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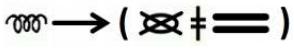
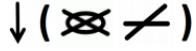
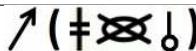
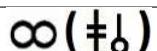
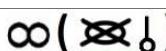
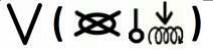
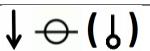
Seventeenth International Linguistics Olympiad

Yongin (Republic of Korea), 29 July – 2 August 2019

Team Contest Problem

Exercises of rhythmic gymnasts are evaluated by two Judges' Panels: D-Panel (Difficulty) and E-Panel (Execution). The D-Panel is concerned with what movements a gymnast chose to perform, while the E-Panel evaluates how well she succeeded in doing them. The D-panel judges use a special notation system to write down gymnasts' exercises.

Study the entries 1–48. Work out the rules of the notation system and the principles of scoring. Some entries come with videos. You may watch the videos on the designated computer under the invigilator's surveillance. You are not allowed to use the internet.

1		0.3	rolls the hoop: outside of visual control, while on the floor does a small throw of the hoop: without the help of hands, outside of visual control, while on the floor
2		0.4	does a large throw of the ball catches the ball: under the leg, outside of visual control
3		0.3	does a large throw of the hoop: during a walkover/cartwheel, without the help of hands, outside of visual control
4		0.3	transmits the hoop from one part of the body to another: without the help of hands, during a rotation around a vertical axis
5		0.2	does a small throw of the hoop bounces the hoop: outside of visual control, during a rotation around a vertical axis
6		—	rolls the ball: outside of visual control
7		0.4	does a large throw of the ball bounces the ball: rolls the ball, outside of visual control, during a 180° rotation
8		0.3	rolls the ball: outside of visual control, during a 180° rotation
9		0.2	does a medium throw of the hoop: during a turn with the torso bending down, outside of visual control, the hoop rotates around its axis
10		0.2	does a medium throw of the hoop catches the hoop: during a turn with the torso bending down passes through the hoop: during a turn with the torso bending down
11		0.2	rotates the ball around a part of the gymnast's body: while on the floor, outside of visual control, during a 360° rotation

12	$\text{R}(\text{#}\text{○}\text{=})$	0.2	holds the ball in an unstable balance: while on the floor, during a 180° rotation, without the help of hands
13	$\Theta(\text{=}\text{#})$	0.2	rotates the hoop around its axis: while on the floor, without the help of hands
14	$\text{V}(\text{#}\text{=})$	0.2	bounces the ball off the floor: while on the floor, without the help of hands
15	$\ominus(\text{⊗}\text{#})$	0.2	passes through the hoop: without the help of hands, outside of visual control
16	$\text{R} \rightarrow (\text{#}\text{⊗}\text{!})$	0.2	holds the ball in an unstable balance: during a walkover/cartwheel, without the help of hands, outside of visual control does a small throw of the ball: without the help of hands
17	$\text{O}(\text{!}\text{#})$	0.2	rotates the hoop around a part of the gymnast's body: during a 180° rotation, without the help of hands
18	$\infty(\text{=}\text{#}\text{○})$	0.3	transmits the ball from one part of the body to another: without the help of hands, while on the floor, during a rotation around a horizontal axis
19	$\text{ω}(\text{#}\text{○})$	0.2	rolls the ball on the floor: without the help of hands, during a rotation around a horizontal axis
20	$\text{R}_3 \text{#} \text{Q}$	0.5	does a large throw of the hoop does three rolls catches the hoop: without the help of hands, the hoop rotates around a part of the gymnast's body
21	$\text{#}\text{⊗}\Theta\text{ R}_3 \text{ Z}$	0.7	does a large throw of the hoop: during a turn with the torso bending down, outside of visual control, without the help of hands, the hoop rotates around its axis does two rolls catches the hoop
22	$\ominus \text{ R}_2 \text{ Z}$	0.4	does a large throw of the hoop: passes through the hoop does one 360° rotation around a vertical axis and a roll catches the hoop
23	$\text{R}_3 \text{ Z} \text{⊗} \text{!} \text{#}$	0.7	does a large throw of the hoop does two 360° rotations around a vertical axis catches the hoop: during a walkover/cartwheel, under the leg, outside of visual control
24	$\text{⊗} \text{ R}_2 \text{⊗} \text{#} \text{!}$	0.6	does a large throw of the ball: outside of visual control does a walkover/cartwheel and one 180° rotation around a vertical axis catches the ball: without the help of hands, outside of visual control, during a walkover/cartwheel
25	$\text{!} \text{ V } \text{ R}_2$	0.4	does a large throw of the ball: after rebound from the floor, without the help of hands does a turn with the torso bending down catches the ball: during a walkover/cartwheel

26		0.5	performs a split leap: bends her back backwards
27		0.4	performs a split leap: leg in the ring position
28		0.4	performs a stag leap: with a 360° turn, bends her back backwards, leg in the ring position
29		0.1	performs a stag leap
30		0.4	performs a split leap: with a 360° turn
31		0.6	performs a split leap: with a 360° turn, bends her back backwards
32		0.3	performs a stag leap: bends her back backwards
33		0.6	performs a split leap: with a 180° turn, bends her back backwards
34		0.5	performs a stag leap: with a 360° turn, bends her back backwards
35		0.3	performs a stag leap: with a 180° turn, leg in the ring position
36		0.2	performs a balance on her toes, free leg is in front and horizontal, trunk is vertical
37		0.4	performs a balance on her toes, free leg is back and up, trunk is vertical
38		0.3	performs a 360° rotation on her toes and a 540° rotation on flat foot, leg is held up and back with the help of a hand, trunk is vertical
39		0.4	performs a balance on flat foot, free leg is in front and up, trunk is horizontal
40		0.3	performs a balance on flat foot, leg is held up and back with the help of a hand, trunk is horizontal
41		0.5	performs a balance on her toes, free leg is in front and up, trunk is horizontal
42		0.2	performs a 360° rotation on her toes, free leg is to the side and horizontal, trunk is vertical
43		0.3	performs a balance on her toes, free leg is in front and horizontal, trunk is horizontal
44		0.3	performs a 540° rotation on her toes, free leg is back and horizontal, trunk is horizontal
45		0.3	performs a balance on her toes, leg is held up and to the side with the help of a hand, trunk is vertical
46		0.5	performs a 860° rotation on her toes, leg is held up and front with the help of a hand, trunk is vertical
47		0.9	performs a 1350° rotation on her toes, free leg is back and up, trunk is horizontal
48		0.5	performs a 180° rotation on her toes, free leg is to the side and up, trunk is horizontal

Fill in the gaps:

49	☒ R₃ Z ↓		
50	→(≠Q)		
51	↓(≠✗)		
52	→(≠⊖)		
53	⊖(≠⊕)		
54	⊗ O(≠=)		
55	⊕ →(≠☒)	0.2	
56	↑↓		
57		does a large throw of the hoop bounces the hoop: while on the floor, under the leg	
58		rotates the ball around its axis: while on the floor, without the help of hands, during a rotation	
59		holds the hoop in an unstable balance: without the help of hands bounces the hoop off the floor: without the help of hands	
60		transmits the ball from one part of the body to another: without the help of hands rolls the ball: without the help of hands, outside of visual control	
61		does a large throw of the hoop does a turn with the torso bending down and two 360° rotations around a vertical axis bounces the hoop: without the help of hands, outside of visual control, during a 360° rotation around a vertical axis	
62		does a large throw of the hoop: outside of visual control, during a walkover/cartwheel catches the hoop: passes through the hoop, during a walkover/cartwheel	
63		does a large throw of the ball does two 360° rotations around a vertical axis and one 180° rotation around a vertical axis, goes down on the floor catches the ball	
64		performs a stag leap: leg in the ring position	
65		performs a stag leap: with a 360° turn	
66		performs a split leap: with a 360° turn, leg in the ring position	

67		performs a side split leap
68		performs a split leap: with a 180° turn
69		performs a stag leap: with a 180° turn, bends her back backwards
70		performs a split leap: bends her back backwards, leg in the ring position
71		performs a 1620° rotation on her toes, free leg is back and horizontal, trunk is vertical
72		performs a balance on her toes, free leg is in front and up, trunk is vertical
73		performs a 270° rotation on her toes, free leg is in front and up, trunk is horizontal
74		performs a balance on her toes, free leg is to the side and horizontal, trunk is horizontal
75		performs a balance on flat foot, leg is held up and back with the help of a hand, trunk is vertical
76		performs a 360° rotation on her toes, leg is held up and back with the help of a hand, trunk is horizontal
77		performs a 180° rotation on her toes and a 360° rotation on flat foot, free leg is to the side and horizontal, trunk is horizontal

If more than one symbolic notation, mark and/or description could be used, write down two of them that differ as much as possible.

English text: Anna Danilova.

Good luck!