WITH GRAPH PAPER

केन्द्रीय माध्यमिक शिक्षा बोर्ड, दिल्ली

सैकण्डरी स्कूल परीक्षा (कक्षा दसवीं)

परीक्षार्थी प्रवेश–पत्र के अनुसार भरें

ाय Subject : MATHEMATICS

ाय कोड Subject Code : 041

ोक्षा का दिन एवं तिथि
ay & Date of the Examination : 07-03-2019 Thursday

ुत्तर देने का माध्यम
Medium of answering the paper : English

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Write code No. as written on the top of the question paper :

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Each letter be written in one box and one box be left blank between each part of the name. In case Candidate's Name exceeds 24 letters, write first 24 letters.

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केन्द्रीय माध्यमिक शिक्षा बोर्ड, दिल्ली

Central Board of Secondary Education, Delhi

WITH GRAPH PAPER

SECONDARY SCHOOL EXAMINATION (CLASS X)

सैकण्डरी स्कूल परीक्षा (कक्षा दसवीं)

Q. No.	01	02	03	04	05	06	07	08	09	10	TOTAL
MARKS	1	1	1	1	1	1	2	2	2	2	14

Q. No.	11	12	13	14	15	16	17	18	19	20	TOTAL
MARKS	2	2	3	3	3	3	3	3	3	3	28

Q. No.	21	22	23	24	25	26	27	28	29	30	TOTAL
MARKS	3	3	4	4	4	4	4	4	4	4	38

Q. No.	31	32	33	34	35	36	37	38	39	40	TOTAL
MARKS											

	GRAND TOTAL	80
MARKS IN WORDS	Eighty	

CBS

प्रमाणित किया जाता है कि मैंने इस उत्तर पुस्तिका का मूल्यांकन उचित प्रश्नपत्र के सैट और अंकन योजना के अनुसार किया है। यह भी प्रमाणित किया जाता है कि उत्तर पुस्तिका के अन्दर कोई भी प्रश्न बिना मूल्यांकन के नहीं छूटा है।

Certified that I have evaluated this answer book according to the correct set of question

Ans(1) (x,y) $\quad O \quad (1,4)$

A $\quad (2,-3) \quad$ B

$AO = OB$ (radii of circle)

O is mid point of AB

1

$$(2,-3) = \left[\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right]$$

$$(2,-3) = \left[\frac{x+1}{2}, \frac{y+4}{2}\right]$$

$$\frac{x+1}{2} = 2 \quad \text{and} \quad \frac{y+4}{2} = -3$$

$x+1 = 4$ $\qquad$ $y+4 = -6$

$x = 3$ $\qquad$ $y = -10$

coordinates are $(3,-10)$

Ans (2) $3x^2 - 10x + k = 0$

roots are reciprocal to each other

one root $= \alpha$

other root $= \frac{1}{\alpha}$

product of zeroes $= \frac{c}{a}$

$\alpha \times \frac{1}{\alpha} = \frac{k}{3}$

$1 = \frac{k}{3}$

$\boxed{k = 3}$

Ans (3) $\tan 2A = \cot(A - 24)$

$\cot(90 - 2A) = \cot(A - 24)$

$\therefore \quad 90 - 2A = A - 24$

$-2A - A = -24 - 90$

$\cancel{-}3A = \cancel{-}114$

$A = \frac{114}{3} = 38^\circ$

$\boxed{A = 38^\circ}$

Ans (4) 12, 15, - - - - - - - - 99

$a = 12$, $d = 3$, $a_n = 99$

$n = ?$

1

$a_n = a + (n-1)d$

$99 = 12 + (n-1)3$

$99 = 12 + 3n - 3$

$99 = 9 + 3n$

$3n = 90$

$n = \frac{90}{3} = 30$

there are 30 two digit numbers divisible by 3.

Ans (5)

$DE \parallel BC$, $AD = 1cm$ and $BD = 2cm$

$\frac{ar(\Delta ABC)}{ar(\Delta ADE)} = ?$

1

In ΔABC

$DE \parallel BC$

$\frac{AD}{DB} = \frac{AE}{EC}$ (Basic proportionality theorem)

In Δ ADE and ABC

$\angle A = \angle A$ (common)

$\angle ADE = \angle ABC$ (corresponding angles)

$\angle AED = \angle ACB$ (corresponding angles)

by AA similarity,

$\Delta ADE \sim \Delta ABC$

$AD = 1cm$, $BD = 2cm$ $\quad \frac{ar(ABC)}{ar(ADE)} = \left(\frac{AB}{AD}\right)^2$

$AB = 1 + 2$

$= 3cm$

$$\frac{ar(\Delta ABC)}{ar(\Delta ADE)} = \left(\frac{3}{1}\right)^2 = \frac{9}{1} = 9:1$$

Ans(6) $\sqrt{2}$ and $\sqrt{3}$

1

1.42 and 1.73

rational no. between 1.42 and 1.73 is 1.50

Ans(7) 1260 and 7344

7344 > 1260

by euclid division lemma, $a = bq + r$, $0 \le r < b$

2

$7344 = 1260 \times 5 + 1044$

$1260 = 1044 \times 1 + 216$

$1044 = 216 \times 4 + 180$

$216 = 180 \times 1 + 36$

$180 = 36 \times 5 + 0$

last divisor is 36

therefore the HCF of 1260 and 7344 is 36

Rough space

Ans (8.) A.P = 3, 15, 27, 39 - - - -

$a = 3, \; d = 12$

2

$$
\begin{aligned}
\text{term} &= a_{21} + 120 \\
&= a + 20d + 120 \\
&= 3 + 20(12) + 120 \\
&= 3 + 240 + 120 \\
&= 363
\end{aligned}
$$

$a_n = 363$

$a_n = a + (n-1)d$

$363 = 3 + (n-1) \times 12$

$363 = 3 + 12n - 12$

$363 = -9 + 12n$

$12n = 372$

$n = \frac{372}{12} = 31$

31ST term is 120 more than its 21ST term.

Rough space

Ans (9) A $(1,-3)$ — $(x,0)$ — B $(4,5)$

2

let the ratio $K:1$

$$(x,0) = \left[\frac{m_1x_2 + m_2x_1}{m_1+m_2}, \frac{m_1y_2 + m_2y_1}{m_1+m_2}\right]$$

$$(x,0) = \left[\frac{4K+1}{K+1}, \frac{5K-3}{K+1}\right]$$

$$\frac{4K+1}{K+1} = x \qquad \frac{5K-3}{K+1} = 0$$

$$5K-3 = 0$$

$$5K = 3$$

$$K = \frac{3}{5}$$

ratio is $3:5$

coordinates on x-axis $= \dfrac{4\left(\frac{3}{5}\right)+1}{\frac{3}{5}+1} = x$

$$\frac{\frac{12}{5}+1}{\frac{3}{5}+1} = \frac{\frac{12+5}{5}}{\frac{3+5}{5}} = \frac{\frac{17}{5}}{\frac{8}{5}} = \frac{17}{8}$$

1260
× 5
6300
1044
7344

1044
216
1260

216
× 4
864
180
1044

180
36
216

36
× 5
180

12 | 31
372
36
12

coordinates are $= (x, 0)$

$= \left[\frac{17}{8}, 0\right]$

Ans (10) outcomes are HHH

HHT

HTT

TTT

TTH

THH

THT

HTH

2

$$P(E) = \frac{\text{no. of outcomes favourable to E}}{\text{no. of all possible outcomes}}$$

$$= \frac{6}{8} = \frac{3}{4}$$

Ans(11) no. of all outcomes = 1, 2, 3, 4, 5, 6

2

(i) $P(E) = \dfrac{\text{no. of outcomes favourable to E}}{\text{No. of all possible outcomes}}$

$= \dfrac{3}{6} = \dfrac{1}{2}$

(ii) $P(E) = \dfrac{\text{No. of outcomes favourable to E}}{\text{No. of all possible outcomes}}$

$= \dfrac{3}{6} = \dfrac{1}{2}$

Ans(12) $cx + 3y + (3-c) = 0$

$12x + cy - c = 0$

2

infinitely many solutions

$\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} = \dfrac{c_1}{c_2}$

$$\frac{c}{12} = \frac{3}{c} = \frac{3-c}{-c}$$

$c^2 = 36$

$c = \pm 6$

$-3c = 3c - c^2$

$-3c - 3c = -c^2$

$\cancel{+6c} = \cancel{+c^2}$

$\boxed{c = 6}$

the value of c is 6

Ans (13) let $\sqrt{2}$ is rational number

$\sqrt{2} = \frac{p}{q}$, $q \neq 0$, p and q are co-prime intergers

3

Squaring both sides

$(\sqrt{2})^2 = \left(\frac{p}{q}\right)^2$

$2 = \frac{p^2}{q^2}$

$q^2 = \frac{p^2}{2}$

2 divides p^2, then it divides p also.

let $p = 2c$

$q^2 = \frac{(2c)^2}{2}$

$q^2 = \frac{4c^2}{2} = 2c^2$

$c^2 = \frac{q^2}{2}$

2 divides q^2, then it divide q also.

therefore 2 is the common factor of p and q
but p and q are co-prime integers

this contradiction has arrison due to our wrong assumption.

therefore $\sqrt{2}$ is an irrational number.

Ans (14) $x^2 - (k+6)x + 2(2k-1)$

3

$\alpha + \beta = \frac{1}{2}(\alpha\beta)$

$\alpha + \beta = \frac{-b}{a} = \frac{k+6}{1}$

$\alpha\beta = \frac{c}{a} = \frac{-2(2k-1)}{1}$

$\alpha+\beta = \frac{1}{2}(\alpha\beta)$

$k+6 = \frac{\cancel{2}(2k-1)}{\cancel{2}}$

$k+6 = 2k-1$

$k-2k = -1-6$

$-k = -7$

$\boxed{k = 7}$

Rough space

$x^2 - 13x + 2$

$(13)^2 - 4 \times x$

$169 - 104$

$\frac{1}{2}(\alpha+\beta) = \alpha\beta$

$\frac{k}{2}+6 = 4k-2$

$k+6 = 8k-4$

$k-8k = -4-6$

$-7k = -10$

$k = \frac{10}{7}$

Ans(15) Let the fraction be $\frac{x}{y}$

3

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

$\frac{x}{y-1} = \frac{1}{2}$

$3x-6 = y$ ~~—— (1)~~

~~$2x = y$~~ 1 $3x - y = 6$ —— (1)

$2x = y - 1$

$2x - y = -1$ —— (II)

solve (I) and (II)

$$\begin{array}{r} 3x - y = 6 \\ 2x - y = -1 \\ - \quad + \quad + \\ \hline x = 7 \end{array}$$

$3(7) - y = 6$

$21 - y = 6$

$21 - 6 = y$

$y = 15$

fraction is $\frac{7}{15}$

Ans(16)

3

$$AO = OB$$

$$AO^2 = OB^2$$

$$(x_2-x_1)^2+(y_2-y_1)^2 = (x_2-x_1)^2+(y_2-y_1)^2$$

$$(0-5)^2+(y+2)^2 = (-3-0)^2+(2-y)^2$$

$$25+\cancel{y^2}+4+4y = 9+4+\cancel{y^2}-4y$$

$$29+4y = 13-4y$$

$$4y+4y = 13-29$$

$$8y = -16$$

$$y = -2$$

coordinates of point ~~of~~ is $(0,-2)$

Ans (17) $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$

3

$LHS = (\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2$

$\sin^2\theta + \operatorname{cosec}^2\theta + 2\sin\theta \operatorname{cosec}\theta + \cos^2\theta + \sec^2\theta + 2\cos\theta \sec\theta$

$\sin^2\theta + \operatorname{cosec}^2\theta + 2\sin\theta \times \frac{1}{\sin\theta} + \cos^2\theta + \sec^2\theta + 2\cos\theta \times \frac{1}{\cos\theta}$

$(\sin^2\theta + \cos^2\theta) + (\operatorname{cosec}^2\theta + \sec^2\theta) + 2 + 2$

$1 + (1 + \cot^2\theta + 1 + \tan^2\theta) + 2 + 2$

$7 + \cot^2\theta + \tan^2\theta = RHS$

Hence prove

Ans (18) Construction = Join OT

3

TP = TQ (tangents of a circle from the same point)

∴ TPQ is isosceles triangle

So, altitude of isosceles triangle is a median

∴ PM = MQ

$PM = \frac{PQ}{2} = \frac{8}{2} = 4cm$

In Δ PMO

$PO^2 = PM^2 + MO^2$

$(5)^2 = (4)^2 + (MO)^2$

$25 = 16 + OM^2$

$OM^2 = 9$

$OM = 3cm$

$\angle TPM + \angle OPM = 90^\circ$ (radius is perpendicular to tangent) — (I)

$\angle TPM + \angle PTM = 90^\circ$ (angle sum property) — (II)

from (I) and (II)

$\angle OPM = \angle PTM$ — (III)

In Δ PTM and Δ OPM

$\angle PMT = \angle OMP$ (90° each)

$\angle PTM = \angle OPM$ (from (III))

by AA similarity, $\Delta PTM \sim \Delta OPM$

$\frac{PT}{OP} = \frac{PM}{OM}$ (sides are proportional of similar triangles)

$\frac{TP}{5} = \frac{4}{3} \Rightarrow 3TP = 20$

$TP = \frac{20}{3} = 6.66$ cm

$$\begin{array}{r} 6.6 \\ 3\overline{)20} \\ 18 \\ \hline 20 \\ 18 \\ \hline 20 \end{array}$$

Ans(19)

given = $\angle ACB = 90°$

$CD \perp AB$

T.P = $CD^2 = BD \times AD$

2

proof :- ~~In ΔACD and ΔCBD~~

$\angle 1 + \angle 2 = 90°$ ($\angle C = 90°$) — (I)

$\angle 2 + \angle 3 = 90°$ (angle sum property) — (II)

from (I) and (II)

$\angle 1 = \angle 3$

$\angle BCD = \angle CAD$ — (III)

In ΔACD and ΔCBD

$\angle ADC = \angle CDB$ ($90°$ each)

$\angle CAD = \angle BCD$ (from (III))

by AA, similarity, $\Delta ACD \sim \Delta CBD$

$\frac{CD}{BD} = \frac{AD}{CD}$ (sides are proportional of the similar triangles)

$$\begin{array}{r} 3.14 \\ 2.5 \\ + 4.00 \\ \hline 9.64 \\ 6.28 \\ \hline 28.50 \end{array}$$

$\frac{CD}{BD} \times \frac{AD}{CD}$

$CD^2 = AD \times BD$

Hence prove.

Ans(20)

In ΔACD

$AC^2 = AD^2 + CD^2$

$AC^2 = (6)^2 + (8)^2$

$AC^2 = 36 + 64$

$AC^2 = 100$

$AC = 10\,cm$

$r = 5\,cm$

area of circle $= \pi r^2$

$= 3.14 \times 5 \times 5$

$= 78.5\,cm^2$

area of rectangle $= l \times b$

$= 8 \times 6$

$= 48\,cm^2$

3

area of shaded region = area of circle − area of rectangle

$= 78.5 - 48$

$= 30.5\,cm^2$

Rough space

1.5
× 3
4500000

1.5
× 30
45
450
562500

8)450

562500
× 8
4500000

562500
× 8
4500000

Ans (21) dimensions of canal $= 6 \times 1.5 \times l$

3

10km in 1 hr

In 30 min $= \frac{10}{2} = 5$ km

$l = 5000$ m

volume of canal $= 6 \times 1.5 \times 5000$

$= 45000\,m^3$

area irrigated × h = vole of canal

$l \times b \times 0.08 = 45000$

$l \times b = \frac{4500000}{0.08} = 562500\ m^2$

Ans (30)

$\frac{N}{2} = \frac{100}{2} = 50$

Median = 28.8

PB15 3250

Ans(22)

CI	f
0-10	8
10-20	10
20-30	10
30-40	16
40-50	12
50-60	6
60-70	7

= modal class

~~mod~~ mode $= l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] \times h$

$l = 30,$
$f_1 = 16$
$f_0 = 10$
$f_2 = 12$
$h = 10$

$30 + \left[\frac{16-10}{2\times16-10-12}\right] \times 10$

$30 + \left[\frac{6}{32-10-12}\right] \times 10$

$30 + \left[\frac{6}{10}\right] \times 10$

$= 36$

mode $= 36$

Ans(23) let the speed of ~~ste~~ boat in still water be x km/hr
let the speed of stream be y km/hr

4

$$\frac{30}{x-y} + \frac{44}{x+y} = 10$$

$$\frac{40}{x-y} + \frac{55}{x+y} = 13$$

let $\frac{1}{x-y} = p$ and $\frac{1}{x+y} = q$

$$30p + 44q = 10 \quad \text{—— (I)}$$
$$40p + 55q = 13 \quad \text{—— (II)}$$

multiply equation (I) by 4
multiply equation (II) by 3

Rough space

$4(30p + 44q = 10)$
$3(40p + 55q = 13)$

$\cancel{120p} + 176q = 40$
$\cancel{120p} + 165q = 39$
$- \quad -$

$11q = 1$

$q = \frac{1}{11}$

$120p + 176\left(\frac{1}{11}\right) = 40$

$120p + 16 = 40$

$120p = 24$

$p = \frac{24}{120} = \frac{1}{5}$

$\frac{1}{x-y} = \frac{1}{5}$ and $\frac{1}{x+y} = \frac{1}{11}$

$x - y = 5$ — (II) and $x + y = 11$ — (IV)

$44 \times 4 = 176$

$55 \times 3 = 165$

$176 - 165 = 11$

$24 \times 5 = 120$

Solve (III) and (IV)

$$x - y = 5$$
$$x + y = 11$$
$$2x = 16$$
$$x = 8$$
$$8 + y = 11$$
$$y = 3$$

the speed of boat in still water is 8 km/hr.
and the speed of stream is 3 km/hr.

Ans (24) $S_4 = 40$ and $S_{14} = 280$

$$S_n = \frac{n}{2}(2a + (n-1)d)$$

$$40 = \frac{4}{2}(2a + (4-1)d)$$

$$40 = 2(2a + 3d)$$

$2a + 3d = 20$ — (I)

$S_{14} = \frac{n}{2}(2a + (n-1)d)$

$280 = \frac{14}{2}(2a + (14-1)d)$

$280 = 7(2a + 13d)$

$2a + 13d = 40$ — (II)

Solve (I) and (II)

$2a + 3d = 20$

$2a + 13d = 40$

$- \quad -$

$-10d = -20$

$d = 2$

$2a + 3 \times 2 = 20$

$2a + 6 = 20$

$2a = 14$

$a = 7$

$a = 7 \quad , d = 2$

$S_n = \frac{n}{2}\left(2a + (n-1)d\right]$

$= \frac{n}{2}\left(2 \times 7 + (n-1)2\right]$

$= \frac{n}{2}\left(14 + 2n - 2\right)$

$= \frac{n}{2}\left(12 + 2n\right)$

$\frac{12n + 2n^2}{2} = 6n + n^2$

Ans(25) $\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \frac{1}{\sec A - \tan A}$

4

divide each term by $\cos A$

$$LHS = \frac{\tan A - 1 + \sec A}{\tan A + 1 - \sec A}$$

$$\frac{\tan A - 1 + \sec A}{\tan A - \sec + (\sec^2 A - \tan^2 A)}$$

$$\frac{\tan A - 1 + \sec A}{\tan A - \sec A + (\sec A - \tan A)(\sec A + \tan A)}$$

$$\frac{\cancel{\tan A - 1 + \sec A}}{\sec A - \tan A\ (\cancel{-1 + \sec A + \tan A})} = \frac{1}{\sec A - \tan A} = RHS$$

$\equiv$ Hence prove.

Ans(26)

let the height of poles be h metres

In Δ ABE

$\tan 60 = \frac{h}{x}$

$\sqrt{3} = \frac{h}{x}$

$h = x\sqrt{3}$

In Δ CDE

$\tan 30 = \frac{h}{80-x}$

$\frac{1}{\sqrt{3}} = \frac{h}{80-x} \Rightarrow h\sqrt{3} = 80-x$

$x\sqrt{3} \times \sqrt{3} = 80-x$

$3x = 80-x$

$4x = 80$

$x = 20$

$x = 20m$, $h = 20\sqrt{3}$ m

$80-x = 80-20$

$= 60m$

the height of the pole is $20\sqrt{3}$ m and the distance of the point from the poles are 20m and 60m

Ans(27)

steps of construction

(i) Draw a line AC = 6cm
(ii) Draw ∠A = 45° and produce it to the B, AB = 5cm
(iii) join BC
(iv) Draw an acute angle on A downwards and produce it to X.
(v) Draw five arcs on it.
(vi) Join A_5 to C
(vii) Draw a parallel line ∥ to A_5C from A_3 and cut AC at C'
(viii) Draw a parallel line to BC from C' and cut AB at B'

Hence AB'C' is required triangle

Ans(28)

vol. of frustum $= 12308.8\ cm^3$

vol. of frustum $= \frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1 r_2)$

$12308.8 = \frac{1}{3} \times 3.14 \times h\ (400 + 144 + 240)$

$12308.8 = \frac{1}{3} \times 3.14 \times h \times 784$

$36926.4 = 2461.76h$

$h = 3$

$\overline{2461.76h\ \big)\ 1846320}$

~~923160~~
~~461580~~
~~230790~~
115395

~~36926.40~~
~~2461760~~
~~123088~~
~~61544~~
~~30772~~
~~15386~~
7693

$h = \frac{115395}{7693} = 15cm$

area of metal sheet used in making bucket

= CSA of frustum + area of base

$\pi l(r_1+r_2) + \pi r_2^2$

$l = \sqrt{h^2+(r_1-r_2)^2}$

$= \sqrt{15^2+(8)^2}$

$= \sqrt{225+64}$

$= \sqrt{289} = 17\text{cm}$

$\cancel{3.14(17)(20+12) + 3.14\times}$

$\pi l(r_1+r_2) + \pi r_2^2$

$\pi(l(r_1+r_2) + r_2^2]$

$3.14(17\times 32 + 144)$

$3.14(544+144)$

3.14×688

2160.32 cm^2

Rough space

12308.8
× 3
36926.4

12308.8
× 17
224
32×
544

784
×314
3136
784×
2352××
246176

32
×17
224
32×
544

784
×314
3136
784×
2352××
246176

17
×17
119
17×
289

Ans(29)

given = $\angle ABC = 90°$

T.P = $AC^2 = AB^2 + BC^2$

Construction = Draw $BD \perp AC$

proof :- In ΔABC and ΔBDC

$\angle ACB = \angle BCD$ (common)

$\angle BDC = \angle ABC$ (90° each)

by AA, similarity, $\Delta ABC \sim \Delta BDC$

$\frac{AC}{BC} = \frac{BC}{DC}$ (sides are proportional of similar Δs)

$BC^2 = AC \times DC$ — (I)

In ΔABD and ΔACB

~~$\angle ABD$~~ $\angle ADB = \angle ABC$ (90° each)

$\angle DAB = \angle BAC$ (common)

by AA, similarity, $\Delta ABD \sim \Delta ACB$

$\frac{AB}{AC} = \frac{AD}{AB}$ (sides

$AB^2 = AC \times AD$ — (II)

On adding (I) and (II)

$BC^2 + AB^2 = AC \times DC + AC \times AD$

$BC^2 + AB^2 = AC(DC + AD)$

$BC^2 + AB^2 = AC \times AC$

$BC^2 + AB^2 = AC^2$ ✓

Hence prove.

Ans (30)

CI	f	cf (less than type)	Coordinates
0-5	2	2	(5, 2)
5-10	5	7	(10, 7)
10-15	6	13	(15, 13)
15-20	8	21	(20, 21)
20-25	10	31	(25, 31)
25-30	25	56	(30, 56)
30-35	20	76	(35, 76)
35-40	18	94	(40, 94)
40-45	4	98	(45, 98)
45-50	2	100	(50, 100)

80

Ogive graph

80

Tayashi 08957

08920

08968

80/80

median = 28.8

Kavanthan 8953

Rough space

15
7693) 115395 (1413
7693
38465

688
× 314
2752
688 ×
2064 ×
216032

341
7693
× 5
38465

341
7693
× 15
38465
7693 ×
115395

688
× 314
2752
688 ×
2064 ×
216032

Rough space

$\frac{AB}{BD} =$

$\frac{AC}{BC} = \frac{BC}{DC}$

$BC^2 = AC \times DC$

$\frac{AB}{AC} = \frac{AD}{AB}$

$AB^2 = AD \times AC$

$BC^2 + AB^2 = AC(DC+A$

CASE 2015

2019