MTP 1 – Jan 2025

MTP 1 - Jan 2025

(4) *For a certain commodity the demand equation giving "y" units for price "p" in rupees per unit is y = 100 (10 – p). The supply equation giving the supply z unit for price "p" in rupees per unit is z = 75 (p – 3). The market price is such at which demand equals supply. Find the market price and quantity that will be bought and sold.*

a. ₹7; 300 units b. ₹8; 400 units

c. ₹5; 200 units d. None

check by options,

a) at p = 7

y = 100 (10 – 7) = 300

z = 75 (7 – 3) = 300

} equal

MTP 1 – Jan 2025

MTP 1 - Jan 2025

(5) *The age of a person is 8 years more than thrice the age of the sum of his two grandsons who were twins. After 8 years his age will be 10 years more than twice the sum of the ages of hos grandsons. Then the age of person when the twins were born is:*

a. 86 years *b.* 73 years

c. 68 years *d.* 63 years

MTP 1 – Jan 2025

MTP 1 - Jan 2025

(5) *The age of a person is 8 years more than thrice the age of the sum of his two grandsons who were twins. After 8 years his age will be 10 years more than twice the sum of the ages of hos grandsons. Then the age of person when the twins were born is:*

a. 86 years b. 73 years ✓

c. 68 years d. 63 years

age of x when y were born

86 − 13 = 73 years

let x and y be current age of man and a grandson

$x = (2y \times 3) + 8 \longrightarrow x = 6y + 8$ — (i)

$x + 8 = [2(y+8)] \times 2 + 10 \longrightarrow x + 8 = 4y + 32 + 10$

$x = 4y + 34$ — (ii)

$0 = 2y - 26 \Rightarrow y = 13$ years

$x = 2(13) \times 3 + 8 = 86$ years

MTP Sep 2024 – I

			MTP 1 - Sep 2024
(47)	*If the ratio of the roots of equation* $4x^2 - 6x + p + 0$ *is 1:2 then the value of p is:*		
	a. 1	*b.* 2	
	c. -2	*d.* -1	

MTP Sep 2024 – I

MTP 1 - Sep 2024			
(47)	If the ratio of the roots of equation $4x^2 - 6x + p + 0$ is 1:2 then the value of p is:		
	a. 1	b. 2 ✓	
	c. -2	d. -1	

$4x^2 - 6x + p = 0$

$a = 4,\ b = -6,\ c = p$

also $\alpha : \beta = 1:2$, $\beta = 2\alpha$

$\alpha + \beta = -\frac{(-6)}{4}$

$\alpha + 2\alpha = \frac{3}{2}$

$3\alpha = \frac{3}{2} \Rightarrow \alpha = \frac{1}{2}$

$\beta = 2\alpha = 2 \times \frac{1}{2} = 1$

$\alpha\beta = \frac{p}{4}$

$\frac{1}{2} \times 1 = \frac{p}{4}$

$p = 2$

PYQ Jun 2024

PYQ June 24

If α and β are roots of the equation $ax^2+bx+c=0$ then the equation whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is:

a. $cx^2-bx+a=0$

b. $cx^2+bx+a=0$

c. $x^2+bx+a=0$

d. $x^2+bx-a=0$

PYQ Jun 2024

PYQ June 24

If α and β are roots of the equation $ax^2+bx+c=0$ then the equation whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is:

a. ✓ $cx^2-bx+a=0$ b. $cx^2+bx+a=0$

c. $x^2+bx+a=0$ d. $x^2+bx-a=0$

for given eq. $\alpha+\beta=-\frac{b}{a}$, $\alpha\beta=\frac{c}{a}$

for new eq., sum of roots $=\frac{1}{\alpha}+\frac{1}{\beta}=\frac{\alpha+\beta}{\alpha\beta}=\frac{-b/a}{c/a}=-\frac{b}{c}$

product of roots $=\frac{1}{\alpha}\times\frac{1}{\beta}=\frac{1}{\alpha\beta}=\frac{1}{c/a}=\frac{a}{c}$

required eq. $x^2-\left(\frac{b}{c}\right)x+\frac{a}{c}=0 \Rightarrow \frac{cx^2-bx+a}{c}=0$

$\Rightarrow cx^2-bx+a=0$

MTP June 24 Series I

MTP June 24 Series I

Find the positive value of k for which the equations: $x^2 + kx + 64 = 0$ *and* $x^2 + 8x + k = 0$ *will have real roots:*

a. 12 b. 16

c. 18 d. 22

MTP June 24 Series I

MTP June 24 Series I

Find the positive value of k for which the equations: $x^2 + kx + 64 = 0$ *and* $x^2 + 8x + k = 0$ *will have real roots:*

a. 12 b. 16 ✓

c. 18 d. 22

if roots are real, $b^2 - 4ac \geq 0$

In $x^2 + kx + 64 = 0$, $a = 1, b = k, c = 64$

$k^2 - 4(1)(64) \geq 0$

$k^2 - 256 \geq 0$

$k^2 \geq 256$

$k \geq 16$

In $x^2 + 8x + k \geq 0$

$8^2 - 4(1)k \geq 0$

$64 - 4k \geq 0$

$64 \geq 4k$

$16 \geq k$

common value = 16

MTP June 24 Series III

MTP June 24 Series III

x	5	6	7	8
y	11	13	15	17

In the above table corresponding values of two variable x and y have been given. Which of the following equations establishes the relationship between the two variables?

a. $y = 3x + 2$ b. $y = 2x - 1$

c. $y = 2x + 1$ d. $y = 3x + 1$

MTP June 24 Series III

MTP June 24 Series III

x	5	6	7	8
y	11	13	15	17

In the above table corresponding values of two variable x and y have been given. Which of the following equations establishes the relationship between the two variables?

a. $y = 3x + 2$ b. $y = 2x - 1$

c. $y = 2x + 1$ d. $y = 3x + 1$

✓

check by options,

put value of x in RHS

and check value of y

(c) $y = 2x + 1$

MTP Dec 23 – Series II

If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is_____.

a. $x^2 - 16x - 25 = 0$ b. $x^2 - 16x + 25 = 0$

c. $x^2 - 16x + 5 = 0$ d. None of these

MTP Dec 23 – Series II

If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is_____.

a. $x^2-16x-25=0$ b. $x^2-16x+25=0$

c. $x^2-16x+5=0$ d. None of these

$\frac{\alpha+\beta}{2}=8 \Rightarrow \alpha+\beta=16$

$\sqrt{\alpha\beta}=5 \Rightarrow \alpha\beta=25$

Req. equation is $x^2-16x+25=0$

PYQ Dec. 21

In a multiple choice question paper consisting of 100 questions of 1 mark each, a candidate gets 60% marks. If the candidate attempted all questions and there was a penalty of 0.25 marks for wrong answers is:

a. 32 *b.* 36

c. 40 *d.* 38

PYQ Dec. 21

In a multiple choice question paper consisting of 100 questions of 1 mark each, a candidate gets 60% marks. If the candidate attempted all questions and there was a penalty of 0.25 marks for wrong answers is:

a. 32 b. 36
c. 40 d. 38

let no. of wrong ans are x then
no. of correct ans are (100−x)

Now,

$$[(100-x)\times 1] + [x\times(-0.25)] = 60$$

$$100 - x - 0.25x = 60$$

$$40 = 1.25x$$

$$x = 32$$

MTP Nov 21

The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is ₹ 8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?

a. ₹ 8876 *b.* ₹ 9156

c. ₹ 9472 *d.* ₹ 9000

MTP Nov 21

The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is ₹ 8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?

a. ₹ 8876 b. ₹ 9156

c. ₹ 9472 d. ₹ 9000

let variable charge be x per km
and fixed charge be y

$$456x + y = 8252$$
$$484x + y = 8728$$

$$-28x = -476$$

$$x = 17/km$$

$$456(17) + y = 8252$$

$$y = 500$$

Bill for 500 km,

$$(500 \times 17) + 500 = 9000$$

PYQ Nov. 20

If $2x^2-(a+6)2x+12a=0$, then the roots are:

a. 6 and a

b. 4 and a^2

c. 3 and 2a

d. 6 and 3a

PYQ Nov. 20

If $2x^2-(a+6)2x+12a=0$, then the roots are:

a. 6 and a ✓ b. 4 and a^2

c. 3 and 2a d. 6 and 3a

$2x^2-2xa-12x+12a=0$

$2x(x-a)-12(x-a)=0$

$(2x-12)(x-a)=0$

$2x-12=0 \Rightarrow x=6$

$x-a=0 \Rightarrow x=a$

PYQ Jan. 21

The value of p for which the difference between the root of equation $x^2 + px + 8 = 0$ *is 2*

a. ± 2 b. ± 4

c. ± 6 d. ± 8

PYQ Jan. 21

The value of p for which the difference between the root of equation $x^2 + px + 8 = 0$ *is 2*

a. ± 2 b. ± 4

c. ± 6 ✓ d. ± 8

for given eq., $\alpha - \beta = 2$

$\alpha + \beta = -p$, $\alpha\beta = 8$

$(\alpha+\beta)^2 - (\alpha-\beta)^2 = 4\alpha\beta$

$(-p)^2 - (2)^2 = 4(8)$

$p^2 - 4 = 32$

$p^2 = 36$, $p = \pm 6$

PYQ Jan. 21

If the quadratic equation $x^2 + px + q = 0$ and $x^2 + qx + p = 0$ have a common root then $p + q = ?$

a. 0 b. 1

c. -1 d. 2

PYQ Jan. 21

If the quadratic equation $x^2 + px + q = 0$ and $x^2 + qx + p = 0$ have a common root then $p + q = ?$

a. 0 b. 1

c. -1 d. 2

let common root be α

put $x = \alpha$ in both equations,

$$\alpha^2 + p\alpha + q = 0 \quad \text{—— (i)}$$

$$\alpha^2 + q\alpha + p = 0 \quad \text{—— (ii)}$$

$$p\alpha - q\alpha + q - p = 0$$

$$p\alpha - q\alpha = p - q$$

$$\alpha(p - q) = p - q$$

$$\alpha = 1$$

put value of α in eq(i)

$$1^2 + p(1) + q = 0$$

$$p + q = -1$$

PYQ Jan. 21

The harmonic mean of the roots of the equation $(5+\sqrt{2})x^2-(4+\sqrt{5})x+8+2\sqrt{5}=0$ *is*

a. 2 b. 4

c. 6 d. 8

PYQ Jan. 21

The harmonic mean of the roots of the equation $(5+\sqrt{2})x^2-(4+\sqrt{5})x+8+2\sqrt{5}=0$ is

a. 2 b. 4 ✓

c. 6 d. 8

$$HM = \frac{n}{\Sigma(1/x)}$$

HM of α and β, $\frac{2}{\frac{1}{\alpha}+\frac{1}{\beta}}$

$$= \frac{2}{\frac{\alpha+\beta}{\alpha\beta}} = \frac{2\alpha\beta}{\alpha+\beta} \quad \text{---(i)}$$

In the given eq,

$$\alpha+\beta = \frac{-b}{a} = \frac{-(-(4+\sqrt{5}))}{5+\sqrt{2}} = \frac{4+\sqrt{5}}{5+\sqrt{2}}$$

$$\alpha\beta = \frac{c}{a} = \frac{8+2\sqrt{5}}{5+\sqrt{2}} = \frac{2(4+\sqrt{5})}{5+\sqrt{2}}$$

put in eq(i)

$$HM = \frac{2 \times \frac{2(4+\sqrt{5})}{5+\sqrt{2}}}{\frac{(4+\sqrt{5})}{5+\sqrt{2}}} = 2\times 2 = 4$$

PYQ July 21

The sum of square of any real positive quantity and its reciprocal is never less than:

a. 1 b. 2

c. 3 d. 4

let real qty be x, $x > 0$

now lets try different values of x

x	$x^2 + \frac{1}{x^2}$
0.1	$(0.1)^2 + \frac{1}{(0.1)^2} = 100.01$
0.9	$(0.9)^2 + \frac{1}{(0.9)^2} = 2.044$
1	$(1)^2 + \frac{1}{(1)^2} = 2$ → min
1.1	$(1.1)^2 + \frac{1}{(1.1)^2} = 2.036$

MTP May 20

The roots of the quadratic equation $x^2 - 4x + k = 0$ *are coincident if*

a. $k = 4$ *b.* $k = 3$

c. $k = 2$ *d.* $k = 1$

MTP May 20

The roots of the quadratic equation $x^2 - 4x + k = 0$ are coincident if

a. $k = 4$ ✓ b. $k = 3$

c. $k = 2$ d. $k = 1$

roots are coincident means roots are equal.

$b^2 - 4ac = 0$

$(-4)^2 - 4(1)(k) = 0$

$16 - 4k = 0$

$k = 4$

Chp3 Linear Inequalities

PYQ May 2025

7y

PYQ May 2025

(84) *On solving the inequalities* $6x + 7 \geq 18$, $x + 4y \geq 12, 2x + y \geq 10$; *which of the following are correct solutions*

a. (0, 18), (12, 0), (4, 2) and (2, 6)

b. (3, 0), (0, 3), (4, 2) and (7, 6)

c. (5, 0), (0, 10), (2, 4) and (2, 6)

d. (0, 18), (12, 0), (4, 2) and (0, 7)

$6x + 7y \geq 18$

a)

$6(0) + 7(18) \geq 18$

$126 \geq 18$

$0 + 4(18) \geq 12$

$72 \geq 12$

$2(0) + 4(18)$

$72 \geq 10$

PYQ May 2025

PYQ May 2025

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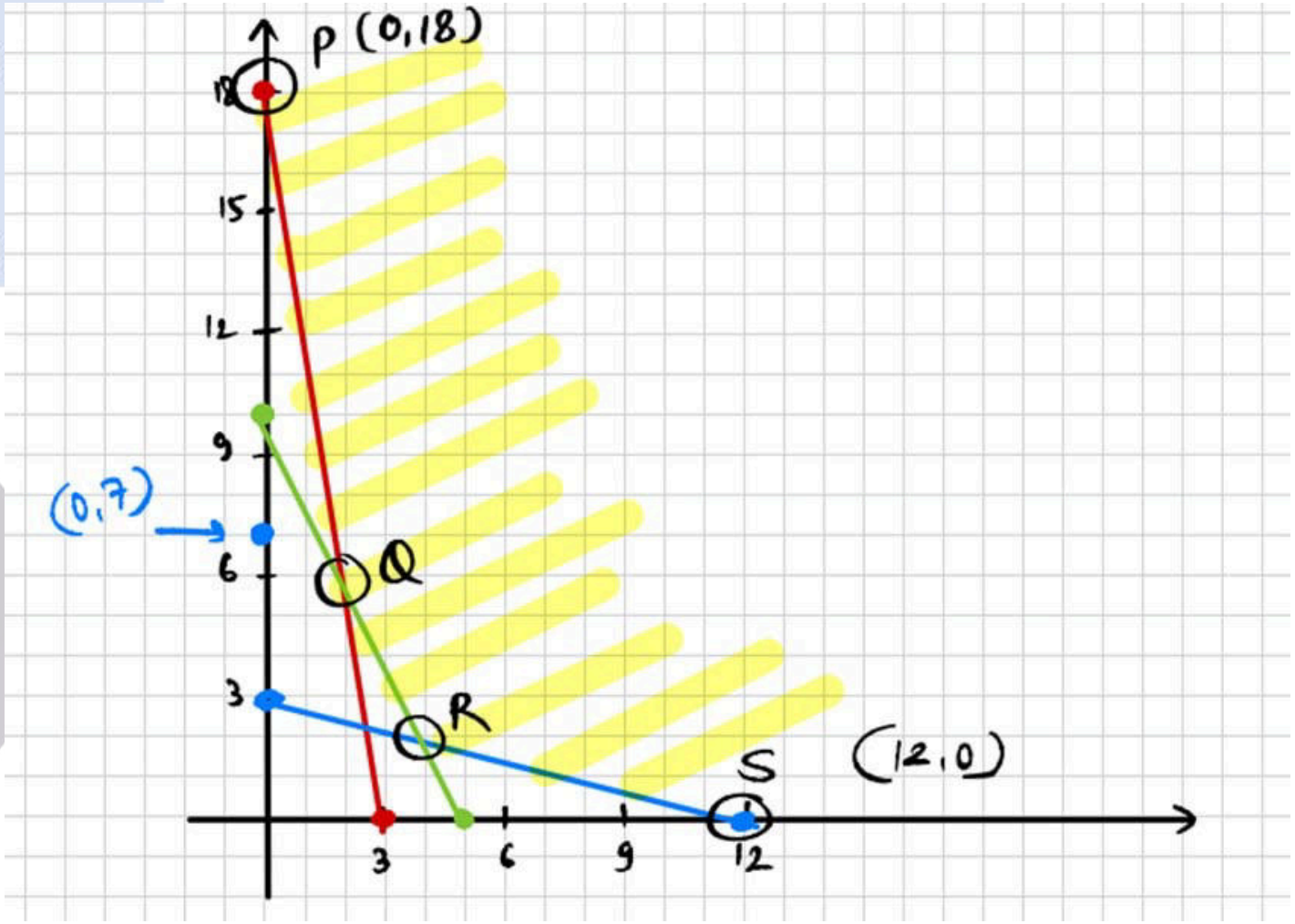
a. (0, 18), (12, 0), (4, 2) and (2, 6)

b. (3, 0), (0, 3), (4, 2) and (7, 6)

c. (5, 0), (0, 10), (2, 4) and (2, 6)

d. (0, 18), (12, 0), (4, 2) and (0, 7)



PYQ Jan 2025

PYQ Jan 2025

(10) *A company produce two type of product A & B, which require processing in two machines. First machine can be used up to 15 hours and second can be used at most 12 hrs in a day. The product A requires 2 hours on machine 1 & 3 hours on machine 2. Product B require 3 hours on machine 1 & 1 hour on machine 2. This can be expressed as :*

a. $2x_1 + 3x_2 \leq 15,\ 3x_1 + x_2 \leq 12$

b. $2x_1 + 3x_2 \leq 15,\ 3x_1 + x_2 \leq 15$

c. $3x_1 + 2x_2 \leq 15,\ 2x_1 + x_2 \leq 12$

d. $2x_1 + 3x_2 \leq 12,\ 3x_1 + x_2 \leq 15$

PYQ Jan 2025

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c. $3x_1 + 2x_2 \le 15,\ 2x_1 + x_2 \le 12$

d. $2x_1 + 3x_2 \le 12,\ 3x_1 + x_2 \le 15$

	M_1	M_2
A (x_1)	2	3
B (x_2)	3	1
Max	15	12

$2x_1 + 3x_2 \le 15$

$3x_1 + x_2 \le 12$

PYQ Jan 2025

PYQ Jan 2025

(51) *A manufacturer produces two products A and B. The profit on product A is ₹ 8 on each unit and profit on product B is ₹ 13 on each unit. Then the objective function is*

a. *Minimize* $Z = 8x_1 + 13x_2$

b. *Maximize* $Z = 8x_1 + 13x_2$

c. *Minimize* $Z = 13x_1 + 8x_2$

d. *Maximize* $Z = 13x_1 + 8x_2$

PYQ Jan 2025

PYQ Jan 2025

(51) *A manufacturer produces two products A and B. The profit on product A is ₹ 8 on each unit and profit on product B is ₹ 13 on each unit. Then the objective function is*

a. Minimize $Z = 8x_1 + 13x_2$

b. ✓ Maximize $Z = 8x_1 + 13x_2$

c. Minimize $Z = 13x_1 + 8x_2$

d. Maximize $Z = 13x_1 + 8x_2$

Max → as it is profit

MTP Sep 2024 – I

	MTP 1 - Sep 2024
(11)	*If* $2x+5>3x+2$ *and* $2x-3\leq 4x-5$ *then* x *takes which of the following value?*
	a. 4 *b.* -4
	c. 2 *d.* -2

MTP Sep 2024 – I

MTP 1 - Sep 2024

(11) *If* $2x+5>3x+2$ *and* $2x-3\leq 4x-5$ *then* x *takes which of the following value?*

a. 4 b. -4

c. 2 d. -2

$2x+5 > 3x+2$

$3 > x$

$2x-3 \leq 4x-5$

$2 \leq 2x$

$1 \leq x$

$1 \leq x < 3$

now check by options,

(C) 2 satisfy

PYQ Jun 2024

PYQ June 24
Given the constraints, $x \leq 3, y \leq 4$ and $4x + 3y \leq 12$, the point_____ is in the feasible region. (Select from the below given list)
a. (3, 4) b. (2, 4)
c. (2, 2) d. (1, 1)

PYQ Jun 2024

PYQ June 24

Given the constraints, $x \leq 3, y \leq 4$ and $4x + 3y \leq 12$, the point_____ is in the feasible region. (Select from the below given list)

a. (3, 4) b. (2, 4)

c. (2, 2) d. (1, 1) ✓

check by options:

	$x \leq 3$	$y \leq 4$	$4x+3y \leq 12$
a) (3,4)	$3 \leq 3$ ✓	$4 \leq 4$ ✓	$12+12 \leq 12$ ✗
b) (2,4)	$2 \leq 3$ ✓	$4 \leq 4$ ✓	$8+12 \leq 12$ ✗
c) (2,2)	$2 \leq 3$ ✓	$2 \leq 4$ ✓	$8+6 \leq 12$ ✗
d) (1,1)	$1 \leq 3$ ✓	$1 \leq 4$ ✓	$4+3 \leq 12$ ✓

PYQ Dec 23

The solution of the inequality $\frac{5-2x}{3} \leq \frac{x}{6} - 5$ is

a. $x \geq 8$ b. $x \geq 7$

c. $x \leq 80/3$ d. $x \geq 40/3$

PYQ Dec 23

The solution of the inequality $\frac{5-2x}{3} \leq \frac{x}{6} - 5$ is

a. $x \geq 8$ ✓

b. $x \geq 7$

c. $x \leq 80/3$

d. $x \geq 40/3$

$$\frac{5-2x}{3} \leq \frac{x}{6} - 5$$

$$\frac{5-2x}{3} \leq \frac{x-30}{6}$$

$$30 - 12x \leq 3x - 90$$

$$120 \leq 15x$$

$$8 \leq x$$

$$\Rightarrow x \geq 8$$

PYQ Nov. 20

Solve for x of the inequalities

$$2 \leq \frac{3x-2}{5} \leq 4 \text{ where } x \leftarrow N$$

a. $\{5,6,7\}$

b. $\{3,4,5,6\}$

c. $\{4,5,6\}$

d. None of these

PYQ Nov. 20

Solve for x of the inequalities

$$2 \le \frac{3x-2}{5} \le 4 \text{ where } x \leftarrow N$$

a. $\{5,6,7\}$

b. $\{3,4,5,6\}$

c. $\{4,5,6\}$

d. None of these ✓

$2 \le \frac{3x-2}{5}$

$10 \le 3x-2$

$12 \le 3x$

$4 \le x$

$\frac{3x-2}{5} \le 4$

$3x-2 \le 20$

$3x \le 22$

$x \le \frac{22}{3}$

$x \le 7.33$

$4 \le x \le 7.33$

$d\{4,5,6,7\}$

PYQ Jan. 21

The common region in the graph of the inequalities $x + y \leq 4, x - y \leq 4, x \geq 2$ *is*

a. *Equilateral triangle*
b. *Isosceles triangle*
c. *Quadrilateral*
d. *Square*

PYQ Jan. 21

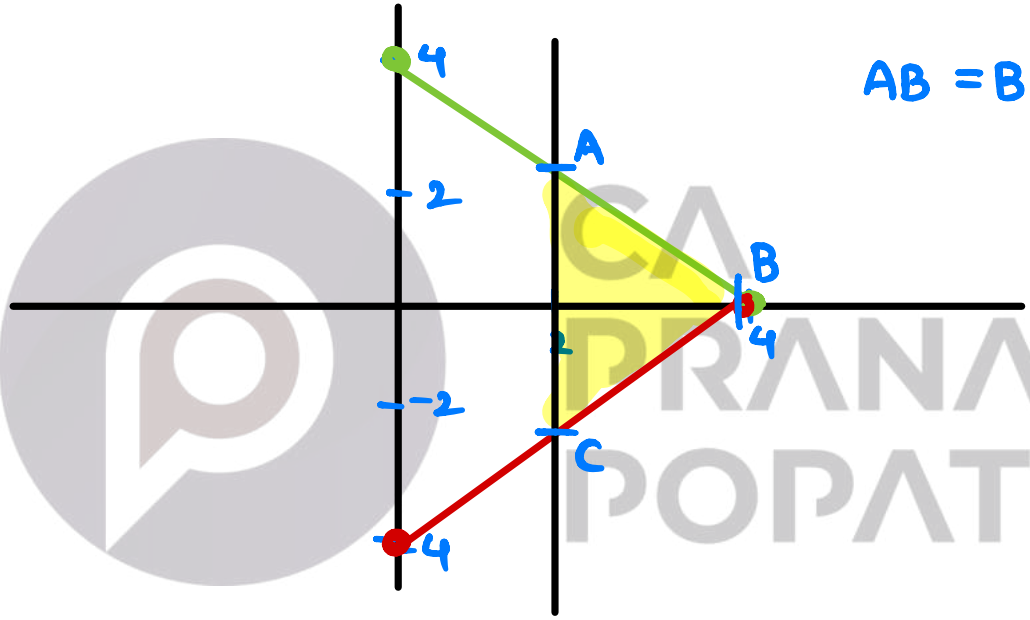
The common region in the graph of the inequalities $x+y \le 4, x-y \le 4, x \ge 2$ is

a. Equilateral triangle
b. ✓ Isosceles triangle
c. Quadrilateral
d. Square

$x+y \le 4$ (0,4) (4,0)

$x-y \le 4$ (0,-4), (4,0)

$x \ge 2$



AB = BC

AC > AB

AC > BC

so isosceles

PYQ Dec. 21

XYZ Company has a policy for its recruitment as: it should not recruit more than eight men (x) to three women (y). How can this fact be expressed in inequality?

a. $3y \geq 8x$

b. $3y \leq x / 8$

c. $8y \geq 3x$

d. $8y \leq 3x$

PYQ Dec. 21

XYZ Company has a policy for its recruitment as: it should not recruit more than eight men (x) to three women (y). How can this fact be expressed in inequality?

a. $3y \geq 8x$ b. $3y \leq x/8$

c. $8y \geq 3x$ d. $8y \leq 3x$

For $y = 3$, $x \leq 8$

$$\frac{x}{y} \leq \frac{8}{3}$$

$$3x \leq 8y$$

$$8y \geq 3x$$