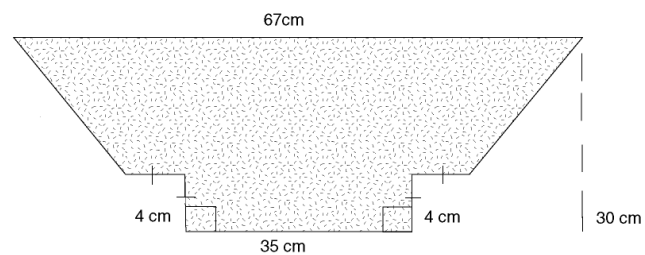


Item 4

Finde **so viele Wege wie möglich**, die Fläche der nachstehenden Figur zu berechnen.



Wenn du mehr Platz brauchst, frage nach weiteren Aufgabenblättern.

Fluency: Each relevant response is given one point.

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

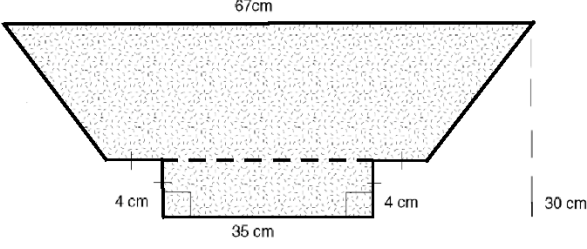
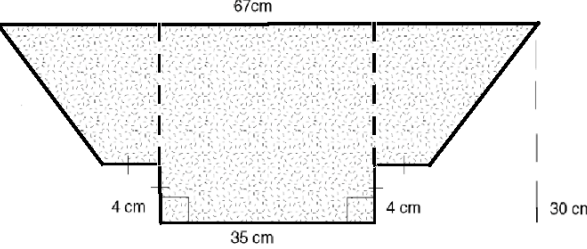
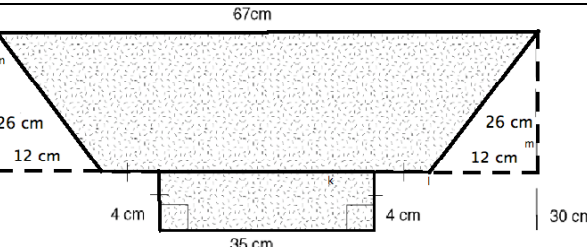
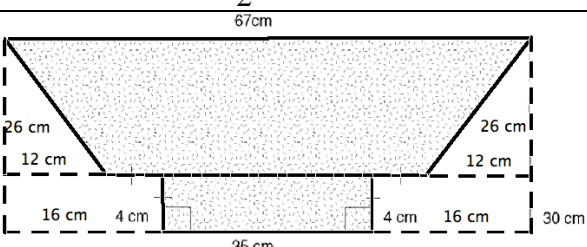
- C1 Responses that use adding strategy by dividing the given figure into other figures of known areas, then adding them together.
- C2 Responses that use subtracting strategy by considering the area of the outer rectangle, dividing the area between the outer rectangle and the given figure to other figures of known areas, then calculating the area of the required figure by subtracting the total area between the outer rectangle and the required figure from the area of the outer rectangle.
- C3 Responses that use both strategies of adding and subtracting.
- C4 Responses that use the symmetry of the given figure.
- C5 Responses that use cutting and combining strategy to form figures of known areas.
- C6 Responses that use other strategies

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

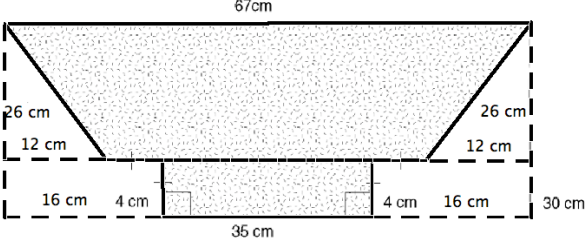
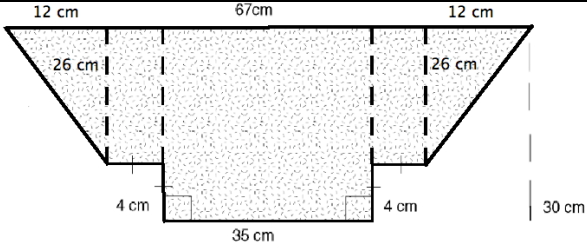
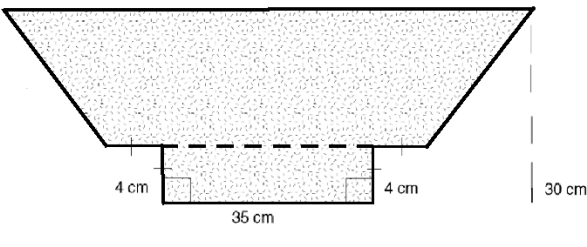
The number of students who registered the response	1 Student	2 Student	3 Student	4 Student	5 Student
Originality score	4	3	2	1	0

Student 1

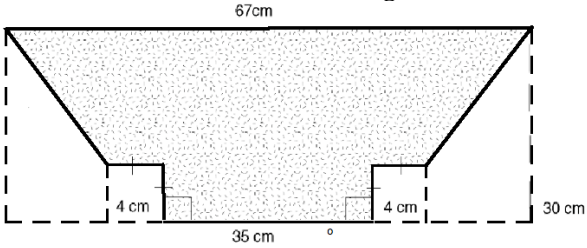
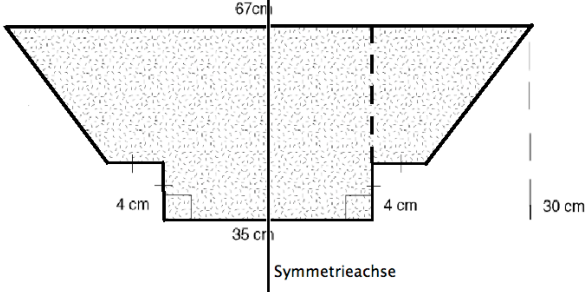
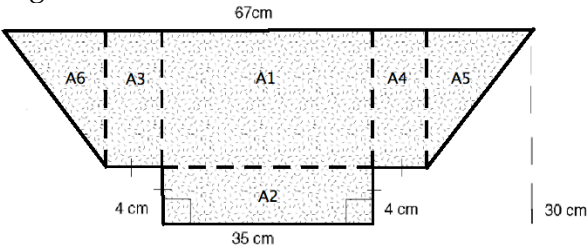
Student's Responses	Flu.	Flex.	Ori.
 Rechteck + Trapez $= 35 \cdot 4 + \frac{1}{2} (67 + 35) \cdot 26$	1	C1	0
 Rechteck + 2 Trapez $= 35 \cdot 30 + 2 \left[\frac{1}{2} (4 + 16) \cdot 26 \right]$	1	C1	0
 Rechteck + Rechteck - 2 Dreiecke $= 35 \cdot 4 + 67 \cdot 26 - 2 \left[\frac{1}{2} \cdot 12 \cdot 26 \right]$	1	C3	0
 Rechteck - 2 Dreieck - 2 Rechteck $= 67 \cdot 30 - 2 \left[\frac{1}{2} \cdot 12 \cdot 26 \right] - 2 [4 \cdot 16]$	1	C2	0

Score	4	3	0
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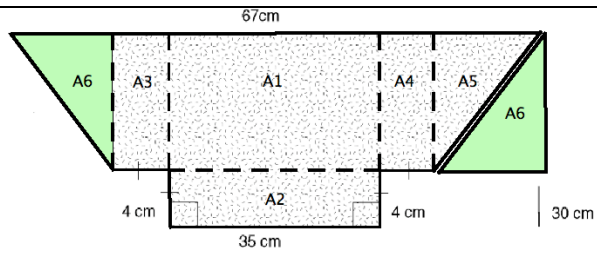
Student 2

Student's Responses	Flu.	Flex.	Ori.
 $A_{ges.} = A [\text{Rechteck } (67, 30)] - 2A [\text{Dreieck } (12, 26)] - 2A [\text{Rechteck } (16, 4)]$	1	C2	0
 $A_{ges.} = 2A [\text{Dreieck } (12, 26)] + 2A [\text{Rechteck } (4, 26)] + A [\text{Rechteck } (35, 30)]$	1	C1	0
 $A = A \text{ Trapez } (43, 67, 26) + A \text{ Rechteck } (35, 4)$	1	C1	0
Score	3	2	0

Student 3

Student's Responses	Flu.	Flex.	Ori.
Die Fläche in Teilflächen zu zerlegen.  Die Fläche zuerst zu erweitern / zu einem Rechteck/ und dann die 2 Quadrate und die 2 Trapeze von Rechtecksfläche abziehen.	1	C2	0
 Die Figur zuerst teilen durch die Symmetrieachse und dann die eine Hälfte zerlegen in ein Rechteck und in ein Trapez and dies doppelt nehmen.	1	C4	4
Gedanke Fläche in Teilflächen zerlegen! Eine Möglichkeit  Um auf A1 zu kommen $(30\text{ cm} - 4\text{ cm}) \cdot 35\text{ cm}$ A2: $35\text{ cm} \cdot 4\text{ cm}$ A3 und A4 : $4\text{ cm} \cdot (30\text{ cm} - 4\text{ cm})$ für jeweils eine Fläche. A5 und A6: Um die Grundfläche zu errechnen $\frac{67\text{ cm} - 35\text{ cm} - 8\text{ cm}}{2}$ Und das dann mal die Höhe	1	C1	3

$h = 30 \text{ cm} - 4 \text{ cm}$
 für jeweils ein Dreieck / noch durch 2 teilen.



Zusatz: man könnte auch nicht durch 2 teilen, so
 hätte man die beiden Dreiecksflächen zu einem
 Rechteck.

1

C5

4

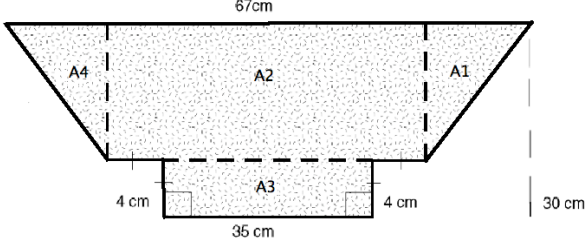
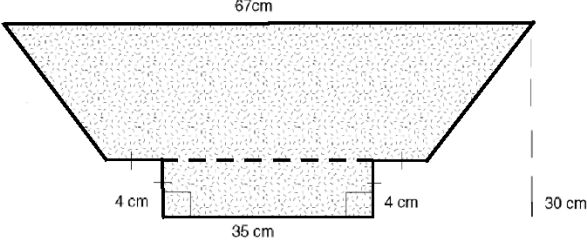
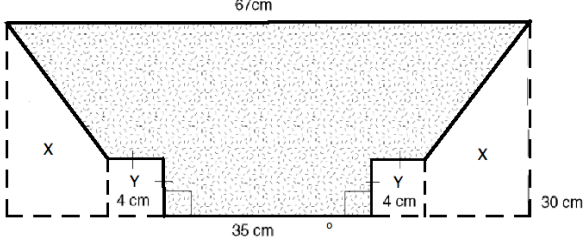
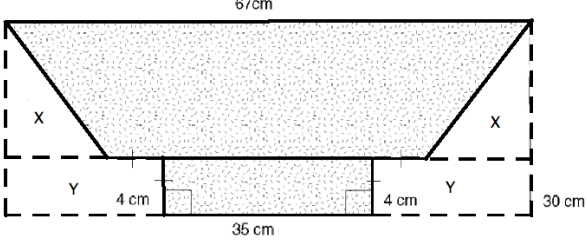
Score

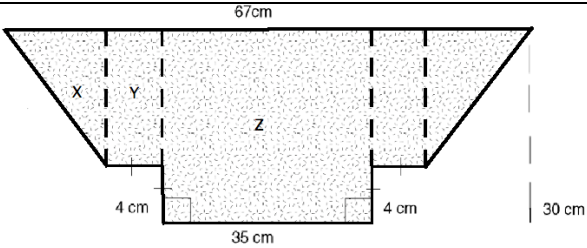
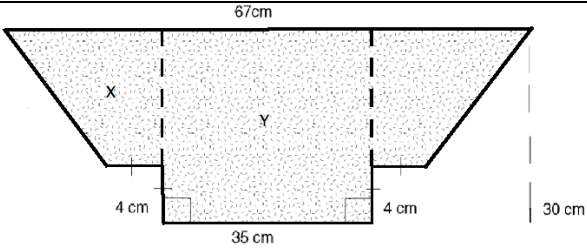
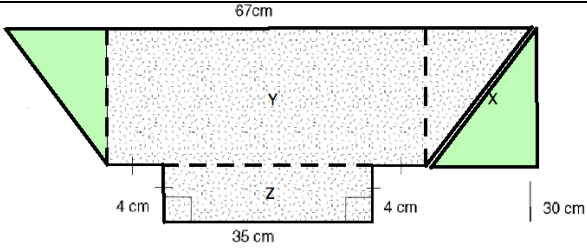
4

4

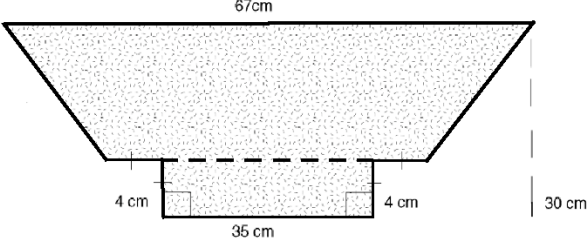
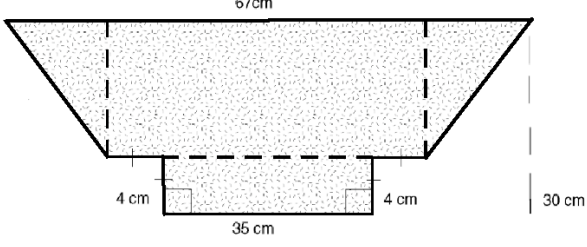
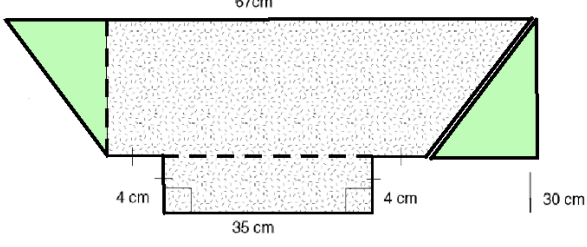
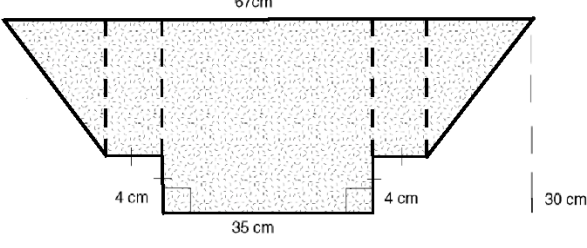
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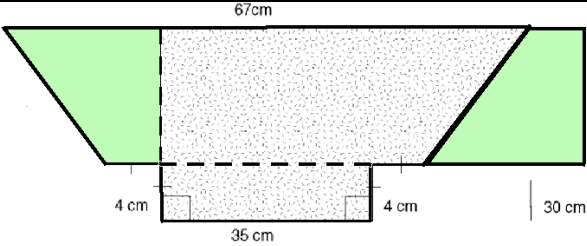
Student 4

Student's Responses	Flu.	Flex.	Ori.
 $A = A_1 + A_2 + A_3 + A_4$	1	C1	0
 $A = A_{\text{Trapez}} + A_{\text{Rechteck}}$	1	C1	0
 $A = A_{\text{Grosse Rechteck}} - (A_{\text{Trapez } x \cdot 2} + A_{\text{Quadrat } y \cdot 2})$	1	C2	0
 $A = A_{\text{Grosse Rechteck}} - (A_{\text{Dreieck } x \cdot 2} + A_{\text{Rechteck } y \cdot 2})$	1	C2	0

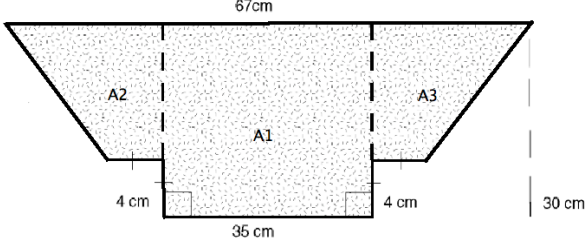
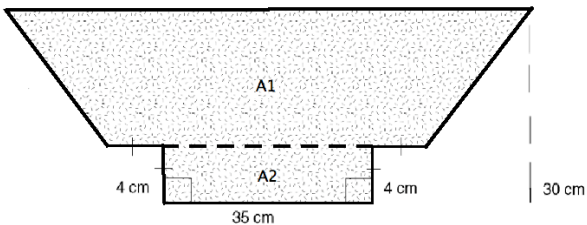
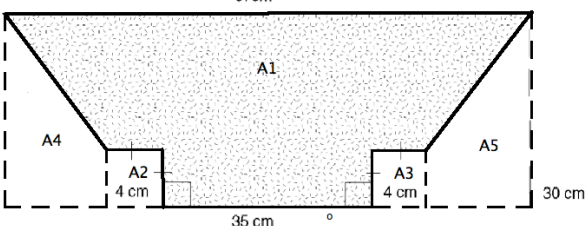
 $A = A_{\text{Dreieck X}} \cdot 2 + A_{\text{Rechteck Y}} \cdot 2 + A_{\text{Rechteck Z}}$	1	C1	0
 $A = A_{\text{Trapez X}} \cdot 2 + A_{\text{Rechteck Y}}$	1	C1	0
 $A = A_{\text{Rechteck X}} + A_{\text{Rechteck Y}} + A_{\text{Rechteck Z}}$	1	C5	2
Score	7	3	2

Student 5

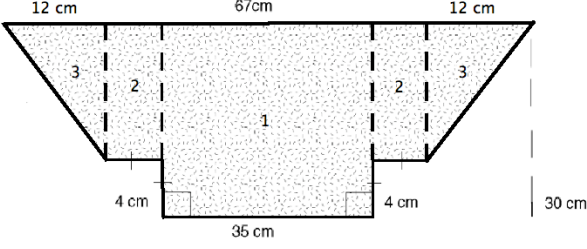
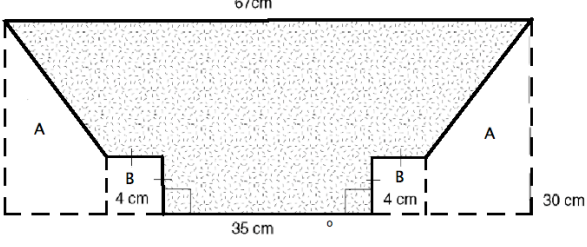
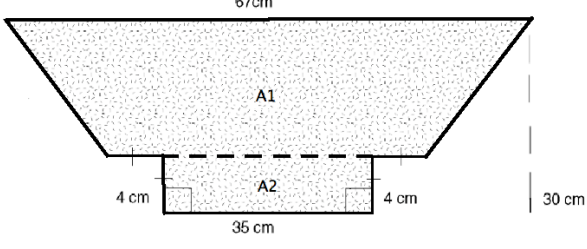
Student's Responses	Flu.	Flex.	Ori.
 Zerlegen der Fläche in ein Rechteck und in ein Trapez: $A_{\text{Rechteck}} = 4 \text{ cm} \cdot 35 \text{ cm}$ $A_{\text{Trapez}} = \frac{67\text{cm} + (35\text{cm} + 4\text{cm} + 4\text{cm})}{2} \cdot (30\text{cm} - 4\text{cm})$	1	C1	0
 Zwei Dreieck + Ein großes Rechteck + ein kleines Rechteck	1	C1	0
 Ein großes Rechteck + ein kleines Rechteck	1	C5	2
 Zwei kongruente Dreiecke + Zwei kongruente Rechtecke + Ein großes Rechteck	1	C1	0

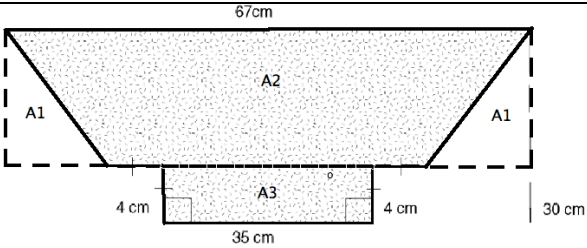
 Kleines Rechteck + Großes zusammengesetztes Rechteck	1	C5	4
Score	5	2	6

Student 6

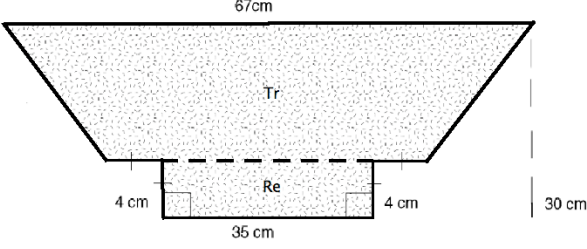
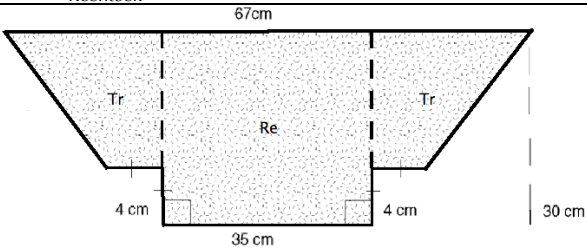
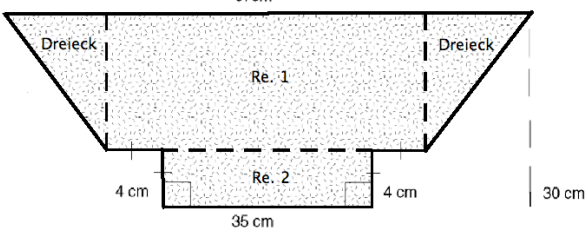
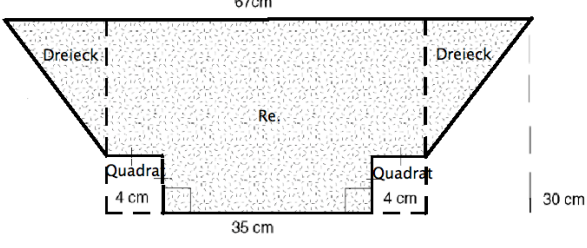
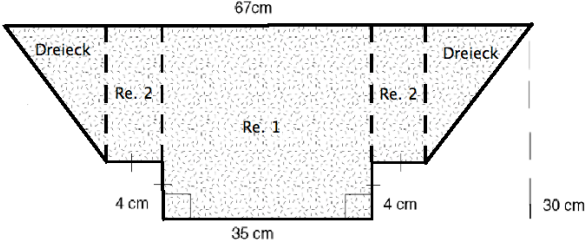
Student's Responses	Flu.	Flex.	Ori.
 $A_1 = 35\text{cm} \cdot 30\text{cm} = 1050\text{ cm}^2$ $A_2 = A_3 = \left(\frac{16\text{cm} + 4\text{cm}}{2}\right) \cdot 26\text{cm} = 260\text{ cm}^2$ $A_{\text{ges}} = A_1 + A_2 + A_3 = 1570\text{ cm}^2$	1	C1	0
 Berechne $A_1 = \text{Sym. Trapez}$ $= \left(\frac{67\text{cm} + 43\text{cm}}{2}\right) \cdot 26\text{cm} = 1430\text{ cm}^2$ $A_2 = 4\text{ cm} \cdot 35\text{ cm (das Rechteck)} = 140\text{ cm}^2$ $A_1 + A_2 = 1430 + 140 = 1570\text{ cm}^2$	1	C1	0
 $A_1 = 67\text{ cm} \cdot 30\text{ cm (großes Rechteck)}$ $A_1 - A_2 - A_3 - A_4 - A_5 = A_{\text{ges}}$ $A_2 = A_3 = 4\text{ cm} \cdot 4\text{cm} = 16\text{ cm}^2$ $A_4 = A_5 = \left(\frac{30\text{cm} + 4\text{cm}}{2}\right) \cdot 12\text{cm} = 204\text{ cm}^2$ $A_{\text{ges}} = 2010\text{ cm}^2 - 32\text{ cm}^2 - 408\text{ cm}^2 = 1570\text{ cm}^2$	1	C2	0
Score	3	2	0

Student 7

Student's Responses	Flu.	Flex.	Ori.
 $A_{R1} = (67 \text{ cm} - 2 \cdot 16 \text{ cm}) \cdot 30 \text{ cm}$ $A_{R2} = (30 \text{ cm} - 4 \text{ cm}) \cdot 4 \text{ cm}$ $A_{D3} = (16 \text{ cm} - 4 \text{ cm}) \cdot (30 \text{ cm} - 4 \text{ cm}) \cdot \frac{1}{2}$ $A_{\text{gesamte}} = A_{R1} + 2 \cdot A_{R2} + 2 \cdot A_{D3}$	1	C1	0
 $A_{\text{gesamte}} = a \cdot b = 67 \text{ cm} \cdot 30 \text{ cm}$ $A_B = 4 \text{ cm} \cdot 4 \text{ cm} = 16 \text{ cm}^2$ $A_A = \left(\frac{30 \text{ cm} + 4 \text{ cm}}{2} \right) \cdot (16 \text{ cm} - 4 \text{ cm})$ $A_{\text{Flächegesamte}} = A_{\text{gesamte}} - 2 \cdot A_A - 2 \cdot A_B$	1	C2	0
 $A_{1(\text{Trapez})} = \left(\frac{67 \text{ cm} + 4 \text{ cm} + 35 \text{ cm} + 4 \text{ cm}}{2} \right) \cdot (30 \text{ cm} - 4 \text{ cm})$ $A_{2(\text{Rechteck})} = (35 \text{ cm} \cdot 4 \text{ cm})$ $A_{\text{gesamte Fläche}} = A_{1(\text{Trapez})} + A_{2(\text{Rechteck})}$	1	C1	0

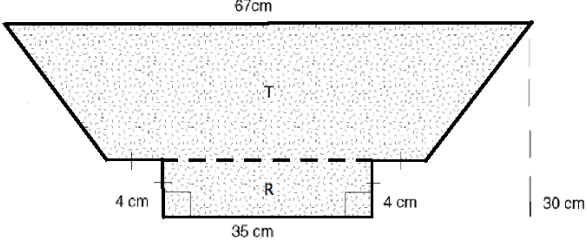
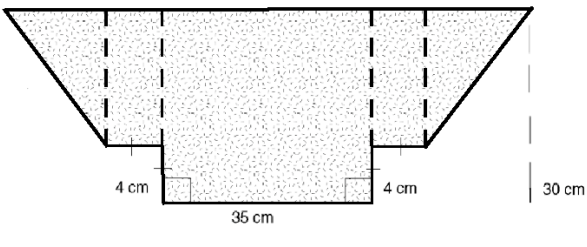
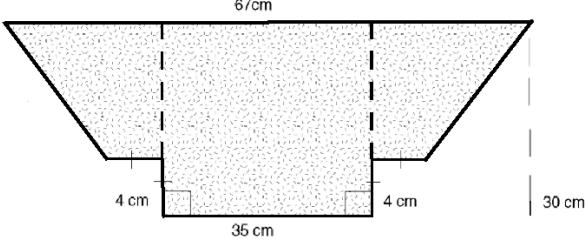
 $A_1 = \frac{(16\text{ cm} - 4\text{ cm}) \cdot (30\text{ cm} - 4\text{ cm})}{2}$ $A_2 = (30\text{ cm} - 4\text{ cm}) \cdot 67\text{ cm}$ $A_3 = 35\text{ cm} \cdot 4\text{ cm}$ $A_{\text{gesamte Fläche}} = A_2 - A_1 - A_1 + A_3$	1	C3	0
Score	4	3	0

Student 8

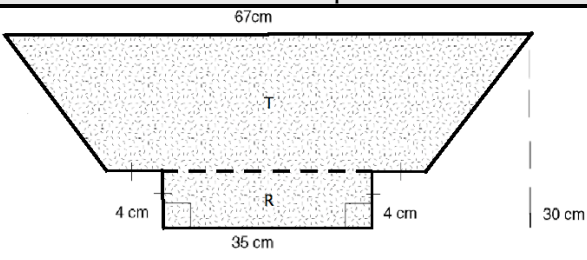
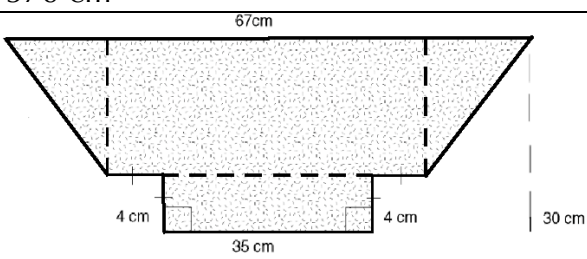
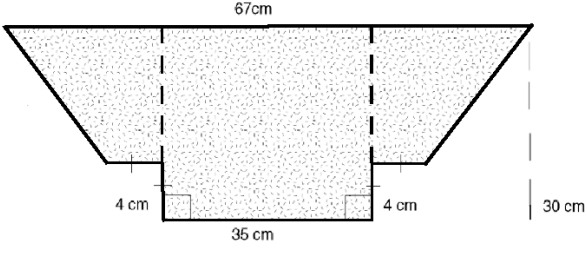
Student's Responses		Flu.	Flex.	Ori.
 $A_{\text{Trapez}} + A_{\text{Rechteck}}$		1	C1	0
 $2A_{\text{Trapez}} + A_{\text{Rechteck}}$		1	C1	0
 $2A_{\text{Dreieck}} + A_{\text{Rechteck1}} + A_{\text{Rechteck2}}$		1	C1	0
 $2A_{\text{Dreieck}} + A_{\text{Rechteck}} - 2A_{\text{Quadrat}}$		1	C3	3
 $2A_{\text{Dreieck}} + A_{\text{Rechteck1}} + 2A_{\text{Rechteck2}}$		1	C1	0

Score	5	2	3
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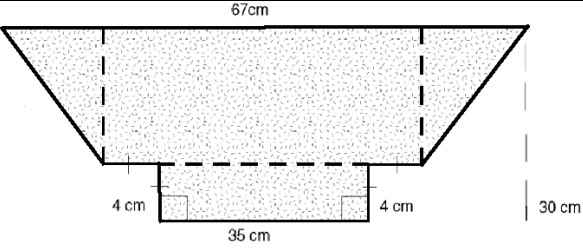
Student 9

Student's Responses	Flu.	Flex.	Ori.
 $A_R = 35 \text{ cm} \cdot 4 \text{ cm} = 140 \text{ cm}^2$ $A_T = \frac{(35 \text{ cm} + 67 \text{ cm}) \cdot 30 \text{ cm}}{2}$ $A_R + A_T = 1715 \text{ cm}^2$	1	C1	0
	1	C1	0
	1	C1	0
Score	3	1	0

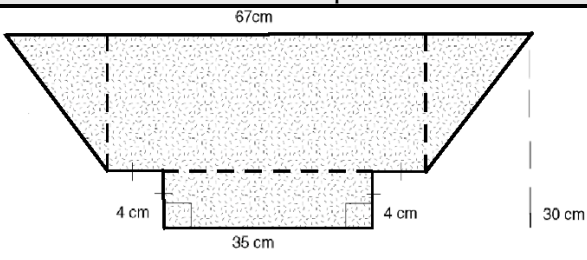
Student 10

Student's Responses	Flu.	Flex.	Ori.
 $A_R = 35 \text{ cm} \cdot 4 \text{ cm} = 140 \text{ cm}^2$ Fläche Rechteck $A_T = 55 \text{ cm} \cdot 26 \text{ cm} = 1430 \text{ cm}^2$ $A_G = 1570 \text{ cm}^2$	1	C1	0
 Aufteilen der Fläche in 2 Dreiecke, ein großes und ein kleines Rechteck	1	C1	0
 Aufteilen der Fläche in 2 Trapeze, ein Rechteck (Mittle)	1	C1	0
Score	3	1	0

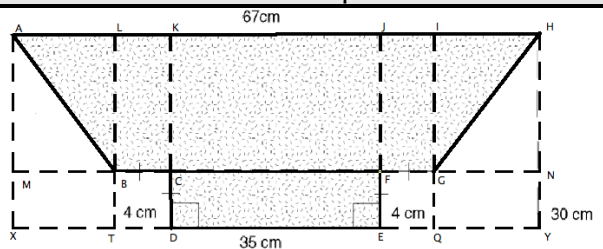
Student 11

Student's Responses	Flu.	Flex.	Ori.
 $A = 12 \text{ cm} \cdot 26 \text{ cm} + 43 \text{ cm} \cdot 26 \text{ cm} + 4 \text{ cm} \cdot 35 \text{ cm}$	1	C1	0
Score	1	1	0

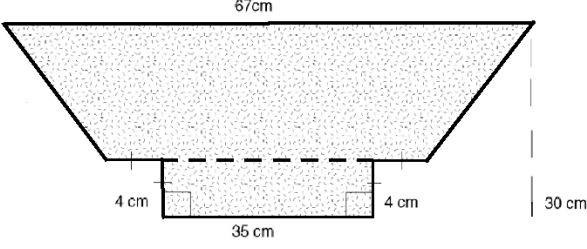
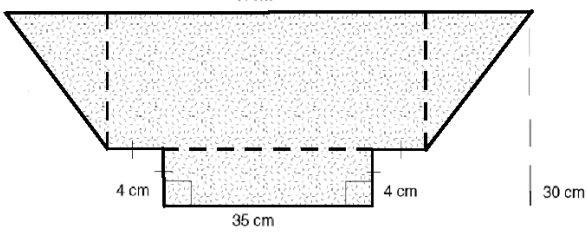
Student 12

Student's Responses	Flu.	Flex.	Ori.
 unteres Rechteck + inneres Rechteck + 2 Dreiecke $= 35 \text{ cm} \cdot 4 \text{ cm} + 43 \text{ cm} \cdot 26 \text{ cm} + 12 \text{ cm} \cdot 26 \text{ cm}$	1	C1	0
Score	1	1	0

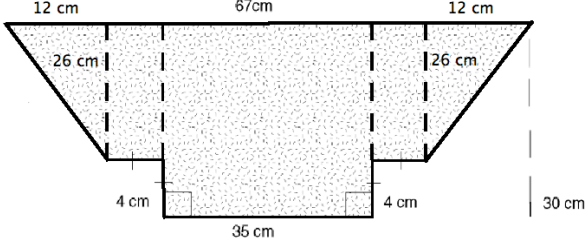
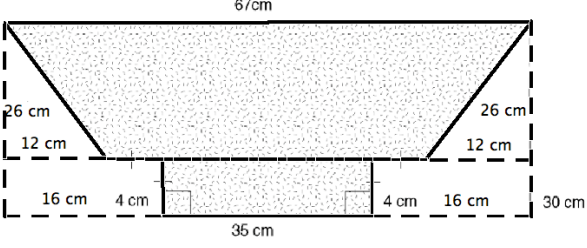
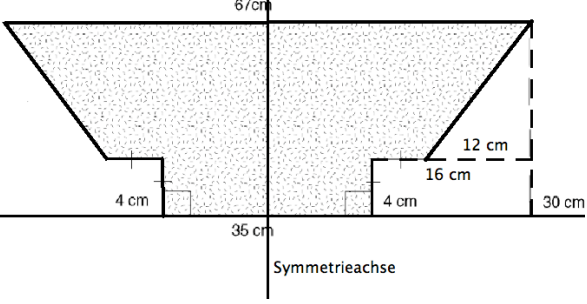
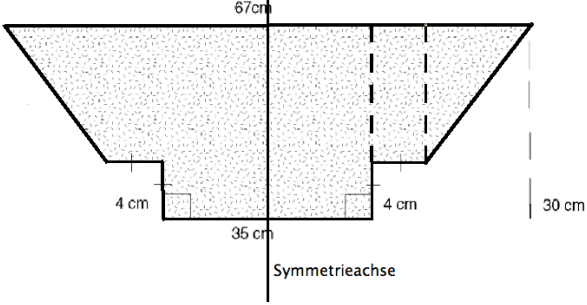
Student 13

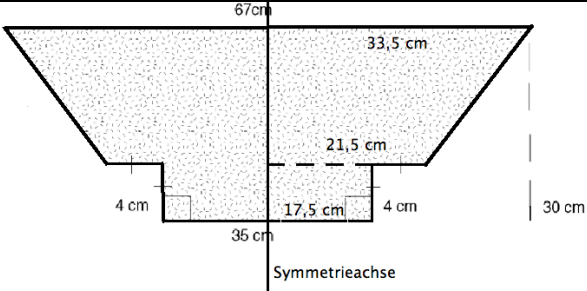
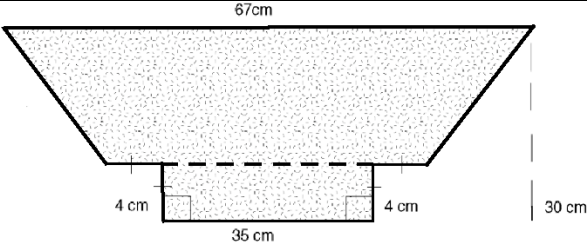
Student's Responses	Flu.	Flex.	Ori.
 $A_{\text{Trapez}}(ABGH) + A_{\text{Rechteck}}(CDEF)$	1	C1	0
$2A_{\text{Dreieck}}(ABL) + A_{\text{Rechteck}}(LBGI) + A_{\text{Rechteck}}(CDEF)$	1	C1	0
$2A_{\text{Dreieck}}(ABL) + 2A_{\text{Rechteck}}(BCKL) + A_{\text{Rechteck}}(DEJK)$	1	C1	0
$A_{\text{Rechteck}}(XYHA) - [2A_{\text{Dreieck}}(MBA) + 2A_{\text{Rechteck}}(XDCA)]$	1	C2	0
Score	4	2	0

Student 14

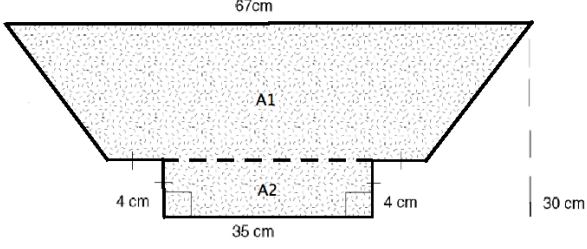
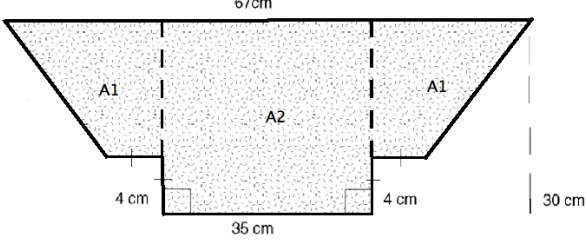
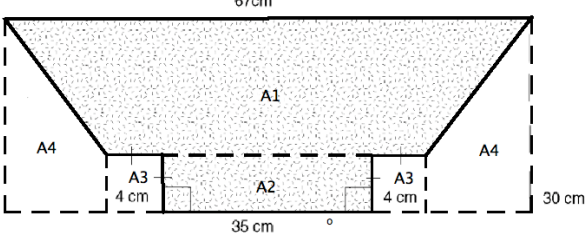
Student's Responses	Flu.	Flex.	Ori.
	1	C1	0
	1	C1	0
Score	2	1	0

Student 15

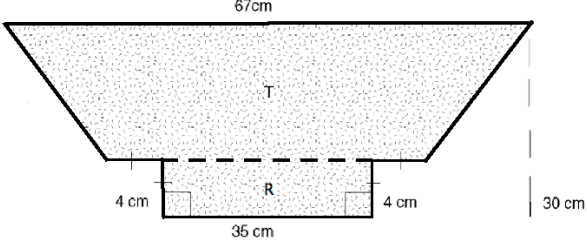
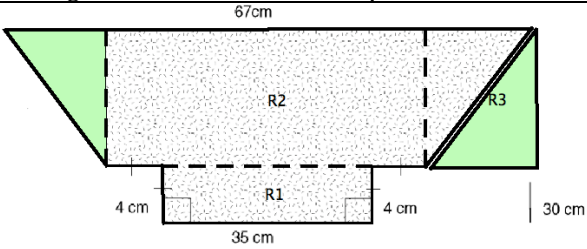
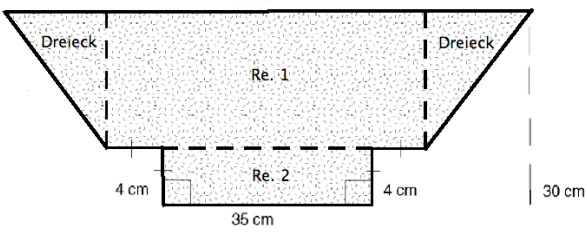
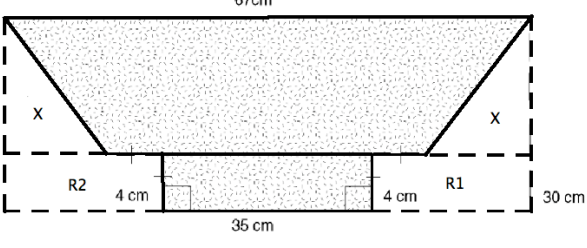
Student's Responses	Flu.	Flex.	Ori.
 35 cm . 30 cm + 2 . 4 cm . 26 cm + 12 cm . 26 cm	1	C1	0
 30 cm . 67 cm - 2 . 16 cm . 4 cm - 12 cm . 26 cm	1	C2	0
 2(33,5 cm . 30 cm - 16 cm . 4 cm - $\frac{1}{2}$. 12 cm . 26 cm)	1	C2, C4	4
 2(17,5 cm . 30 cm + 4 cm . 26 cm + $\frac{1}{2}$. 12 cm . 26 cm)	1	C4	4

 67 cm 33,5 cm 21,5 cm 4 cm 17,5 cm 4 cm 35 cm 30 cm Symmetrieachse $2[(21,5 \text{ cm} + 33,5 \text{ cm}) \cdot \frac{1}{2} \cdot 26 \text{ cm} + 4 \text{ cm} \cdot 17,5 \text{ cm}]$	1	C4	4
 67 cm 35 cm 30 cm 4 cm 4 cm $(67 \text{ cm} + 43 \text{ cm}) \cdot \frac{1}{2} \cdot 26 \text{ cm} + 35 \text{ cm} \cdot 4 \text{ cm}$	1	C1	0
Score	6	3	12

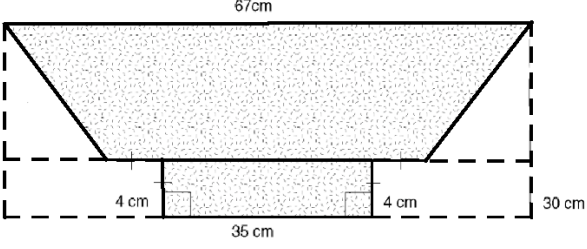
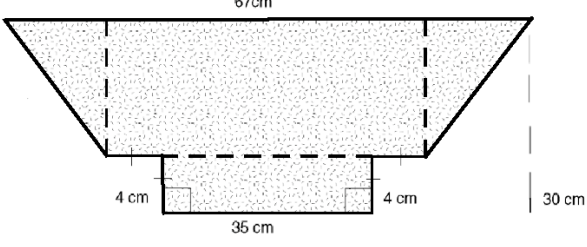
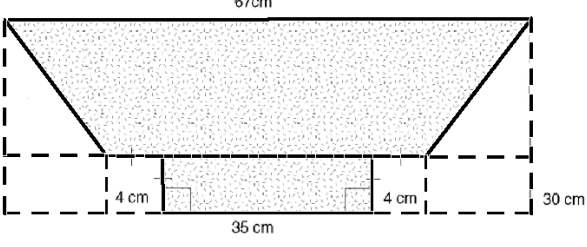
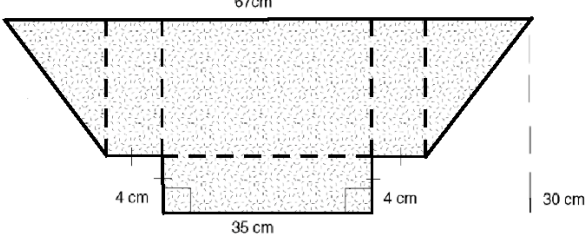
Student 16

Student's Responses	Flu.	Flex.	Ori.
 $A_1 = \text{Trapez}$ $a = 67 \text{ cm}$ $c = 35 \text{ cm}$ $h = (30 - 4) \text{ cm}$ $A_2 = \text{Rechteck}$ $a = 4 \text{ cm}$ $b = 35 \text{ cm}$ $A_{\text{ges.}} = A_1 + A_2$	1	C1	0
 $A_{\text{ges.}} = 2A_1 + A_2$	1	C1	0
 $A = 30 \text{ cm} \cdot 67 \text{ cm}$ $A_3 = 4^2 \text{ cm}^2$ $A_4 = \frac{30 \text{ cm} + 4 \text{ cm}}{2} \cdot (30 \text{ cm} - 4 \text{ cm})$ $A_{\text{ges.}} = A - 2A_3 - 2A_4$	1	C2	0
Score	3	2	0

Student 17

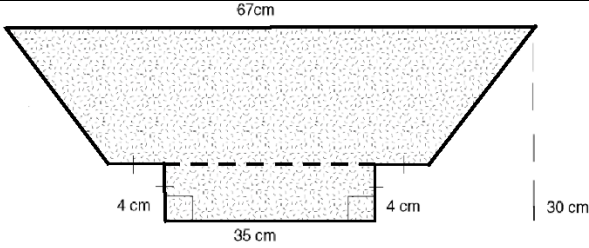
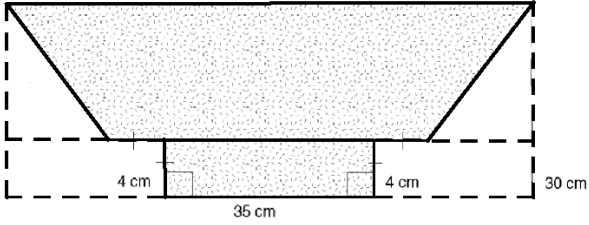
Student's Responses	Flu.	Flex.	Ori.
 Berechnung nach der Formel Trapezes + Rechteck	1	C1	0
 Berechnung über Summierung von 3 Rechtecken	1	C5	2
 Berechnung Summe von 2 Rechtecken + 2 Dreiecken	1	C1	0
 Großes Rechteck minus 3 kleine Rechtecke Großes Rechteck: 67 cm, 30 cm $R_1 = R_2 = 4cm \cdot (\frac{67cm - 35cm}{2})$ 2 Dreiecke X zusammengesetztes Rechteck R_3: (30 cm 4 cm) , 12 cm	1	C2	0
Score	4	3	2

Student 18

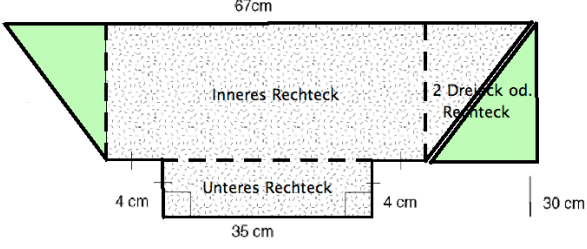
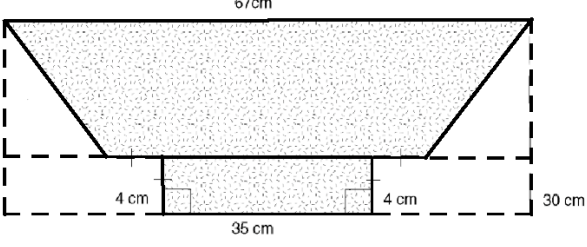
Student's Responses	Flu.	Flex.	Ori.
 Herstellen eines Rechtecks, subtrahieren von 2 Rechtecken mit $A = 4 \text{ cm}$. $(67 \text{ cm} - 35 \text{ cm})$ und 2 Dreiecken mit $A =$ $\frac{(30\text{cm} - 4\text{cm})(67\text{cm} - 35\text{cm} - 4\text{cm} - 4\text{cm})/2}{2}$	1	C2	0
 $4 \text{ cm} \cdot 35 \text{ cm} + 43 \text{ cm} \cdot 26 \text{ cm} + \frac{1}{2} (67 \text{ cm} - 35 \text{ cm} - 4 \text{ cm} - 4 \text{ cm}) \cdot 26 \text{ cm}$	1	C1	0
 $(67 \text{ cm} \cdot 30 \text{ cm}) - 2 \cdot 4 \text{ cm} \cdot 4 \text{ cm} - 2 \cdot (4 \text{ cm} \cdot (67 \text{ cm} - 35 \text{ cm} - 8 \text{ cm}) / 2) - (67 \text{ cm} - 35 \text{ cm} - 8 \text{ cm}) \cdot 26 \text{ cm}$	1	C2	1
 $(4 \text{ cm} \cdot 35 \text{ cm}) + 2 \cdot (4 \text{ cm} \cdot 26 \text{ cm}) + (35 \text{ cm} \cdot 26 \text{ cm}) + 26 \text{ cm} \cdot (67 \text{ cm} - 35 \text{ cm} - 8 \text{ cm})$	1	C1	3

Score	4	2	4
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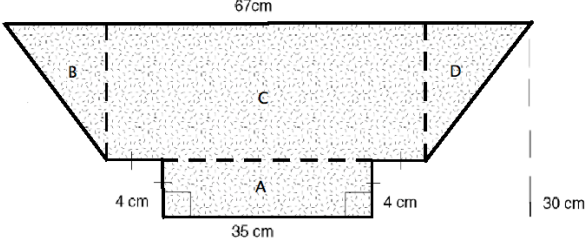
Student 19

Student's Responses	Flu.	Flex.	Ori.
 Trapez + Rechteck $A_{\text{Trapez}} = \frac{67\text{cm} + 43\text{cm}}{2} \cdot 26\text{cm}$ $A_{\text{Rechteck}} = 4\text{ cm} \cdot 35\text{ cm}$	1	C1	0
 Großes Rechteck – 2 kleine Rechtecke – 2 Dreiecke $= 67 \cdot 30 - 2 \cdot 4 \cdot 16 - 12 \cdot 26$	1	C2	0
Score	2	2	0

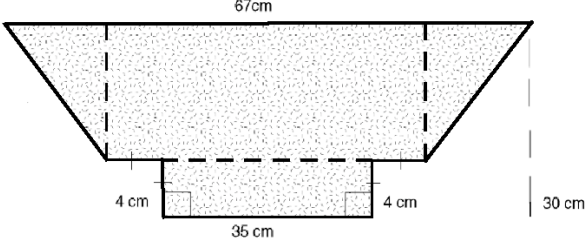
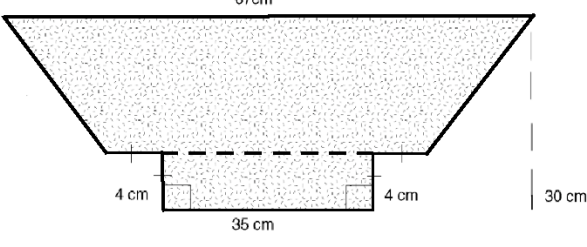
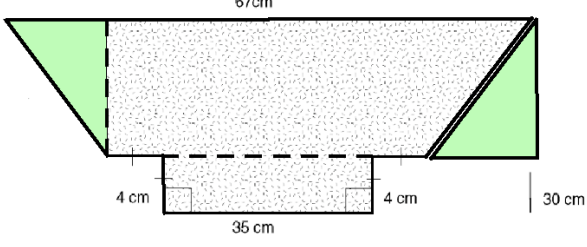
Student 20

Student's Responses	Flu.	Flex.	Ori.
 Unterteilung in bekannte Figuren: 2Δ mit $A = \frac{1}{2} \cdot 12 \cdot 26$ oder Ergänzung zum Rechteck $26 \cdot 12$ Inneres Rechteck Unteres Rechteck	1	C5	2
 Betrachtung als großes Rechteck davon (Dreiecke + Rechtecke) abziehen	1	C2	0
Score	2	2	2

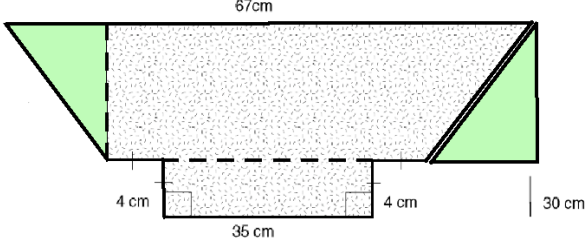
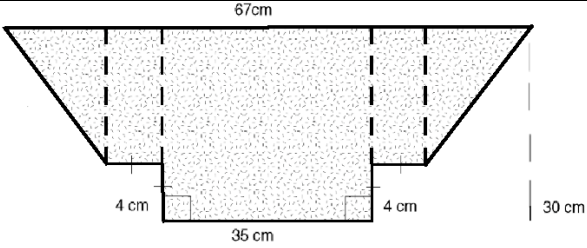
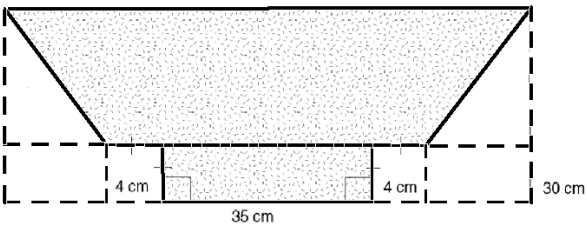
Student 21

Student's Responses	Flu.	Flex.	Ori.
 $A_A = 35 \text{ cm} \cdot 4 \text{ cm} = 140 \text{ cm}^2$ $A_C = (4 \text{ cm} + 35 \text{ cm} + 4 \text{ cm}) \cdot (30 \text{ cm} - 4 \text{ cm})$ $= 43 \text{ cm} \cdot 26 \text{ cm} = 1118 \text{ cm}^2$ $A_B : 67 \text{ cm} - 43 \text{ cm} = 24 \text{ cm}$ $c = 24 \text{ cm} : 2 = 12 \text{ cm}$ $b = 26 \text{ cm}$ $A_B = A_C = \frac{1}{2} b \cdot c = \frac{1}{2} \cdot 12 \text{ cm} \cdot 26 \text{ cm} = 156 \text{ cm}^2$	1	C1	0
Score	1	1	0

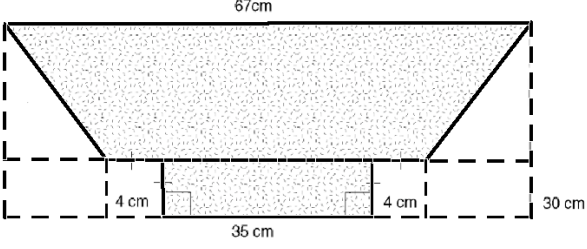
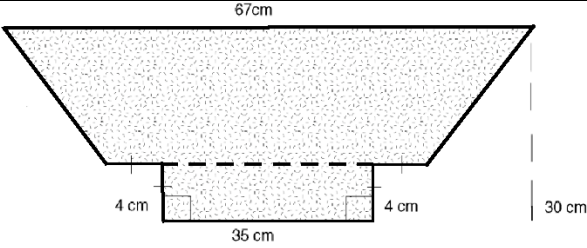
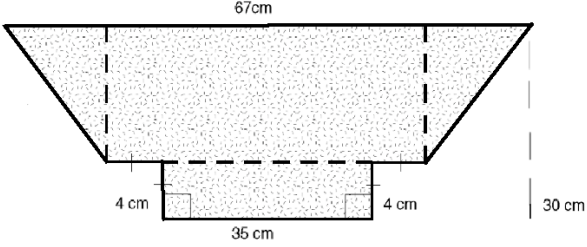
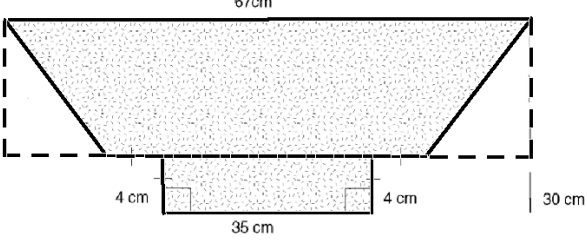
Student 22

Student's Responses	Flu.	Flex.	Ori.
 $\text{Dreiecksfläche} = \frac{1}{2} g \cdot h$, wobei $h = 26 \text{ cm}$, $g = 12 \text{ cm}$ dann großes Rechteck Q ($A = 43 \text{ cm} \cdot 26 \text{ cm}$) dann kleines Rechteck P ($A = 35 \text{ cm} \cdot 4 \text{ cm}$)	1	C1	0
 Über Trapez KLMN + Rechteck P $\text{Trapez} = \frac{a+c}{2} \cdot h = \frac{67+43}{2} \cdot 30$ $\text{Rechteck} = 35 \cdot 4$	1	C1	0
 $\triangle A$ an $\triangle B$ anlegen ... Rechteck entsteht mit Länge $L = (67 - 12) \text{ cm}$ u. Höhe $h = (30 - 4) \text{ cm}$... $A = L \cdot h$ $A + A$ (kleines Rechteck P)		C5	2
Score	8	2	2

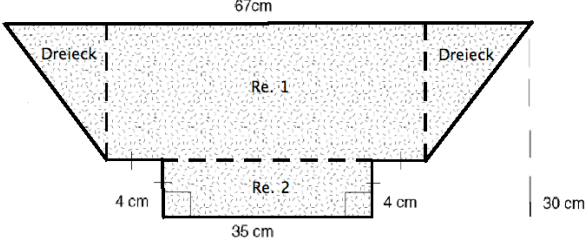
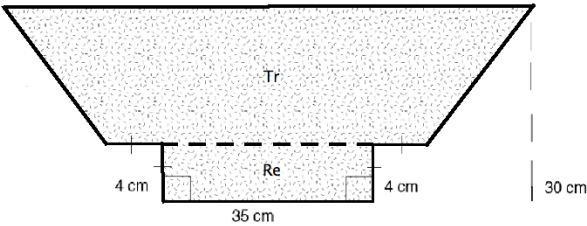
Student 23

Student's Responses	Flu.	Flex.	Ori.
 $A = 4 \text{ cm} \cdot 35 \text{ cm} + [67 \text{ cm} - (\frac{67 \text{ cm} - 2 \times 4 \text{ cm} - 35 \text{ cm}}{2}) \cdot (30 \text{ cm} - 4 \text{ cm})]$	1	C5	2
 $A = 35 \text{ cm} \cdot 30 \text{ cm} + 2 \cdot 4 \text{ cm} \cdot (30 \text{ cm} - 4 \text{ cm}) + (\frac{67 \text{ cm} - 2 \times 4 \text{ cm} - 35 \text{ cm}}{2}) \cdot (30 \text{ cm} - 4 \text{ cm})$	1	C1	0
 $A = 67 \text{ cm} \cdot 30 \text{ cm} - 2 \cdot (4 \text{ cm})^2 - (\frac{67 \text{ cm} - 2 \times 4 \text{ cm} - 35 \text{ cm}}{2}) \cdot (30 \text{ cm} - 4 \text{ cm}) - 2 \cdot (\frac{67 \text{ cm} - 2 \times 4 \text{ cm} - 35 \text{ cm}}{2}) \cdot 4 \text{ cm}$	1	C2	1
Score	3	3	3

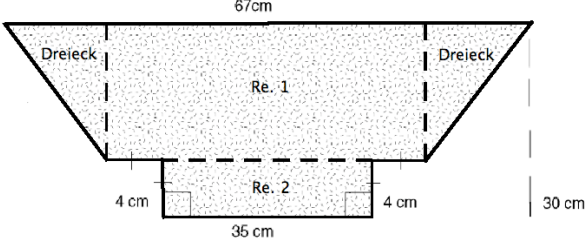
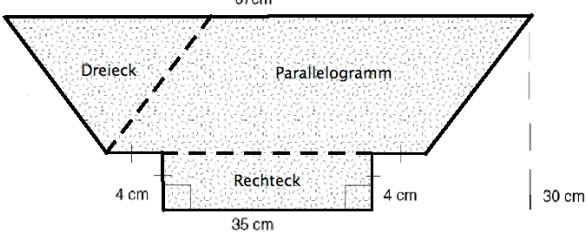
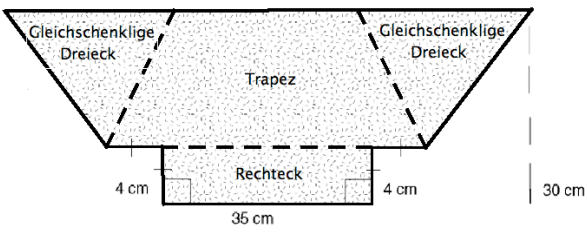
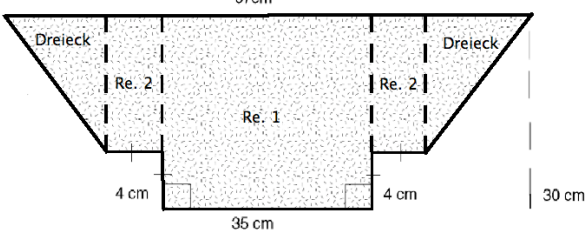
Student 24

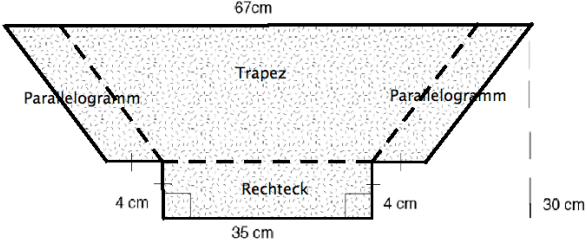
Student's Responses	Flu.	Flex.	Ori.
 $A = 67 \text{ cm} \cdot 30 \text{ cm} - 2 \cdot [(4 \text{ cm})^2 + 4 \text{ cm} \cdot 12 \text{ cm} + \frac{1}{2} 26 \text{ cm} \cdot 12 \text{ cm}]$	1	C2	1
 $A = 35 \text{ cm} \cdot 4 \text{ cm} + (\frac{67 \text{ cm} + 43 \text{ cm}}{2}) \cdot 26 \text{ cm}$	1	C1	0
 $A = 2 \cdot (\frac{1}{2} \cdot 12 \text{ cm} \cdot 26 \text{ cm}) + 43 \text{ cm} \cdot 26 \text{ cm} + 4 \text{ cm} \cdot 35 \text{ cm}$	1	C1	0
 $A = 67 \text{ cm} \cdot 26 \text{ cm} - 2 \cdot (\frac{1}{2} \cdot 12 \text{ cm} \cdot 26 \text{ cm}) + 4 \text{ cm} \cdot 35 \text{ cm}$	1	C3	0
Score	4	3	1

Student 25

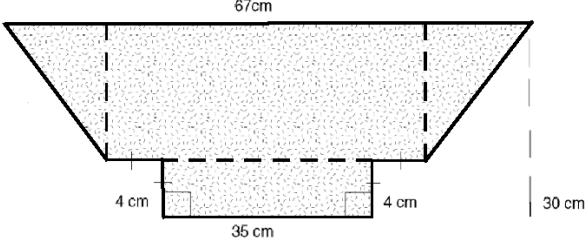
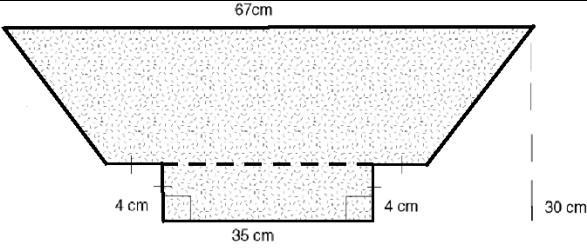
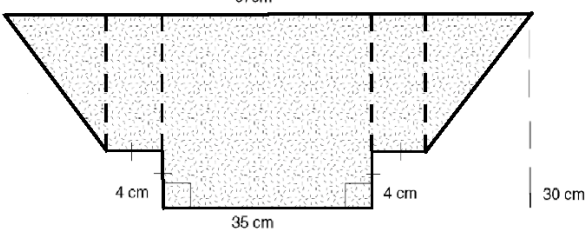
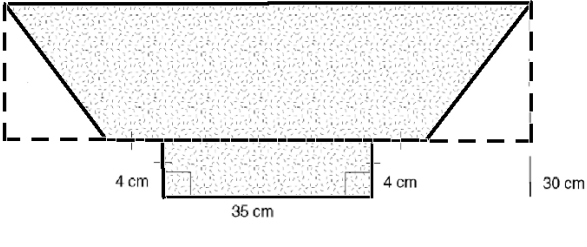
Student's Responses	Flu.	Flex.	Ori.
 2 Dreiecke + 2 Rechtecke	1	C1	0
 1 Trapez + 1 Rechteck	1	C1	0
Score	2	1	0

Student 26

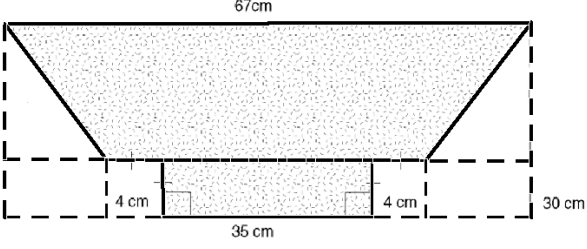
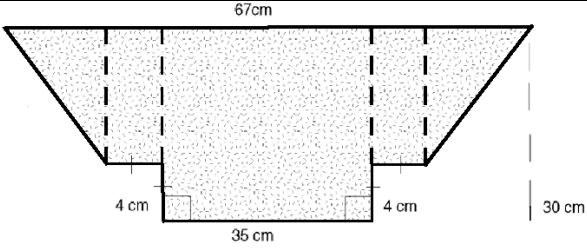
Student's Responses	Flu.	Flex.	Ori.
 2 Dreiecke + 2 Rechtecke $= 2 \cdot \left(\frac{1}{2} \cdot 12 \text{ cm} \cdot 26 \text{ cm} \right) + (43 \text{ cm} \cdot 26 \text{ cm}) + (35 \text{ cm} \cdot 4 \text{ cm})$	1	C1	0
 1 Parallelogramm + 1 Dreieck + 1 Rechteck $= 43 \text{ cm} \cdot 26 \text{ cm} + \frac{1}{2} \cdot (24 \text{ cm} \cdot 26 \text{ cm}) + (35 \text{ cm} \cdot 4 \text{ cm})$	1	C1	4
 1 Trapez + 2 gleichschenklige Dreiecke + 1 Rechteck	1	C1	4
 2 kongruente Dreiecke + 2 kongruente Rechtecke₂ + 1 Rechteck₁ $= 2 \cdot \left(\frac{1}{2} \cdot 12 \text{ cm} \cdot 26 \text{ cm} \right) + 2 \cdot 4 \text{ cm} \cdot 26 \text{ cm} + 35 \text{ cm}$	1	C1	0

. 30 cm			
 2 Parallelogramme + 1 Trapez + 1 Rechteck $= 2 \cdot (4 \text{ cm} \cdot 26 \text{ cm}) + \left(\frac{59\text{cm} + 35\text{cm}}{2}\right) \cdot 26\text{cm} + 35 \text{ cm} \cdot 4 \text{ cm}$	1	C1	4
Score	5	1	12

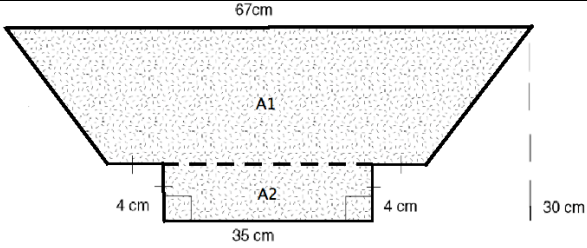
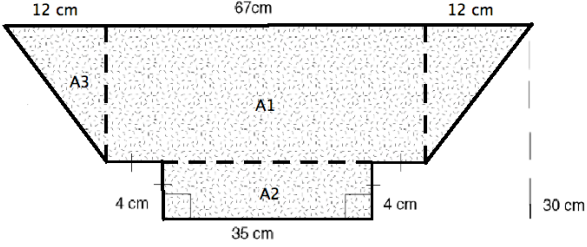
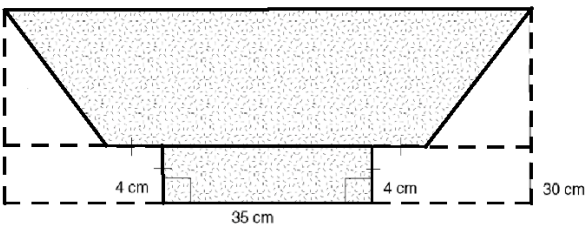
Student 27

Student's Responses	Flu.	Flex.	Ori.
 $A = 4 \cdot 35 + \left(\frac{67 - 35}{2} - 4 \right) \times 26 \times 2 \times \frac{1}{2} + (35 + 4 + 4) \cdot 26$	1	C1	0
 $A = \left(\frac{67 - 35 - 8}{2} \right) \times 26 + 4 \cdot 35$	1	C1	0
 $A = 35 \cdot 30 + 26 \cdot 4 \cdot 2 + \left(\frac{67 - 35}{2} - 4 \right) \times 26 \times 2 \times \frac{1}{2}$	1	C1	0
 $A = 67 \cdot 26 - \left(\frac{67 - 35}{2} - 4 \right) \times 26 \times 2 \times \frac{1}{2} + 35 \cdot 4$	1	C3	0
Score	4	2	0

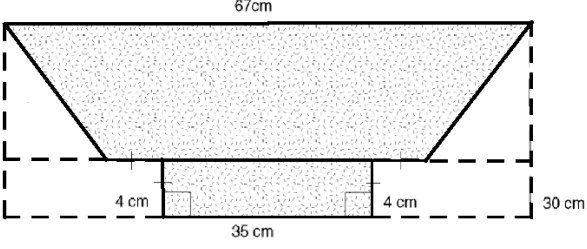
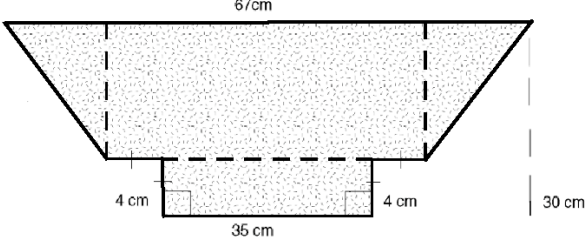
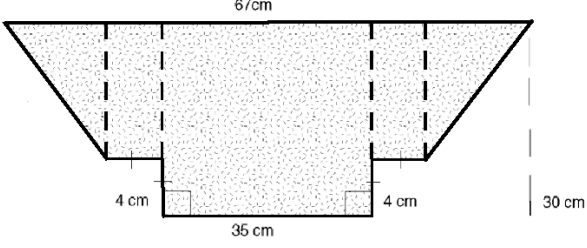
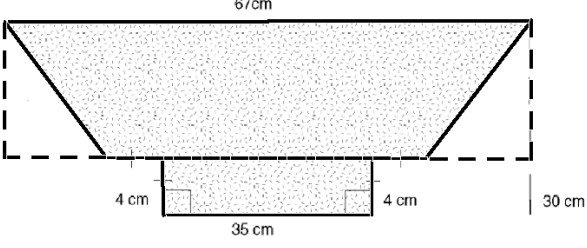
Student 28

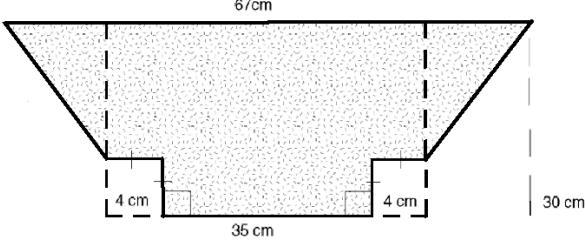
Student's Responses	Flu.	Flex.	Ori.
 $A = 67 \cdot 30 - [2 \cdot (67 - 35 - (2 \cdot 4)) \cdot (30 - 4) \cdot \frac{1}{2}] - 2 \cdot 4^2 - (2 \cdot (67 - 35 - (2 \cdot 4)) \cdot 4)$	1	C2	1
 $A = 2 \cdot [(\frac{35}{2} \cdot 30) + (4 \cdot 26) + (\frac{1}{2} \cdot 12 \cdot 26)]$	1	C1	0
Score	2	2	1

Student 29

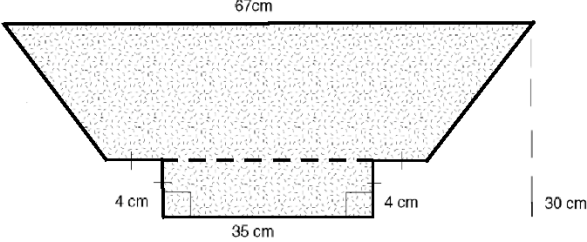
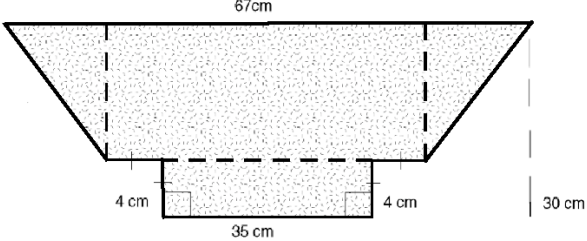
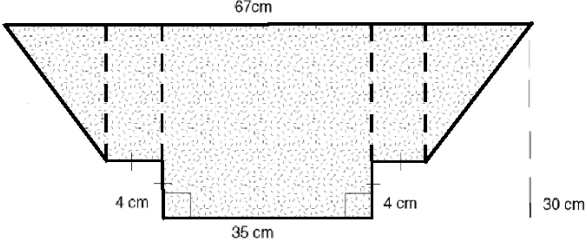
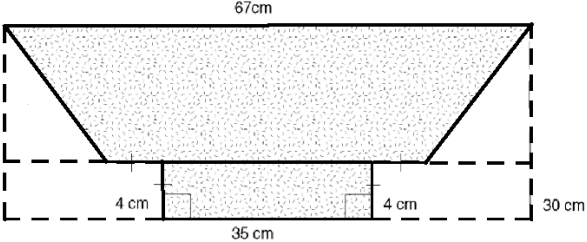
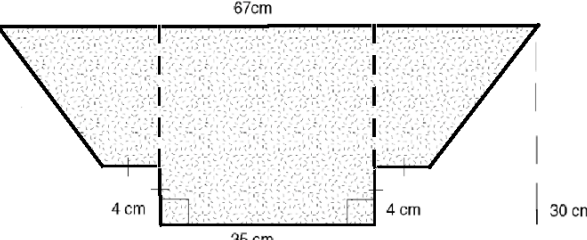
Student's Responses	Flu.	Flex.	Ori.
 $A_1 = \frac{a+c}{2} \cdot h = \frac{(35+67)}{2} \cdot 26 = \dots$ $A_2 = 4 \text{ cm} \cdot 35 \text{ cm} = 140 \text{ cm}^2$ $A = A_1 + A_2$	1	C1	0
 $A = A_1 + A_2 + 2A_3$	1	C1	0
 $A = 67 \cdot 30 - 2 \cdot 4 \cdot 16 - 2 \cdot 12 \cdot 26$	1	C2	0
Score	3	2	0

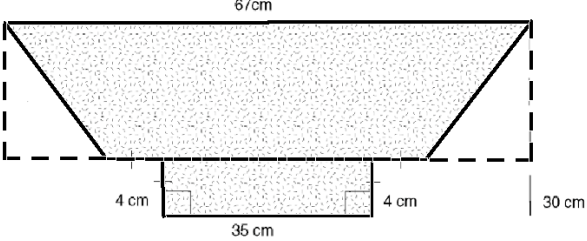
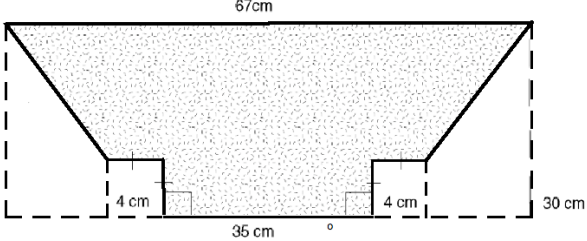
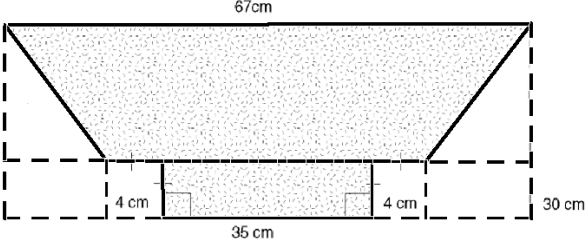
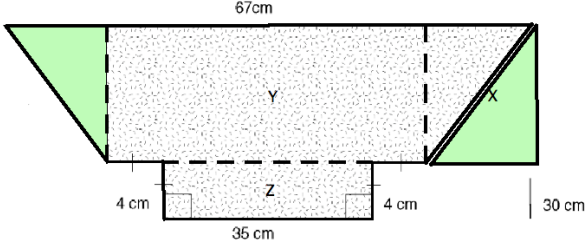
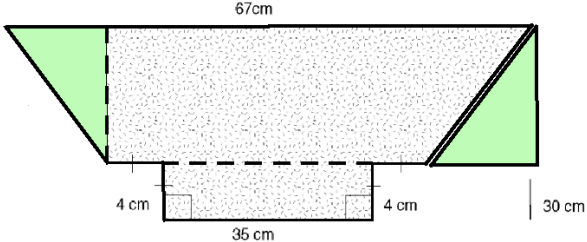
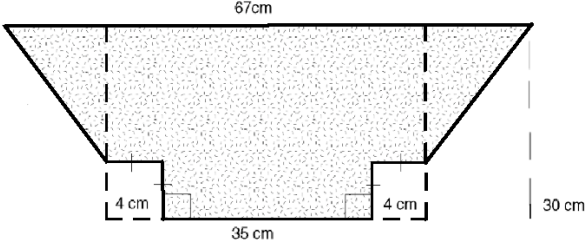
Student 30

Student's Responses	Flu.	Flex.	Ori.
 $67 \cdot 30 - 2 \cdot 4 \cdot 16 - 2 \cdot \left(\frac{12 \times 26}{2} \right)$	1	C2	0
 $35 \cdot 4 + 2 \cdot \left(\frac{12 \times 26}{2} \right) + 43 \cdot 26$	1	C1	0
 $35 \cdot 30 + 2 \cdot (4 \cdot 26) + 2 \cdot \left(\frac{12 \times 26}{2} \right)$	1	C1	0
 $(67 \cdot 26 - 2 \cdot \left(\frac{12 \times 26}{2} \right)) + 35 \cdot 4$	1	C3	0

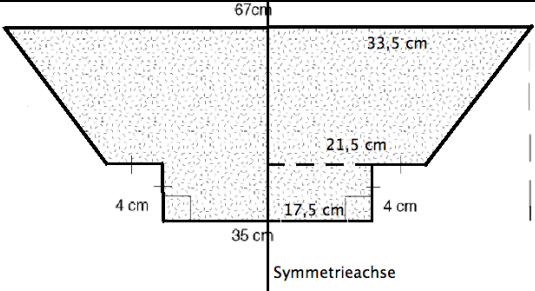
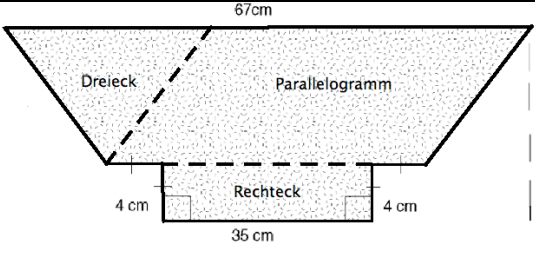
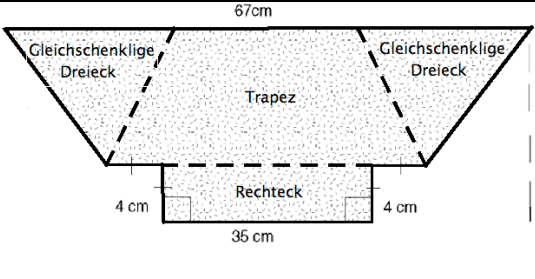
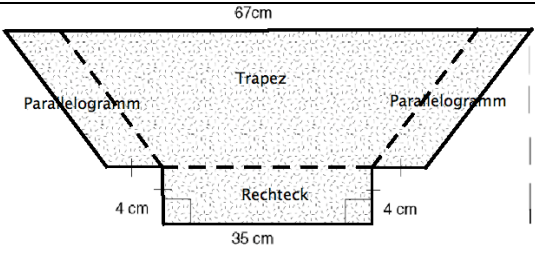
			
$(30 \cdot 43 - 2 (4 \cdot 4)) + 2 \cdot \left(\frac{12 \times 26}{2}\right)$	1	C3	3
$51 \cdot 30 - 4 \cdot 10$ (using distributive property)	1	C6	4
Score	6	4	7

Originality Scores for Students' Responses on Item 4

Student's Responses	Frequency	Originality Scores
	20	0
	18	0
	14	0
	11	0
	7	0

	5	0
	5	0
	4	1
	3	2
	3	2
	2	3

	2	3
	1	4
	1	4
	1	4
	1	4
	1	4

	1	4
	1	4
	1	4
	1	4
$51 \cdot 30 - 4 \cdot 10$ (using distributive property)	1	4