UTS 02 Mathematice -IX

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DATE
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Answer key

Section A

(1 mark each)

Q1

Q2 d) (1,1) is not the solution for equation $x+2y=4$

Q3 b) 12

Q4 d) The whole is lesser than the part

Q5 d) (0,-5)

Section B

(2 mark each)

Q6

(i) let number $=x$

ATQ

$$2x-7=69$$

(ii) $2x-7=69$

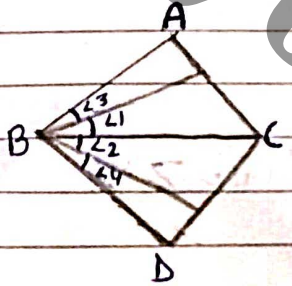
$\Rightarrow 2x=69+7=76$

$\Rightarrow x=\frac{76}{2}=38$

Thus $x=38$

(iii) This equation has only one unique solution.

Q7



Given $\angle 1=\angle 2$, $\angle 3=\angle 4$

To prove that $\angle ABC=\angle DBC$

Proof: $\angle 1=\angle 2$ (1)

$\angle 3=\angle 4$ (2)

add equation (1) and (2)

$\Rightarrow$ ① + ②

$\Rightarrow \angle 1 + \angle 3 = \angle 2 + \angle 4$

$\left(\begin{array}{l} \angle 1 + \angle 3 = \angle ABC \\ \angle 2 + \angle 4 = \angle DBC \end{array}\right)$

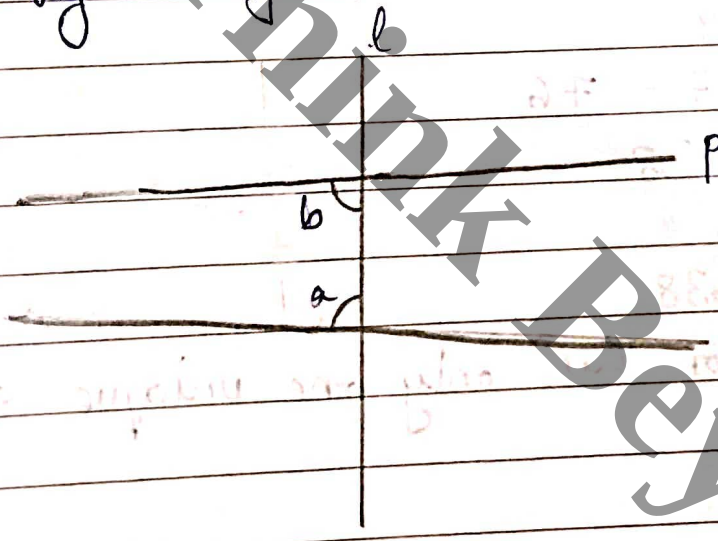
$\angle 1 + \angle 3 = \angle 2 + \angle 4$

$\angle ABC = \angle DBC$

axiom used : If equals are added to equals, the wholes are equal.

Q8

Fifth postulate : If a straight line falling on two straight lines makes the interior angle on the same side of it taken together less than two right angles, then the two straight lines, if produced indefinitely, meet on that side on which the sum of angles is less than two right angles.



$\angle a + \angle b \neq 90^\circ$

Section C

(3 marks each)

Q9

(i) $\left(\frac{x}{3}\right) + 2y = 5$

$\left(\frac{x}{3}\right) = 5 - 2y$

$\frac{x}{1} = (5 - 2y)3$

x in terms of y

$\therefore x = (5 - 2y)3$

(ii) let $x = 3, y = 2$

$\left(\frac{x}{3}\right) + 2(y) = 5$

$\left(\frac{3}{3}\right) + 2(2) = 5$

$\frac{1}{1} + 4 = 5$

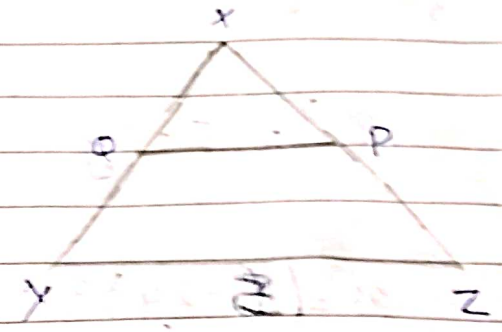
$1 + 4 = 5$

$5 = 5$

Thus $(x = 3, y = 2)$ is a solution for $\left(\frac{x}{3}\right) + 2y = 5$

Q10

Thing which are equal to another are also equal to each other.



$OX = \frac{1}{2} XY$

$PX = \frac{1}{2} XZ$

$OX = PX$

we get

$\frac{1}{2} XY = \frac{1}{2} XZ$

So

$2\left(\frac{1}{2} XY\right) = 2\left(\frac{1}{2} XZ\right)$

$XY = XZ$ (doubles of equals are also equals)

Q11

let $x = 2\sqrt{2}$, $y = \sqrt{2}$

ATQ

$3(2\sqrt{2}) + K(\sqrt{2}) = 4\sqrt{2}$

$6\sqrt{2} + K\sqrt{2} = 4\sqrt{2}$

$+K\sqrt{2} = 4\sqrt{2} - 6\sqrt{2}$

$K\sqrt{2} = -2\sqrt{2}$

$K = \frac{-2\sqrt{2}}{\sqrt{2}}$

There can be infinite no. of ~~solutions~~ values for K.

Q12

$2x + y = 4$

(y in terms of x)

$y = 4 - 2x$

Solutions

let $x = 1$

$y = 4 - 2(1)$

$= 4 - 2$

$y = 2$

$(1, 2)$

let $x = 2$

$y = 4 - 2(2)$

$= 4 - 4$

$y = 0$

$(2, 0)$

let $x = 3$

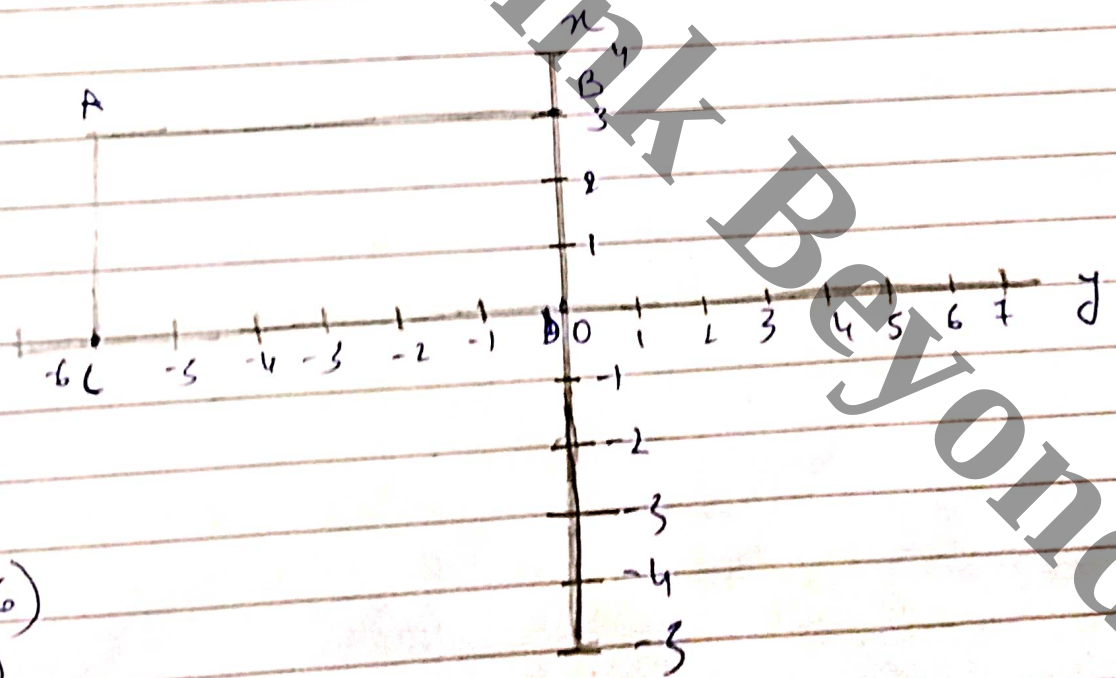
$y = 4 - 2(3)$

$= 4 - 6$

$y = -2$

$(3, -2)$

Q13



A = (3, -6)

B = (3, 0)

C = (0, -6)

D = (0, 0)

Section D

Q-14

father age x yrs
Son's age y yrs

ATQ

(i) $\boxed{y = 2x - 25}$

(ii) After 10 yrs

Son's age $y+10$
Father age $x+10$

$x+10 = 2(y+10) + 30$

$x+10 = 2y+20+30$

$x - 2y = 60$

(iii) $3x + 2y = 9$

for Xaxis put $y=0$

$3x = 9$

$x = 3$

$\therefore$ At $(3,0)$ cut Xaxis

for Yaxis put $x=0$

$2y = 9$

$y = 9/2 = 4.2$

At $(0, 4.2)$ cut at Yaxis.

Or

$(2, 3k)$ is a solⁿ of

$(3k+1)x + 2y = 10$

∴ Satisfy it

$(3k+1)2 + 2(3k) = 10$

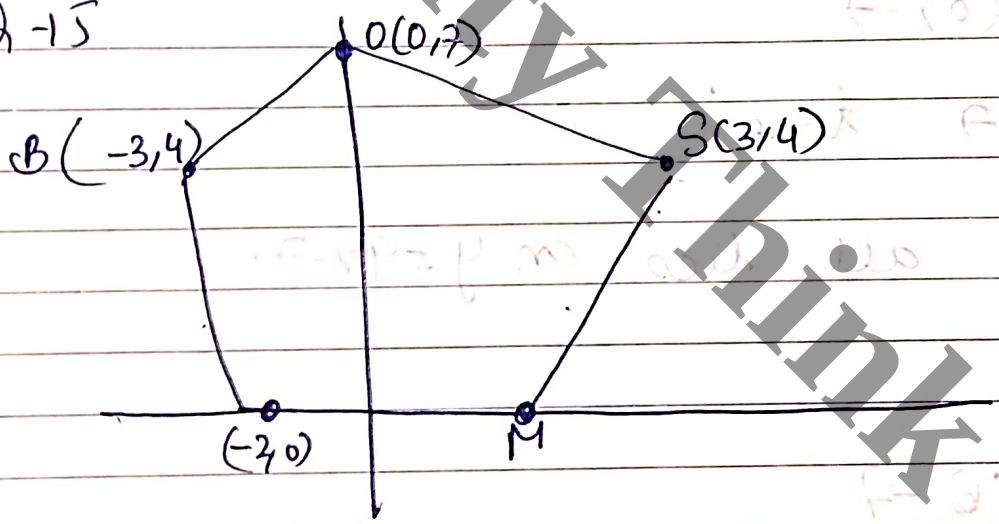
$6k + 2 + 6k = 10$

$12k = 8$

$k = \frac{8}{12} = \frac{2}{3}$

Section E.

Q-15



It's a pentagon.

planting of tree improves the air quality and we should plant more and more tree to improve the environmental pollution.

16

$y = 9x - 7$

A (1, 2)

$2 = 9(1) - 7$ true

B (−1, −16)

$-16 = 9(-1) - 7$

$-16 = -16$ true

C (0, −7)

$-7 = 9(0) - 7$

$-7 = -7$ true

A, B & C all lies on $y = 9x - 7$.

Put $x = 10$

$y = 9(10) - 7$
$= 90 - 7$
$= 83$ (10, 83)

$x = 5$

$y = 9(5) - 7$
$= 45 - 7$
$= 38$ (5, 38)

If $(2k+1, 3k-2)$ is a soln

$\therefore$ Satisfy it

$$3k-2 = 9(2k+1) - 7$$

$$3k-2 = 18k+9-7$$

$$3k-18k = 2+2$$

$$-15k = 4$$

$$k = \frac{4}{-15}$$