Item	Item Content	Format	Field	Perspective	Abilities tested	Correct response rate	Item Reference Profile					IRP Indices					
							Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Alpha	A	Beta	B	Gamma	C
1		Multiple choice	Numbers and calculation	Knowledge and understanding	Able to show proper fractions on a number line	0.951	0.235	0.809	0.962	0.988	0.997	1	0.574	1	0.235	0.00	0.00
2		Cloze	Numbers and calculation	Expression and processing	Able to calculate fractions with common denominators using subtraction	0.938	0.206	0.769	0.946	0.981	0.993	1	0.563	2	0.769	0.00	0.00
3		Multiple choice	Numerical relationships	Expression and processing	Able to determine the size of groups from a bar graph	0.910	0.414	0.737	0.864	0.936	0.964	1	0.323	1	0.414	0.00	0.00
4		Cloze	Volume and measurement	Knowledge and understanding	Understands the formula for determining the area of a triangle, and to determine the area.	0.895	0.141	0.617	0.887	0.966	0.991	1	0.476	2	0.617	0.00	0.00
5		Cloze	Numbers and calculation	Knowledge and understanding	Understands the meaning of fractions	0.893	0.181	0.639	0.875	0.958	0.984	1	0.457	2	0.639	0.00	0.00
6		Cloze	Diagrams	Knowledge and understanding	Understands the definition and qualities of a parallelogram	0.886	0.178	0.649	0.860	0.940	0.981	1	0.471	2	0.649	0.00	0.00
7		Multiple choice	Volume and measurement / Numerical relationships	Expression and processing	Able to read the formula expressing the method for determining the area of an L-shaped figure	0.882	0.372	0.623	0.815	0.934	0.975	1	0.251	2	0.623	0.00	0.00
8		Cloze	Numbers and calculation	Expression and processing	Able to multiply integers and decimal fractions	0.856	0.192	0.681	0.829	0.885	0.939	1	0.490	2	0.681	0.00	0.00
9		Multiple choice	Numerical relationships	Thinking	Able to determine changes in groups from a bar graph	0.853	0.329	0.589	0.786	0.904	0.944	1	0.260	2	0.589	0.00	0.00
10		Cloze	Numbers and calculation	Expression and processing	Able to multiply decimal fractions and decimal fractions	0.848	0.179	0.655	0.815	0.884	0.943	1	0.476	2	0.655	0.00	0.00
11		Cloze	Diagrams	Knowledge and understanding	Understands that the sum of the three internal angles of a triangle is 180°	0.838	0.103	0.482	0.796	0.926	0.978	1	0.379	2	0.482	0.00	0.00
12		Cloze	Numerical relationships	Knowledge and understanding	Able to determine the length of a rectangle based on the height, when the total length of all four sides is known	0.825	0.094	0.443	0.755	0.918	0.983	1	0.350	2	0.443	0.00	0.00
13		Multiple choice	Diagrams	Knowledge and understanding	Able to look at a right-angled triangle and determine the length of paths based on the relationship among the three sides	0.792	0.378	0.642	0.738	0.812	0.846	1	0.264	1	0.378	0.00	0.00
14		Cloze	Numerical relationships	Expression and processing	Able to complete a table showing the relationship between length and height of a rectangle, when the total length of all four sides is known	0.754	0.084	0.346	0.617	0.829	0.970	2	0.271	3	0.617	0.00	0.00
15		Cloze	Numerical relationships	Expression and processing	Able to determine the regularity of changes based on a table of results for the length and height of a rectangle	0.753	0.083	0.349	0.623	0.829	0.966	2	0.274	3	0.623	0.00	0.00
16		Cloze	Volume and measurement	Knowledge and understanding	Understands the formula for determining the area of a circle, and to determine the area.	0.732	0.051	0.287	0.599	0.819	0.945	2	0.312	3	0.599	0.00	0.00
17		Cloze	Numbers and calculation	Expression and processing	Able to divide integers by decimal fractions	0.730	0.054	0.273	0.574	0.816	0.959	2	0.300	3	0.574	0.00	0.00
18		Multiple choice	Diagrams	Thinking	Able think of a travel route using the characteristics of a parallelogram	0.714	0.230	0.350	0.561	0.773	0.901	3	0.212	3	0.561	0.00	0.00
19		Cloze	Numbers and calculation	Expression and processing	Able to calculate integers and decimal fractions using a combination of addition and multiplication	0.691	0.068	0.330	0.578	0.741	0.894	1	0.262	3	0.578	0.00	0.00
20		Multiple choice	Volume and measurement	Thinking	Able to look at several diagrams with different conditions, and explain why the areas are the same	0.681	0.180	0.257	0.511	0.762	0.893	2	0.254	3	0.511	0.00	0.00
21		Multiple choice	Diagrams / Numerical relationships	Knowledge and understanding	Understands how to determine the circumference of a rectangle	0.675	0.241	0.316	0.483	0.721	0.894	3	0.238	3	0.483	0.00	0.00
22		Multiple choice	Numerical relationships	Expression and processing	Able to determine values by inserting numbers into a language formula, compare with actual records, and make a judgment	0.651	0.277	0.428	0.496	0.645	0.822	4	0.177	3	0.496	0.00	0.00
23		Multiple choice	Numbers and calculation	Thinking	Able to understand the conditions of a problem, and to determine the correct approach	0.593	0.201	0.267	0.412	0.617	0.814	3	0.205	3	0.412	0.00	0.00
24		Multiple choice	Numbers and calculation / Numerical relationships	Thinking	Able to determine a new approach to calculation, and to explain methods for solving problems involving other figures using that approach	0.590	0.150	0.209	0.426	0.653	0.791	3	0.227	3	0.426	0.00	0.00
25		Cloze	Numbers and calculation	Knowledge and understanding	Able to find the largest value from among three fractions and decimal fractions, and to show that value on a number line	0.559	0.028	0.137	0.330	0.587	0.870	4	0.284	4	0.587	0.00	0.00
26		Cloze	Numbers and calculation	Knowledge and understanding	Understands the meaning of multiplication of decimal fractions	0.543	0.119	0.348	0.422	0.524	0.718	1	0.229	4	0.524	0.00	0.00
27		Multiple choice	Numerical relationships	Thinking	Able to determine changes in ratios from a band graph	0.541	0.179	0.243	0.356	0.546	0.759	4	0.213	4	0.546	0.00	0.00
28		Multiple choice	Numerical relationships	Thinking	Able to judge the size of calculation results with a focus on the format of the formula, and to explain the grounds for that reasoning	0.514	0.129	0.150	0.286	0.532	0.785	4	0.253	4	0.532	0.00	0.00
29		Multiple choice	Numerical relationships	Thinking	Able to compare the costs on each weekday based on given conditions	0.295	0.052	0.012	0.055	0.252	0.585	4	0.334	5	0.585	0.25	-0.04
30		Multiple choice	Volume and measurement	Expression and processing	Able to pick out shapes from a map, compare areas, and explain	0.182	0.033	0.009	0.036	0.149	0.366	4	0.217	5	0.366	0.25	-0.02

Can-Do Statements

Rank Title	Needs more effort	Understands basic calculations	Understands numbers and basic diagrams	Understands diagrams	Achieves the goals of this chart

[Volume and measurement] Understanding is insufficient, but is able to calculate using addition with carrying over and addition of fractions with common denominators. [Numerical relationships] Understanding is insufficient, but is able to determine the size of groups from a bar graph.

[Numbers and calculation] Able to add fractions with common denominators; add with carrying over; and express proper fractions on a number line. [Volumes and calculation] Understands the formula for determining the area of a parallelogram, and to determine the area.

[Numbers and calculation] Able to subtract fractions with common denominators, understand the meaning of fractions, multiply integers and decimal fractions, and multiply decimal fractions and decimal fractions. [Volume and measurement] Able to read the formula expressing the method for determining the area of a triangle and an L-shaped figure. [Diagrams] Understands the definition and qualities of a parallelogram. [Numerical relationships] Able to determine the size of groups from a bar graph.

[Numbers and calculation] Able to multiply integers and decimal fractions. [Volumes and measurement] Understands the formula for determining the area of a circle, and to determine the area. [Diagrams] Understands the relationship among the three sides of a triangle, and understands that the sum of the three internal angles is 180°. [Numerical relationships] Understands the relationship between the length and height of a rectangle. Able to determine changes in groups from a bar graph.

[Numbers and calculation] Able to show proper fractions and decimal fractions on a number line. Able to think of the best approach to problems. Able to calculate integers and decimal fractions using a combination of addition and multiplication. [Volume and measurement] Able to look at several diagrams, and explain why the areas are the same. [Diagrams] Able think of a travel route using the characteristics of a parallelogram. Understands how to determine the circumference of a rectangle. [Numerical relationships] Able to determine the values in a verbal formula, and to make comparative judgments.