Language	P@K	Before-Alignment	Ceiling Performance	EN (P@K: 1000/2000/3000) Eval - Both	Eval - Abstract	Eval-Physical (all)	Eval - Physical (downsample)
fr	P@1	54.26	79.17	48.17/52.83/53.47	54.65/60.38/61.81	45.40/49.59/49.90	45.58/50.84/50.84
	P@5	62.78	88.12	61.49/62.92/63.56	68.26/71.12/71.12	58.59/59.41/60.33	60.14/61.10/62.29
	P@10	66.43	90.69	64.64/66.07/66.50	71.36/72.55/73.03	61.76/63.29/63.70	63.96/66.11/66.59
	P@30	71.08	93.84	69.29/71.15/71.73	75.66/77.33/77.80	66.56/68.51/69.12	69.21/71.36/71.60
ro	P@1	45.96	80.6	42.30/45.88/47.46	48.45/53.22/54.89	39.67/42.74/44.27	41.53/45.35/46.30
	P@5	56.76	89.62	54.90/58.70/59.99	61.58/66.35/67.78	52.04/55.42/56.65	55.13/56.56/58.23
	P@10	60.92	91.48	60.06/62.56/63.92	65.39/70.41/71.12	57.77/59.20/60.84	59.19/60.14/61.58
	P@30	67.07	94.63	66.79/68.22/68.86	73.27/74.46/73.99	64.01/65.54/66.67	65.39/66.59/67.78
eu	P@1	34.86	77.81	25.63/32.21/33.43	29.59/38.66/40.10	23.93/29.45/30.57	24.34/29.83/30.79
	P@5	43.52	87.97	39.58/42.45/44.09	46.78/51.07/53.22	36.50/38.75/40.18	37.23/39.62/40.33
	P@10	46.67	90.34	42.30/45.31/47.32	50.36/53.70/56.09	38.85/41.72/43.56	39.38/42.24/43.68
	P@30	52.11	92.63	48.39/50.75/53.19	56.32/60.14/62.77	44.99/46.73/49.08	44.39/47.02/49.40
fi	P@1	39.08	76.95	30.28/34.79/36.72	39.62/42.96/46.06	26.28/31.29/32.72	27.45/30.79/32.22
	P@5	50.47	86.97	44.67/47.53/49.03	53.70/57.28/59.67	40.80/43.35/44.48	42.72/44.63/46.06
	P@10	53.54	89.62	48.46/51.40/52.54	57.28/62.53/63.48	44.68/46.63/47.85	46.54/48.69/50.12
	P@30	58.77	92.56	54.19/56.62/58.34	64.92/67.30/68.74	49.59/52.04/53.89	52.51/54.18/55.61
ja	P@1	41.95	79.46	24.19/32.93/34.22	23.63/32.46/33.65	24.44/33.13/34.46	25.54/35.80/36.52
	P@5	57.12	89.55	47.24/52.61/53.61	48.69/54.89/57.28	46.63/51.64/52.04	52.03/56.09/55.85
	P@10	61.92	92.13	54.19/58.48/58.84	57.28/60.86/60.86	52.86/57.46/57.98	58.00/61.10/62.05
	P@30	67.86	95.13	61.78/65.00/66.00	62.29/66.35/67.30	61.55/64.42/65.44	65.16/66.35/67.30
th	P@1	38.01	80.31	23.55/28.13/31.78	23.15/29.59/33.65	23.72/27.51/30.98	25.54/27.92/33.65
	P@5	56.84	90.12	49.82/54.26/56.19	51.55/58.00/59.43	49.08/52.66/54.81	51.07/55.85/58.00
	P@10	62.78	93.13	57.05/60.99/62.71	59.67/63.72/65.39	55.93/59.82/61.55	57.28/63.25/65.63
	P@30	70.44	96.13	67.57/70.22/71.08	69.93/72.55/72.55	66.56/69.22/70.45	68.97/71.36/72.79

Table 5: Full results for Aya101 (13B) with average embedding

Language	P@K	Before-Alignment	Ceiling Performance	EN (P@K: 1000/2000/3000) Eval - Both	Eval - Abstract	Eval-Physical (all)	Eval - Physical (downsample)
fr	P@1	40.52	56.12	45.96/47.10/47.67	56.56/57.52/58.47	41.41/42.64/43.05	42.24/43.91/44.63
	P@5	49.82	63.92	55.26/56.84/57.34	66.35/67.78/67.78	52.04/52.15/52.86	51.07/53.70/54.18
	P@10	53.76	66.14	58.48/59.34/59.70	68.74/69.45/69.69	54.09/55.01/55.42	55.61/56.56/57.04
	P@30	59.91	70.15	64.14/64.64/64.71	73.75/74.22/74.94	60.02/60.53/60.33	63.25/63.72/63.72
ro	P@1	20.19	50.32	37.01/39.01/40.01	49.64/51.79/52.27	31.60/33.54/34.76	32.70/35.08/36.75
	P@5	29.99	59.2	47.89/49.75/50.54	60.38/63.01/63.25	42.54/44.07/45.09	44.39/46.30/46.30
	P@10	35.22	61.78	52.11/53.40/54.26	64.44/66.35/66.83	46.83/47.85/48.88	48.45/49.40/50.36
	P@30	43.45	66.71	57.98/59.41/59.77	70.88/73.27/73.51	52.45/53.48/53.89	53.46/54.65/54.65
eu	P@1	11.81	30.99	17.18/19.18/20.62	23.63/26.25/27.68	14.42/16.16/17.59	15.75/17.42/18.38
	P@5	19.83	38.8	26.27/27.77/28.92	35.32/37.71/38.42	22.39/23.52/24.85	23.87/25.06/26.01
	P@10	23.34	42.38	30.28/31.85/32.50	41.29/42.72/43.20	25.56/27.20/27.91	26.97/28.88/29.83
	P@30	29.78	47.17	36.36/37.87/38.37	46.06/48.21/49.64	32.21/33.44/33.54	32.94/33.65/34.13
fi	P@1	26.34	43.66	29.35/31.78/32.78	37.71/39.86/40.81	25.77/28.32/29.35	26.97/29.12/30.79
	P@5	37.29	52.68	41.02/42.16/42.73	51.79/53.22/53.94	36.40/37.42/37.93	35.80/37.71/37.23
	P@10	41.88	56.91	45.03/46.39/46.96	56.56/58.00/58.95	40.08/41.41/41.82	40.10/40.33/40.10
	P@30	49.68	62.99	52.61/53.40/54.19	62.77/63.25/64.44	48.26/49.18/49.80	47.02/48.21/48.21
ja	P@1	19.54	42.81	25.13/27.63/27.70	33.17/36.99/36.28	21.68/23.62/24.03	22.91/26.01/26.73
	P@5	31.85	54.83	38.80/40.44/41.66	48.93/49.88/50.60	34.46/36.40/37.83	36.99/38.42/40.57
	P@10	37.22	58.91	43.88/45.88/46.67	53.70/55.37/55.37	39.67/41.82/42.94	41.53/43.68/45.11
	P@30	46.17	65.14	52.83/54.33/54.97	61.81/63.96/65.39	48.98/50.20/50.51	49.88/51.31/51.79
th	P@1	17.82	44.52	24.70/26.70/27.77	27.21/30.31/32.70	23.62/25.15/25.66	26.01/27.21/29.12
	P@5	29.99	57.19	40.59/42.30/42.81	48.93/50.60/51.79	37.01/38.75/38.96	37.95/39.38/39.86
	P@10	36.65	61.42	46.53/48.03/47.89	54.18/56.09/56.80	43.25/44.58/44.07	44.87/46.54/46.54
	P@30	45.81	69.58	55.69/56.69/57.48	63.96/64.20/65.39	52.15/53.48/54.09	54.65/56.32/57.04

Table 6: Full results for Aya101 (13B) with prompt-based embedding

Language	P@K	Before-Alignment	Ceiling Performance	EN (P@K: 1000/2000/3000) Eval - Both	Eval - Abstract	Eval-Physical (all)	Eval - Physical (downsample)
fr	P@1	24.27	34.29	22.62/25.77/27.20	24.34/29.12/30.55	21.88/24.34/25.77	21.96/23.87/26.01
	P@5	30.42	40.8	30.06/33.21/34.36	34.61/38.42/39.86	28.12/30.98/32.00	29.12/31.50/32.70
	P@10	33.57	43.24	32.93/35.22/36.51	38.19/40.81/41.77	30.67/32.82/34.25	32.22/33.41/34.37
	P@30	38.73	47.82	38.01/40.23/41.30	42.96/46.06/47.49	35.89/37.73/38.65	36.99/39.14/40.57
ro	P@1	14.17	18.18	8.02/10.31/11.24	6.44/9.07/9.79	8.69/10.84/11.86	8.59/10.98/12.65
	P@5	16.75	22.98	13.82/15.60/16.75	12.17/14.56/16.23	14.52/16.05/16.87	15.75/17.66/18.38
	P@10	18.25	24.48	16.25/17.47/18.61	15.51/17.42/17.90	16.56/17.48/18.92	17.42/19.09/20.53
	P@30	20.97	28.2	20.04/20.83/21.90	19.81/21.00/21.72	20.14/20.76/21.98	21.48/22.43/23.87
eu	P@1	9.74	15.32	5.65/8.45/9.16	6.68/10.26/11.22	5.21/7.67/8.28	4.53/6.92/7.40
	P@5	12.67	20.47	10.88/12.88/13.82	12.41/14.56/15.27	10.22/12.17/13.19	10.02/11.22/11.69
	P@10	14.1	21.9	12.96/15.25/15.82	15.27/17.90/17.90	11.96/14.11/14.93	11.93/12.65/13.13
	P@30	17.32	25.2	16.39/17.97/19.04	19.33/21.00/21.72	15.13/16.67/17.89	14.56/15.51/15.99
fi	P@1	5.15	7.09	1.36/2.00/2.51	1.91/2.39/3.10	1.12/1.84/2.25	0.48/1.19/1.67
	P@5	5.8	10.74	2.51/4.01/4.44	2.63/3.82/5.01	2.45/4.09/4.19	2.63/4.06/3.82
	P@10	6.73	12.46	3.87/5.51/5.94	4.53/6.21/7.16	3.58/5.21/5.42	4.06/5.01/5.49
	P@30	8.45	15.75	6.51/7.95/8.45	6.92/8.11/9.07	6.34/7.77/8.18	6.68/7.40/7.88
ja	P@1	0.07	4.72	0.36/0.57/0.86	0.24/0.48/0.72	0.41/0.61/0.92	0.00/0.48/0.48
	P@5	0.14	8.09	1.29/2.51/2.58	1.67/3.58/3.34	1.12/2.04/2.25	0.72/1.19/1.43
	P@10	0.64	10.52	2.43/3.72/3.65	3.58/4.53/4.77	1.94/3.37/3.17	1.19/2.15/1.91
	P@30	1.86	16.46	5.87/6.51/6.80	7.88/8.83/8.59	5.01/5.52/6.03	3.58/4.30/4.77
th	P@1	0	3.01	0.14/0.21/0.21	0.00/0.48/0.48	0.20/0.10/0.10	0.00/0.24/0.00
	P@5	0.14	5.94	0.29/0.72/0.79	0.24/1.43/1.43	0.31/0.41/0.51	0.24/0.24/0.24
	P@10	0.21	7.66	0.50/1.00/1.36	0.48/1.91/2.63	0.51/0.61/0.82	0.24/0.24/0.48
	P@30	1.5	12.53	2.22/2.79/2.65	4.30/5.25/4.77	1.33/1.74/1.74	0.72/1.67/1.43

Table 7: Full results for BLOOMZ-1B7 with last-token embedding