Олимпиада ЮМШ 2020-21 года

Код участника: 7958

Лист подготовки устного ответа

Лист № 1

Фиксация санитарных выходов:

1 выход:		возвращение:	
2 выход:		возвращение:	
3 выход:		возвращение:	
4 выход:		возвращение:	
5 выход:		возвращение:	

Время окончания: 14.55

Всего листов: 4

$x < 6$ 24 15 8 3

$116 \cdot 1^2 = 116$, $2^2 + 5^2 + 1 \cdot 114 = 4 + 75 + 114$

$36 + 115 \cdot 1^2 = 115 + 36 =$

$1^2\ 2^2\ 3^2\ 4^2\ 5^2$ $99 \cdot 6 =$

$= 151 > 144$

297

$144 - 116 = 28$ $+1-16$ $1+1=2$

I: $28+1-4=25$, $28+1-9=20$, $28+1-16=13$, $28+1-25=4$

II: $25+1-4=22$, $25+1-9=17$, $25+1-16=10$, ~~$25+1-25=1$~~

II: $20+1-4=17$, $20+1-9=12$, $20+1-16=5$, ~~$20+1-25=X$~~

II: $13+1-4=10$, $13+1-9=5$, ~~$13+1-16=X$~~, ~~$13+1-25=X$~~

~~$4+1-4=1$~~, ~~$4+1-9=X$~~, ~~$4+1-16=X$~~, ~~$4+1-25=X$~~

III: $22+1-4=19$, $22+1-9=14$, $22+1-16=7$, ~~$22+1-25=X$~~

III: $17+1-4=14$, $17+1-9=9$, ~~$17+1-16=2$~~, ~~$17+1-25=X$~~

III: $10+1-4=7$, ~~$10+1-9=2$~~, ~~$10+1-16=X$~~, ~~$10+1-25=X$~~

III: $12+1-4=9$, $12+1-9=4$, ~~$12+1-16=X$~~, ~~$12+1-25=X$~~

III: $5+1-4=2$, ~~$5+1-9=X$~~, ~~$5+1-16=X$~~, ~~$5+1-25=X$~~

IV: $19+1-4=16$, $19+1-9=11$, $19+1-16=4$, ~~$19+1-25=X$~~

IV: $14+1-4=11$, $14+1-9=6$, ~~$14+1-16=X$~~, ~~$14+1-25=X$~~

IV: $7+1-4=4$, ~~$7+1-9=X$~~, ~~$7+1-16=X$~~, ~~$4+1-25=X$~~

IV: $9+1-4=6$, ~~$9+1-9=1$~~, ~~$9+1-16=X$~~, ~~$9+1-25=X$~~

IV: ~~$4+1-4=1$~~, ~~$4+1-9=X$~~, ~~$4+1-16=X$~~, ~~$4+1-25=X$~~

V: ~~$16+1-4=13$~~ (I)
1) $16+1-9=8$, ~~$16+1-16=1$~~, ~~$16+1-25=X$~~

V: 2) $11+1-4=8$
3) $11+1-9=3$, ~~$11+1-16=X$~~, ~~$11+1-25=X$~~

V: ~~$4+1-4=1$~~, ~~$4+1-9=X$~~, ~~$4+1-16=X$~~, ~~$4+1-25=X$~~

V: 4) $6+1-4=3$, ~~$6+1-9=X$~~, ~~$6+1-16=X$~~, ~~$6+1-25=X$~~

$3+1=2^2$

$8+1=9^2$

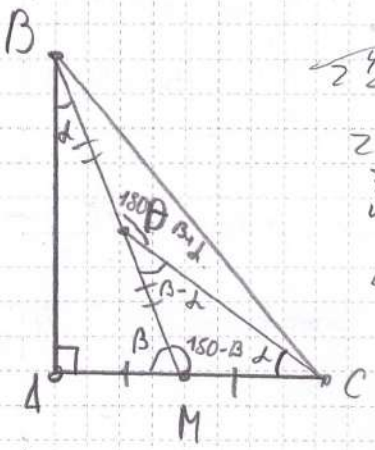
1) $3^2+3^2+2^2+2^2+2^2+2^2$ $34+110=$ (144)

4) $2^2+2^2 \to 2^2 \to 2^2+3^2+3^2$; $\to 3^2+$; $\to 3^2 \to 2^2+2^2+3^2$; $\to 3^2+2^2+2^2$

2) $3^2+2^2+2^2 \to 3^2+2^2+2^2$; $\to 2^2+2^2+3^2$

3) $2^2+3^2+2^2 \to 3^2+2^2+2^2$; $\to 3^2+2^2+3^2$

23 47 144·1



34+110

2 4 3

2 2 2 2 | 3 3

8 2

4 2 2 | 9

4 4

16 18

4+4+4+4+9+9

~~4+4+4+4+81~~

~~16~~+4+4+9+9

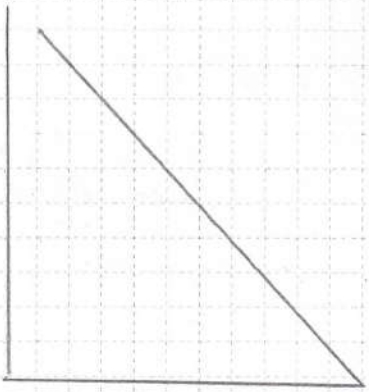
33 4

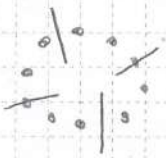
78+6-4-4-4-4-9-6

3 3 3

33

1 ч
1 ср
1 ш

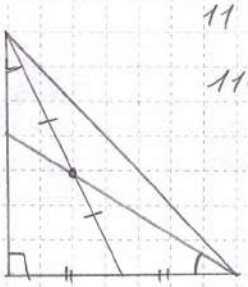


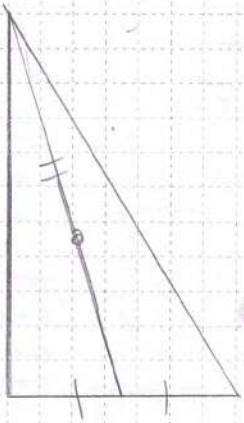


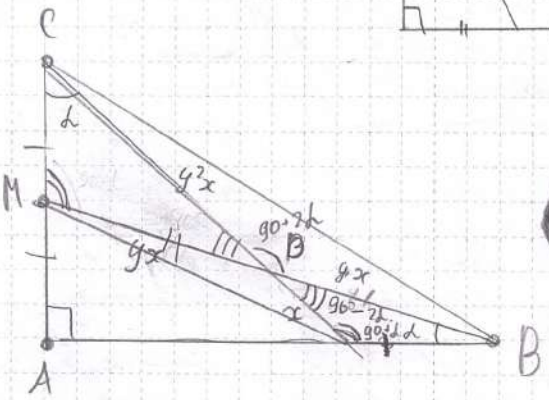
11

11 в.

$1^2+1^2=$







115+25=140

4

114+9+25>144.

114+4+25=143.

113+4+4+25>144.

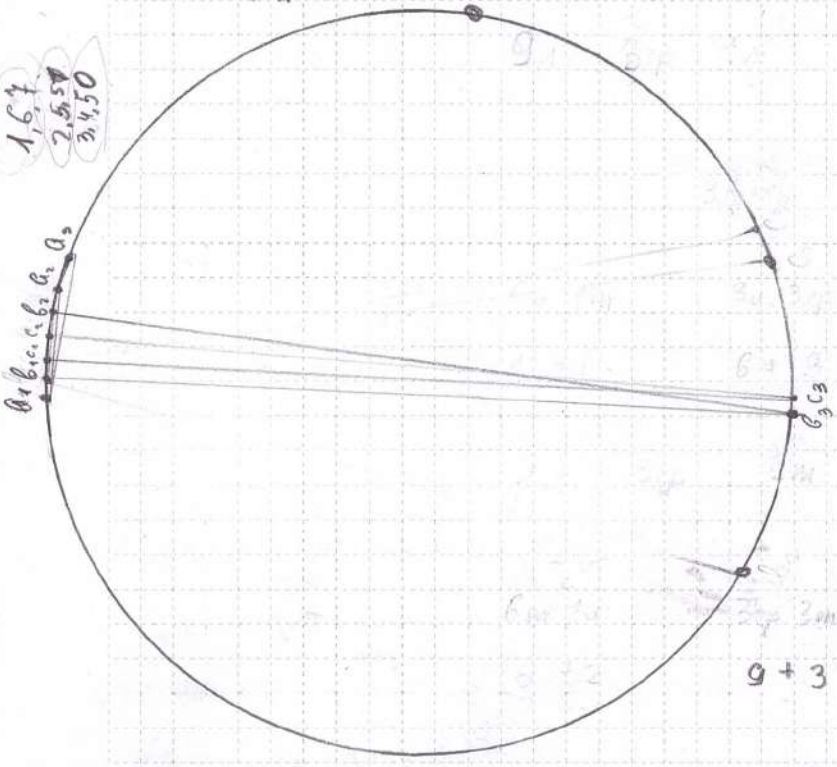
— 249 кр — 249 кр

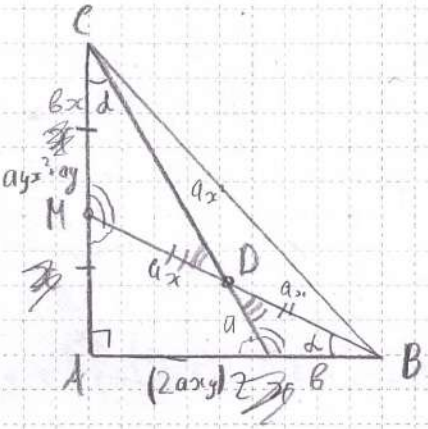
+1

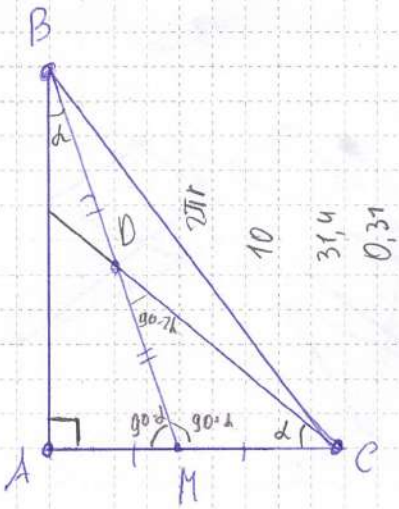
Код участника: 7 9 5 8

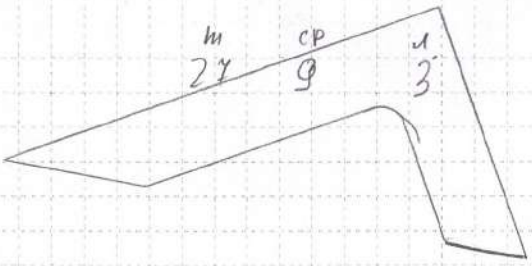
Лист подготовки ответа

Лист № 2









	"л"	"ср"	"м"
I	м	л	ср
II	ср	м	л

$3x_1 +$

$3l_1 + 1s_1 + 2t_1 = 3(99 - l_1) + 1(99 - s_1) + 2(99 - t_1)$

$2l_2 + 3s_2 + 1t_2 = 2(99 - l_2) + 3(99 - s_2) + 1(99 - t_2)$

$2l + 3s + t = 3l + s + 2t$

$198 - 2l + 297 - 3s + 99 - t = 297 - 3l + 99 - s + 198 - 2t$

$2s = l + t.$

$5l + 4s + 3t = 594$

$7l + 5t = 594.$

$594 = 6 \cdot 99 = 2 \cdot 3^3 \cdot 11$

$l = 52$

$7l = 364$

230

$t = 46$

"л"	52	47
"м"	46	53
"ср"	49	50

156 92

$52 \cdot 3 + 49 + 46 \cdot 2 = 297$

141 106

$47 \cdot 3 + 50 + 53 \cdot 2 = 297$

104 147

$52 \cdot 2 + 3 \cdot 49 + 46 = 297$

94 150

$47 \cdot 2 + 3 \cdot 50 + 53 = 297$

$3l + 1s + 2t = 3(9 - l) + 1(9 - s) + 2(9 - t)$

$2l + 3s + 1t = 2(9 - l) + 3(9 - s) + 1(9 - t)$

$3l + 2t + s = 18 - 2l + 27 - 3s + 9 - t.$

$$\begin{cases} 5l + 3t + 4s = 54 \\ 2s = l + t. \end{cases}$$

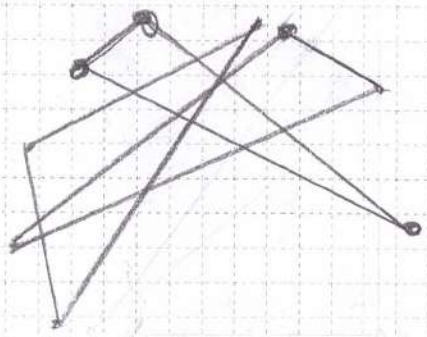
$7l + 5t = 54.$

$l = 2 \quad t = 8$

$s = 5$

"л"	2	7
"ср"	5	4
"м"	8	1

19



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Лист подготовки ответа

Лист № 3

14

л	52	47
т	46	53
ср	49	50

"л" "ср" "т"

I т л ср

II ср т л

106

I 52·3+49+46·2=297

47·3+50+53·2=247

494

II 52·2+3·49+46=297

47·2+3·50+53=297

47·3=141

50

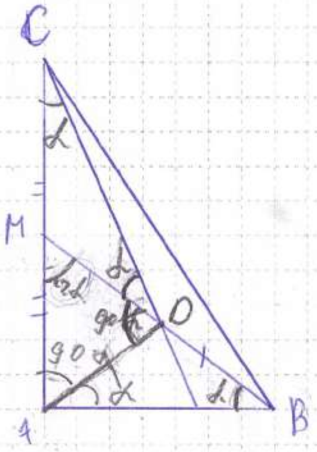
53·2=106

141 + 106 + 50 = 247

156 + 49 + 92 = 297

99·3+99·2+99=594

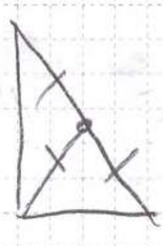
594 : 2 = 297

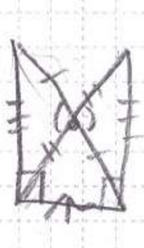


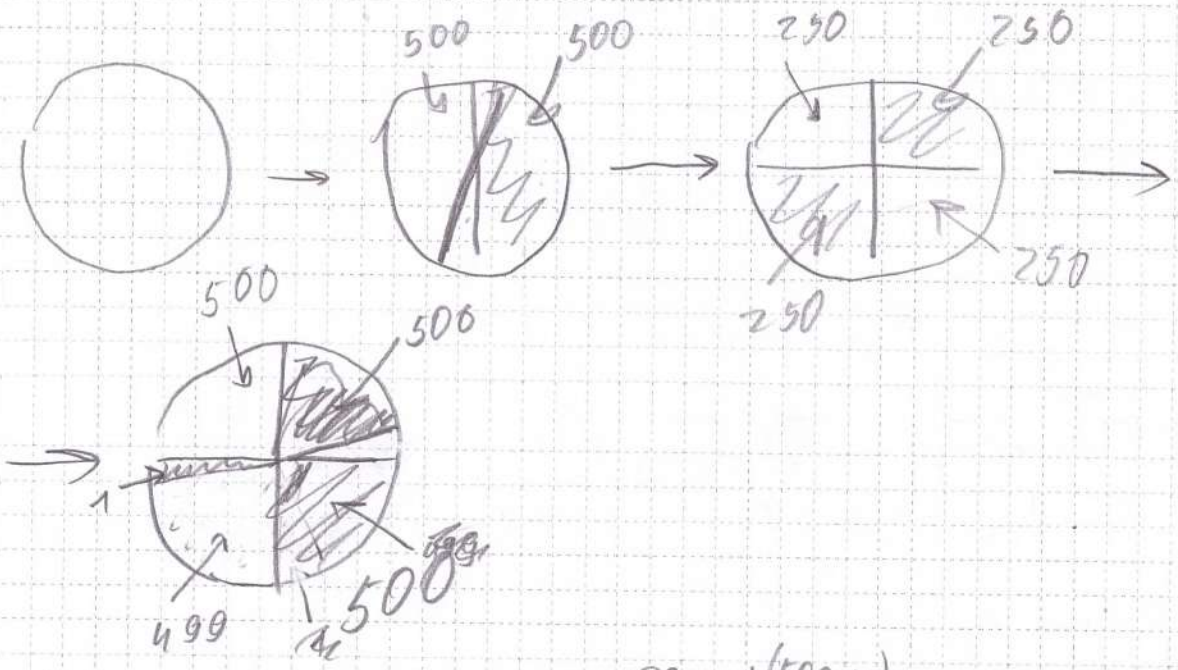
$90+\alpha+2\alpha=180$

$3\alpha=90$

$\alpha=30$







$$-x_{кр} + (500 - x)_{кр}$$
$$+ x\delta - (500 - x)\delta$$

250 250

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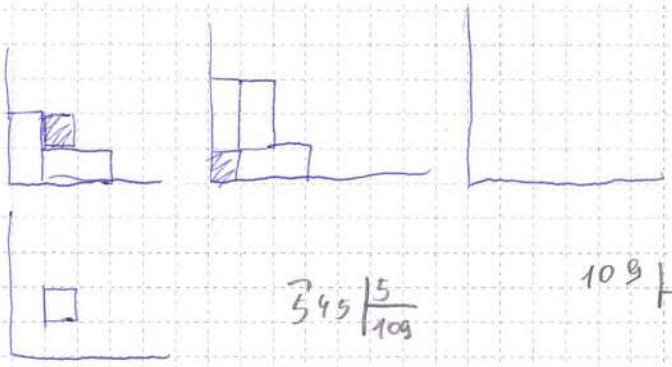
Лист подготовки ответа

Лист № 4



545 | 5
109

109 | 13

547

547

1
4
27
27
189
54

23
23
69
46
529

547 | 13
52 | 4.
27

547 | 19
51 | 2.
37

10
547 | 19
38 | 2 8
167
152
15

547 | 23

10

~~(2)~~ ~~(547)~~

(3) 545 r3

$p \neq 2$

2 (p) 547 (545+p) 10