

Analyzing Students' Responses on the GCT

Item 1

Gib so viele geometrische Konzepte und Begriffe an, die mit dem Buchstaben „P“ anfangen, wie dir einfallen.

Ein Beispiel: Polygon.

Wenn Du mehr Platz benötigst, schreibe auf der Rückseite dieses Blattes weiter.

Fluency: Each relevant response is given one point.

Flexibility: The number of different categories of relevant responses. Each flexibility category is given one point.

- C1 Euclidean Geometry
- C2 Space Geometry
- C3 Transformational Geometry
- C4 Analytical Geometry
- C5 Projective Geometry
- C6 Conic Geometry
- C7 Set Theory
- C8 Vector Geometry

Originality/Novelty: It is the statistical infrequency of responses in relation to peer group. Each response is given zero, one, two, three or four points according to the following table:

Grading originality points for the geometric creativity test

The number of students who registered the response	1 Student	2 Student	3 Student	4 Student	5 Student
Originality score	4	3	2	1	0

Student 1

Student's Responses	Flu.	Flex.	Ori.
Parallele	1	C1	0
Parallelogramm	1	C1	0
Perpendicular	1	C1	4
Polyeder	1	C2	0
Punkt	1	C1	0
Parallelepiped	1	C2	4
Punktmenge	1	C7	4
Peripheriewinkel	1	C1	0
Score	8	3	12

Student 2

Student's Responses	Flu.	Flex.	Ori.
Punkt	1	C1	0
Parallelität	1	C1	2
Punktsymmetrie	1	C3	0
Peripheriewinkel	1	C1	0
Passante	1	C1	2
Punktspiegelung	1	C3	0
Score	6	2	4

Student 3

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Punkt	1	C1	0
Punktsymmetrie	1	C3	0
Parallele	1	C1	0
Score	4	2	0

Student 4

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parallelität	1	C1	2
Perspektive	1	C5	4
Pythagoras	1	C1	0
Punkt	1	C1	0
Punktspiegelung	1	C3	0
Planparallel platte	1	C2	4
Proportional	1	C1	4
Peripheriewinkel	1	C1	0
Pi	1	C1	0
Projektion	1	C5	4
Score	11	4	18

Student 5

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Polyeder	1	C2	0
Peripheriewinkel	1	C1	0
Parallele	1	C2	0
Parkettierung (Tesselation)	1	C1, 2	3
Pythagoras	1	C1	0
Score	6	2	3

Student 6

Student's Responses	Flu.	Flex.	Ori.
Pythagoras	1	C1	0
Prisma	1	C2	0
Pyramide	1	C2	0
Punktsymmetrie	1	C3	0
Punkt	1	C1	0
Parallele	1	C1	0
Parabel	1	C6	0
Parallelogramm	1	C1	0
Score	8	4	0

Student 7

Student's Responses	Flu.	Flex.	Ori.
Pythagoras	1	C1	0
Punktsymmetrie	1	C3	0
Punktspiegelung	1	C3	0
Peripheriewinkel	1	C1	0
Parallele	1	C1	0
Passante	1	C1	2
Parallelogramm	1	C1	0
Punkt	1	C1	0
Punktabstandsformel	1	C4	4
Score	9	3	6

Student 8

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parallele	1	C1	0
Punkte	1	C1	0
Score	3	1	0

Student 9

Student's Responses	Flu.	Flex.	Ori.
No response	0	0	0
Score	0	0	0

Student 10

Student's Responses	Flu.	Flex.	Ori.
Parallele	1	C1	0
Punkt	1	C1	0
Parkette	1	C1, 2	3
Peripheriewinkel	1	C1	0
Parallelogramm	1	C1	0
Score	5	2	3

Student 11

Student's Responses	Flu.	Flex.	Ori.
Pi	1	C1	0
Polyeder	1	C2	0
Punkt	1	C1	0
Parallele	1	C1	0
Punktsymmetrie	1	C3	0
Peripheriewinkel	1	C1	0
Score	6	3	0

Student 12

Student's Responses	Flu.	Flex.	Ori.
Punkt	1	C1	0
Parallele	1	C1	0
Score	2	1	0

Student 13

Student's Responses	Flu.	Flex.	Ori.
Punkt	1	C1	0
Punktspiegelung	1	C3	0
Punktdrehung	1	C3	4
Parallele	1	C1	0
Pythagoras	1	C1	0
Score	5	2	4

Student 14

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parallele	1	C1	0
Polyeder	1	C2	0
Prisma	1	C2	0
Pyramide	1	C2	0
Pentagramm	1	C1	2
Score	6	2	2

Student 15

Student's Responses	Flu.	Flex.	Ori.
Pyramide	1	C2	0
Pythagoras	1	C1	0
Polyeder	1	C2	0
Punkt	1	C1	0
Pi	1	C1	0
Parallele	1	C1	0
Parallelverschiebung	1	C3	3
Punktspiegelung	1	C3	0
Score	8	3	3

Student 16

Student's Responses	Flu.	Flex.	Ori.
Parabel	1	C6	0
Parallele	1	C1	0
Prisma	1	C2	0
Punkt	1	C1	0
Score	4	3	0

Student 17

Student's Responses	Flu.	Flex.	Ori.
Parallele	1	C1	0
Punkt	1	C1	0
Parallelogramm	1	C1	0
Pythagoras	1	C1	0
Pi	1	C1	0
Score	5	1	0

Student 18

Student's Responses	Flu.	Flex.	Ori.
Parallele	1	C1	0
Parabel	1	C6	0
Punkt	1	C1	0
Parallelogramm	1	C1	0
Pythagoras	1	C1	0
Parameter	1	C4	1
Parkettierung	1	C1, 2	3
Peripheriewinkel	1	C1	0
Score	8	4	4

Student 19

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parabel	1	C6	0
Parallele	1	C1	0
Punkt	1	C1	0
Pythagoras	1	C1	0
Score	5	2	0

Student 20

Student's Responses	Flu.	Flex.	Ori.
Punkt	1	C1	0
Parallele	1	C1	0
Prisma	1	C2	0
Pyramide	1	C2	0
Parallelogramm	1	C1	0
Score	5	2	0

Student 21

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parallele	1	C1	0
Punkt	1	C1	0
Punktsymmetrie	1	C3	0
Passante	1	C1	2
Score	5	2	2

Student 22

Student's Responses	Flu.	Flex.	Ori.
Parallelität	1	C1	0
Polyeder	1	C2	0
Planskizze (Sketch plan)	1	C1	4
Plan	1	C1	4
Planimetrie (Geometrie der Ebene)	1	C1	4
Polardarstellung	1	C4	4
Parallelogramm	1	C1	0
Score	8	3	16

Student 23

Student's Responses	Flu.	Flex.	Ori.
Punkt	1	C1	0
Parallele	1	C1	0
Polyeder	1	C2	0
Pythagoras	1	C1	0
Score	4	2	0

Student 24

Student's Responses	Flu.	Flex.	Ori.
Pythagoras	1	C1	0
Pyramide	1	C2	0
Parallele	1	C1	0
Parallelogramm	1	C1	0
Prisma	1	C2	0
Polyeder	1	C2	0
Pfeile	1	C1	3
Parabel	1	C6	0
Pylon (Geometric figure in 3 D)	1	C2	4
Score	9	3	7

Student 25

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Punkt	1	C1	0
Parameter	1	C1	1
Punktspiegelung	1	C3	0
Parkette	1	C1, 2	3
Parallele	1	C1	0
Score	6	3	4

Student 26

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Parallele	1	C1	0
Punkt	1	C1	0
Punktspiegelung	1	C3	0
Parabel	1	C6	0
Pythagoras	1	C1	0
Parameter	1	C4	1
Peripheriewinkel	1	C1	0
Score	8	4	1

Student 27

Student's Responses	Flu.	Flex.	Ori.
Parallele	1	C1	0
Parallelogramm	1	C1	0
Punkt	1	C1	0
Punktsymmetrie	1	C3	0
Parabel	1	C6	0
Parallelverschiebung	1	C3	3
Score	6	3	3

Student 28

Student's Responses	Flu.	Flex.	Ori.
Pythagoras	1	C1	0
Parabel	1	C6	0
Pfeil	1	C8	3
Parallelogramm	1	C1	0
Punkt	1	C1	0
Parallele	1	C1	0
Parameter	1	C4	1
Pi	1	C1	0
Position	1	C1, 4	4
Score	9	4	8

Student 29

Student's Responses	Flu.	Flex.	Ori.
Parallelogramm	1	C1	0
Pyramide	1	C2	0
Pyramidenstumpf	1	C2	4
Parallele	1	C1	0
Punkt	1	C1	0
Pentagramm	1	C1	2
Pythagorasherleitung	1	C1	4
Score	7	2	10

Student 30

Student's Responses	Flu.	Flex.	Ori.
Pyramide	1	C2	0
Parallele	1	C1	0
Pentagramm	1	C1	2
Parallelogramm	1	C1	0
Pythagoras	1	C1	0
Score	5	2	2

Originality Scores for Students' Responses on Item 1

Student's Responses	Frequency	Originality Scores
Parallele	25	0
Punkt	24	0
Parallelogramm	22	0
Pythagoras	14	0
Peripheriewinkel	9	0
Polyeder	8	0
Parabel	8	0
Punktspiegelung	7	0
Pyramide	7	0
Punktsymmetrie	6	0
Pi	5	0
Prisma	5	0
Parameter	4	1
Parallelität	3	2
Passante	3	2
Pentagramm	3	2
Parkettierung	2	3
Parallelverschiebung	2	3
Pfeile	2	3
Parkette	2	3
Perpendicular	1	4
Parallelepiped	1	4
Punktmenge	1	4
Perspektive	1	4
Pythagorasherleitung	1	4
Planparallel Platte	1	4
Projektion	1	4
Pyramidenstumpf	1	4
Punktabstandsformel	1	4
Punktdrehung	1	4
Plankizze	1	4
Plan	1	4
Planimetrie	1	4
Polardarstellung	1	4
Pylon	1	4
Position	1	4
Proportional	1	4