Fig.1

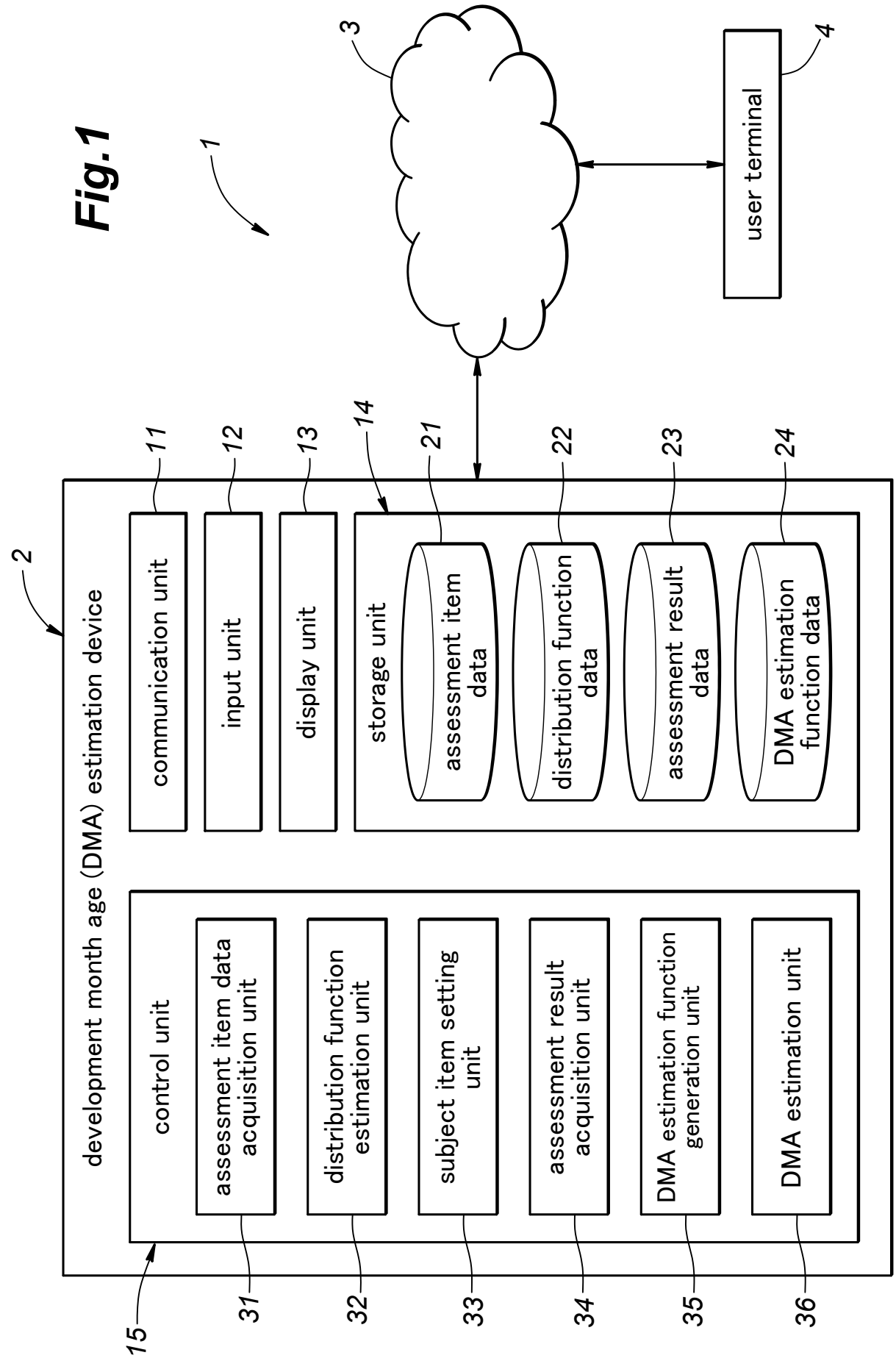
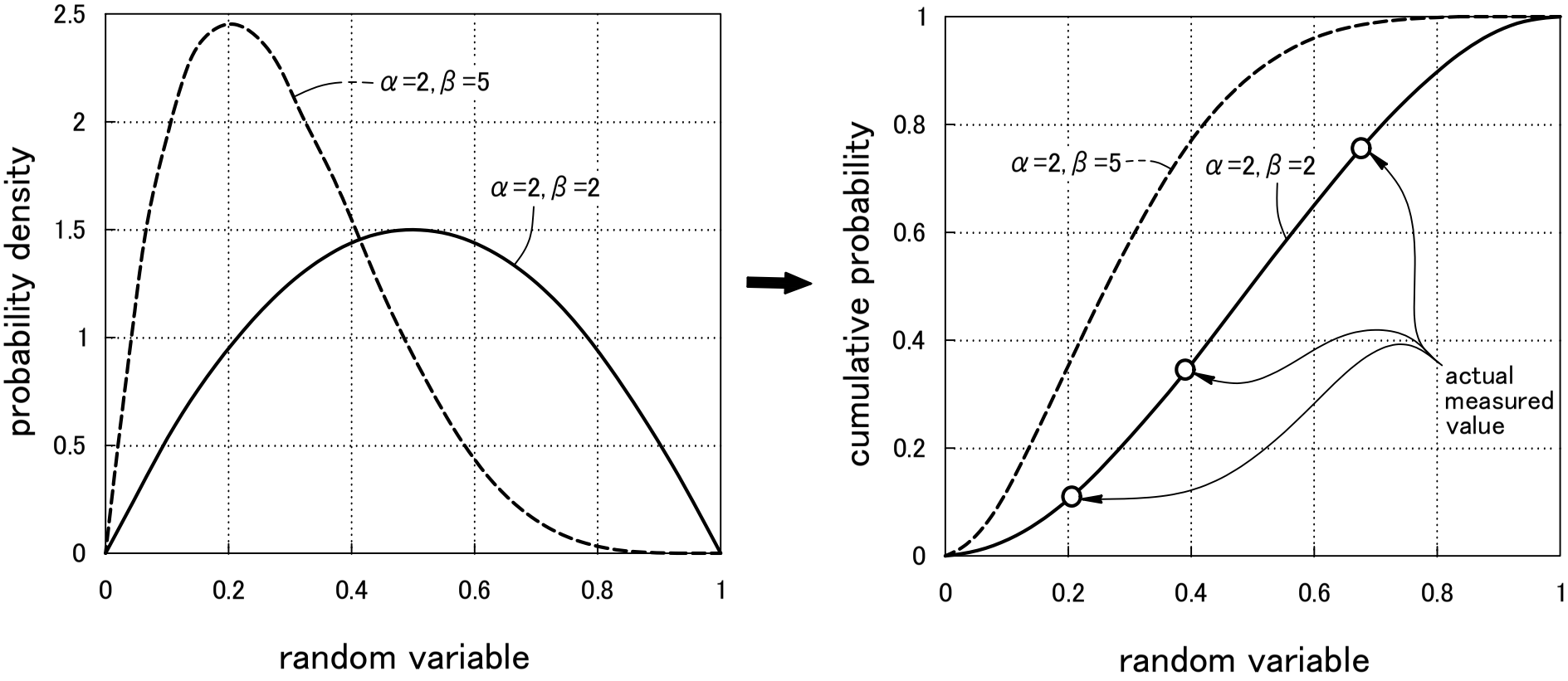

1
2
3
4
user terminal
development month age (DMA) estimation device
communication unit
input unit
display unit
storage unit
assessment item data
distribution function data
assessment result data
DMA estimation function data
control unit
assessment item data acquisition unit
distribution function estimation unit
subject item setting unit
assessment result acquisition unit
DMA estimation function generation unit
DMA estimation unit
11
12
13
14
21
22
23
24
15
31
32
33
34
35
36

Fig.2

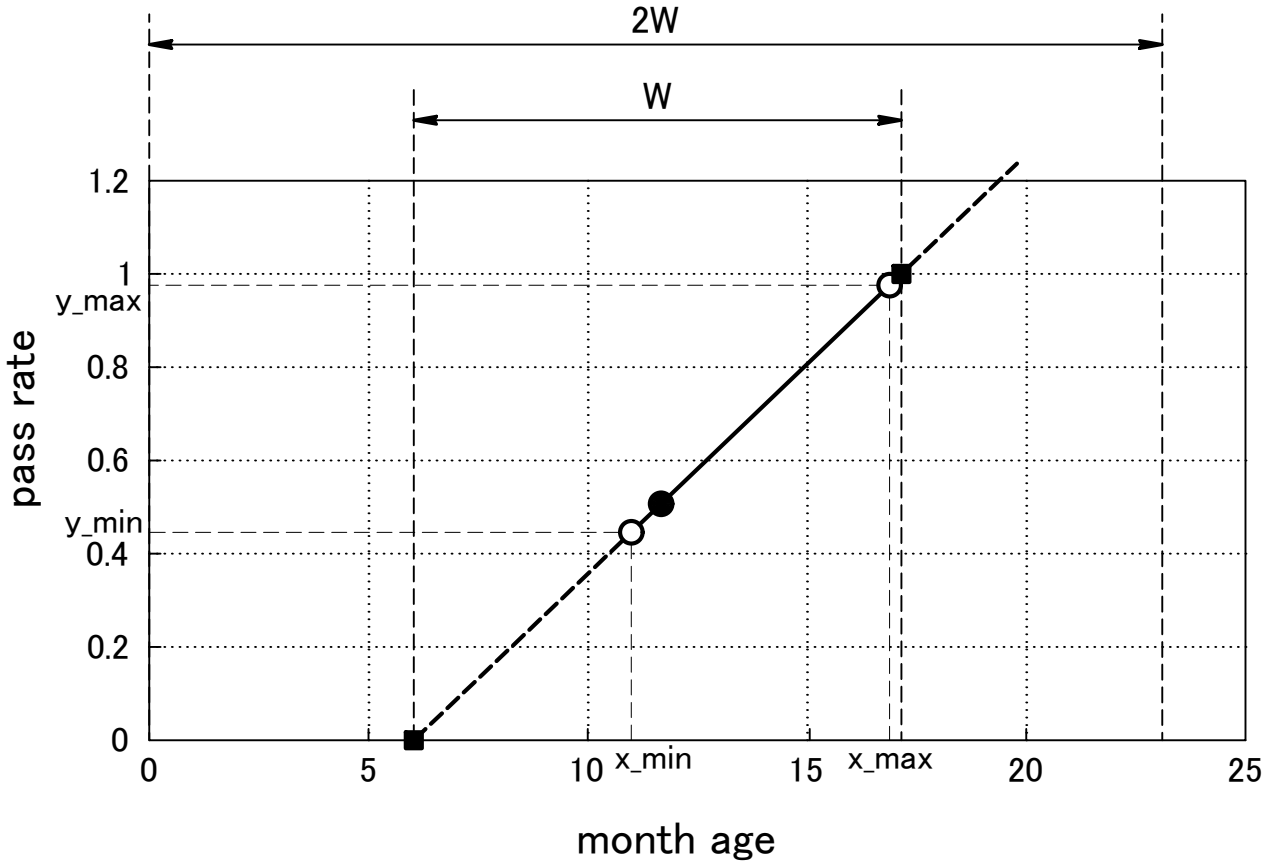
assessment item	pass rate									
	11 m	13 m	15 m	17 m	19.5 m	22.5 m	23.5 m	28.5 m	31.5 m	34.5 m
.....	...	...	...							
134 take two or three steps	44.2%	68.3%	89.5%	98.0%						
135 walk in shoes		42.4%	87.0%	98.0%	98.0%					
136 run			35.1%	64.0%	87.0%	96.4%				
137 climb stairs independently, placing feet together on each step				60.0%	75.9%	85.5%	97.8%			
138 kick the ball forward					48.1%	79.0%	75.6%	88.7%		
139 hopping up and down on both feet						41.8%	77.8%	92.5%	98.0%	
140 climb stairs, stepping forward by alternating feet							48.9%	62.3%	86.8%	87.8%
.....								...	...	...

Fig.3


probability density
random variable
α=2, β=5
α=2, β=2
cumulative probability
random variable
α=2, β=5
α=2, β=2
actual measured value

(A) (B)

Fig.4


2W
W
1.2
1
y_max
0.8
0.6
y_min
0.4
0.2
0
pass rate
0
5
10
x_min
15
x_max
20
25
month age

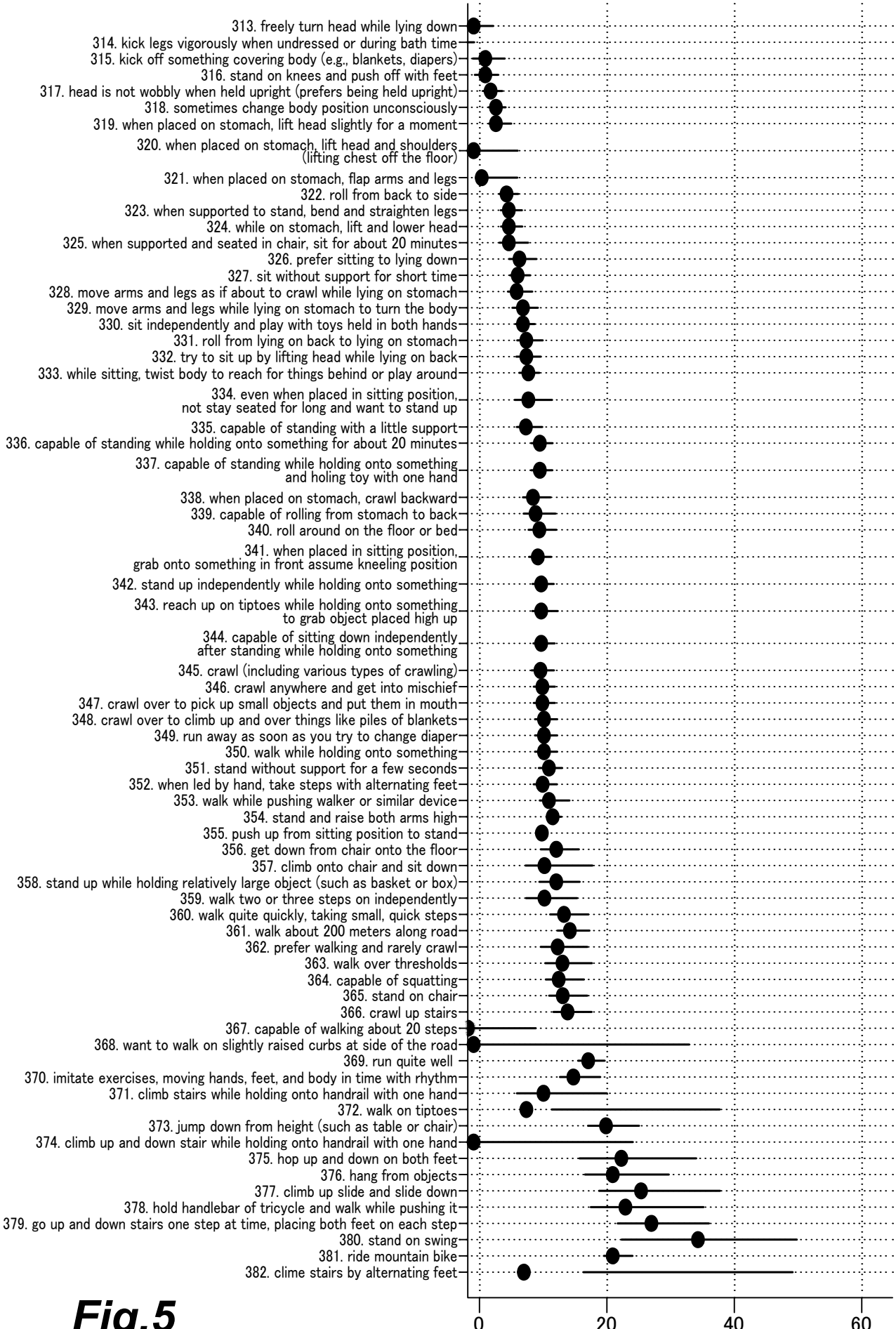
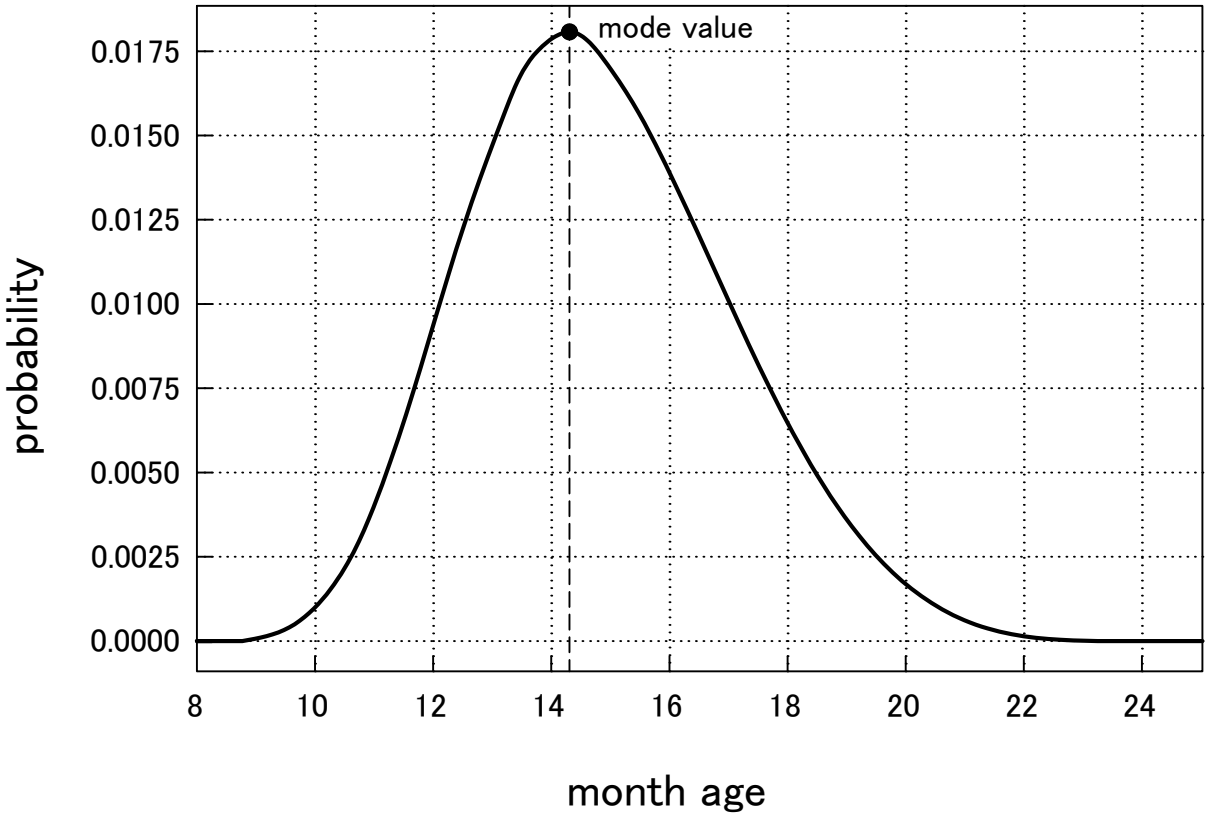

313. freely turn head while lying down
314. kick legs vigorously when undressed or during bath time
315. kick off something covering body (e.g., blankets, diapers)
316. stand on knees and push off with feet
317. head is not wobbly when held upright (prefers being held upright)
318. sometimes change body position unconsciously
319. when placed on stomach, lift head slightly for a moment
320. when placed on stomach, lift head and shoulders (lifting chest off the floor)
321. when placed on stomach, flap arms and legs
322. roll from back to side
323. when supported to stand, bend and straighten legs
324. while on stomach, lift and lower head
325. when supported and seated in chair, sit for about 20 minutes
326. prefer sitting to lying down
327. sit without support for short time
328. move arms and legs as if about to crawl while lying on stomach
329. move arms and legs while lying on stomach to turn the body
330. sit independently and play with toys held in both hands
331. roll from lying on back to lying on stomach
332. try to sit up by lifting head while lying on back
333. while sitting, twist body to reach for things behind or play around
334. even when placed in sitting position, not stay seated for long and want to stand up
335. capable of standing with a little support
336. capable of standing while holding onto something for about 20 minutes
337. capable of standing while holding onto something and holing toy with one hand
338. when placed on stomach, crawl backward
339. capable of rolling from stomach to back
340. roll around on the floor or bed
341. when placed in sitting position, grab onto something in front assume kneeling position
342. stand up independently while holding onto something
343. reach up on tiptoes while holding onto something to grab object placed high up
344. capable of sitting down independently after standing while holding onto something
345. crawl (including various types of crawling)
346. crawl anywhere and get into mischief
347. crawl over to pick up small objects and put them in mouth
348. crawl over to climb up and over things like piles of blankets
349. run away as soon as you try to change diaper
350. walk while holding onto something
351. stand without support for a few seconds
352. when led by hand, take steps with alternating feet
353. walk while pushing walker or similar device
354. stand and raise both arms high
355. push up from sitting position to stand
356. get down from chair onto the floor
357. climb onto chair and sit down
358. stand up while holding relatively large object (such as basket or box)
359. walk two or three steps on independently
360. walk quite quickly, taking small, quick steps
361. walk about 200 meters along road
362. prefer walking and rarely crawl
363. walk over thresholds
364. capable of squatting
365. stand on chair
366. crawl up stairs
367. capable of walking about 20 steps
368. want to walk on slightly raised curbs at side of the road
369. run quite well
370. imitate exercises, moving hands, feet, and body in time with rhythm
371. climb stairs while holding onto handrail with one hand
372. walk on tiptoes
373. jump down from height (such as table or chair)
374. climb up and down stair while holding onto handrail with one hand
375. hop up and down on both feet
376. hang from objects
377. climb up slide and slide down
378. hold handlebar of tricycle and walk while pushing it
379. go up and down stairs one step at time, placing both feet on each step
380. stand on swing
381. ride mountain bike
382. clime stairs by alternating feet
0
20
40
60

Fig.5

Fig.6


mode value
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
probability
8
10
12
14
16
18
20
22
24
month age