



UNIVERSITÄTS-
BIBLIOTHEK
PADERBORN

Anschauliche Geometrie

Barth, Friedrich

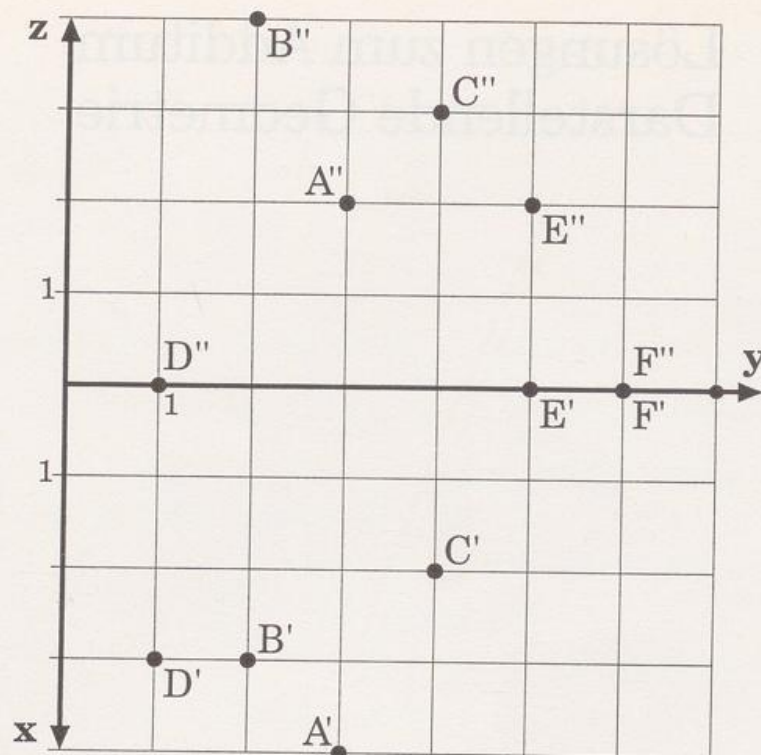
München, 1999

Lösungen zum Additum Darstellende Geometrie

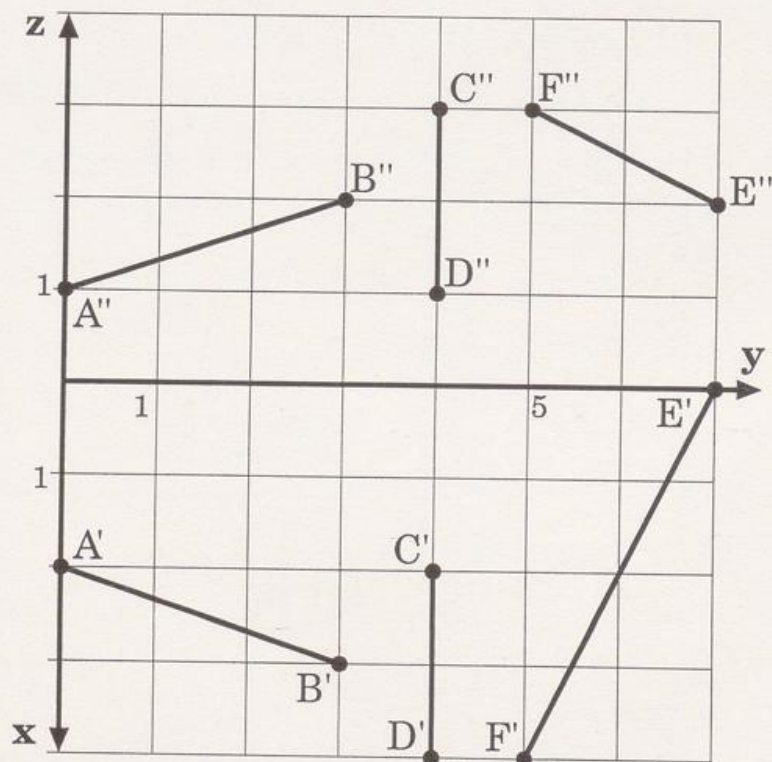
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Lösungen zum Additum Darstellende Geometrie

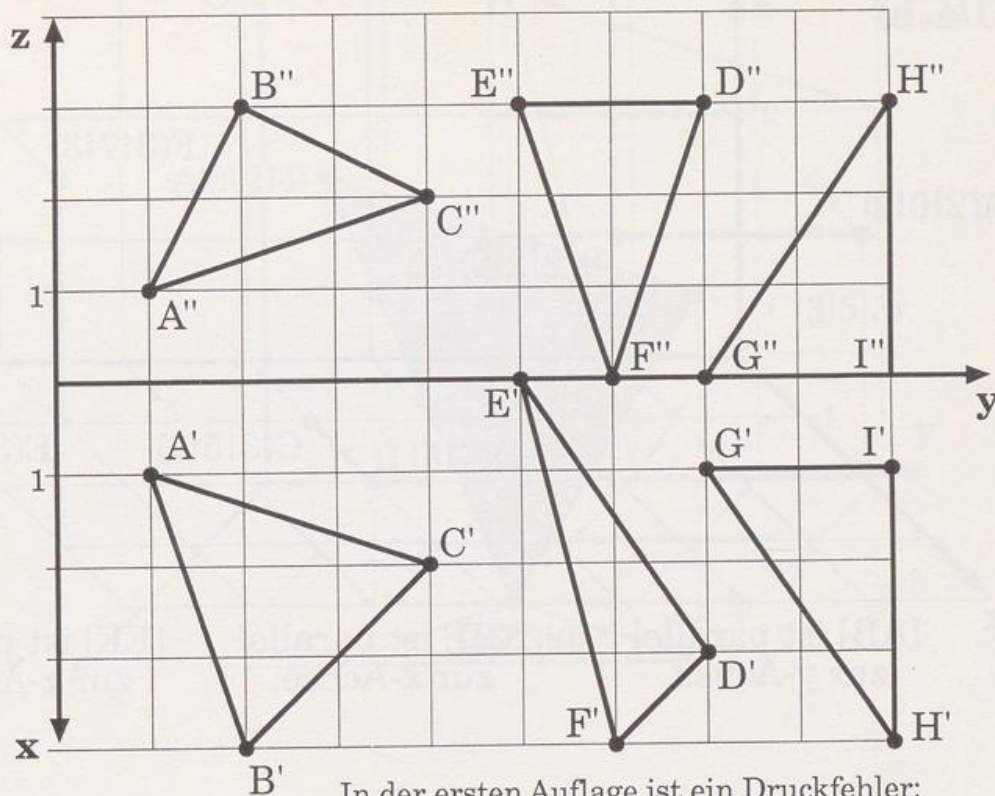
10/1.



10/2.

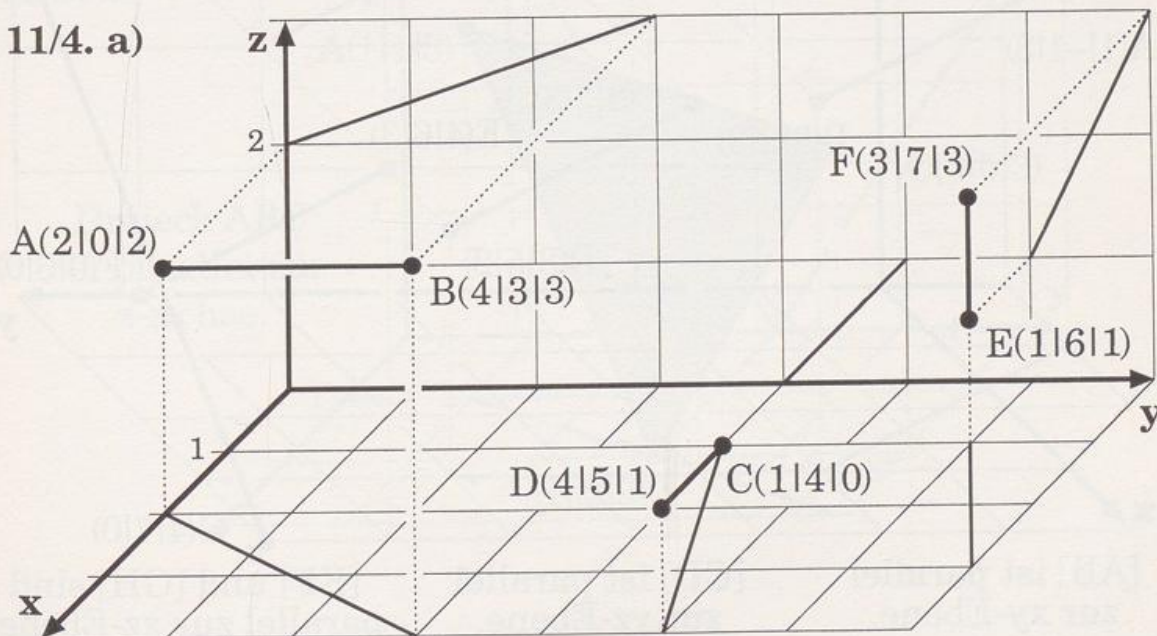


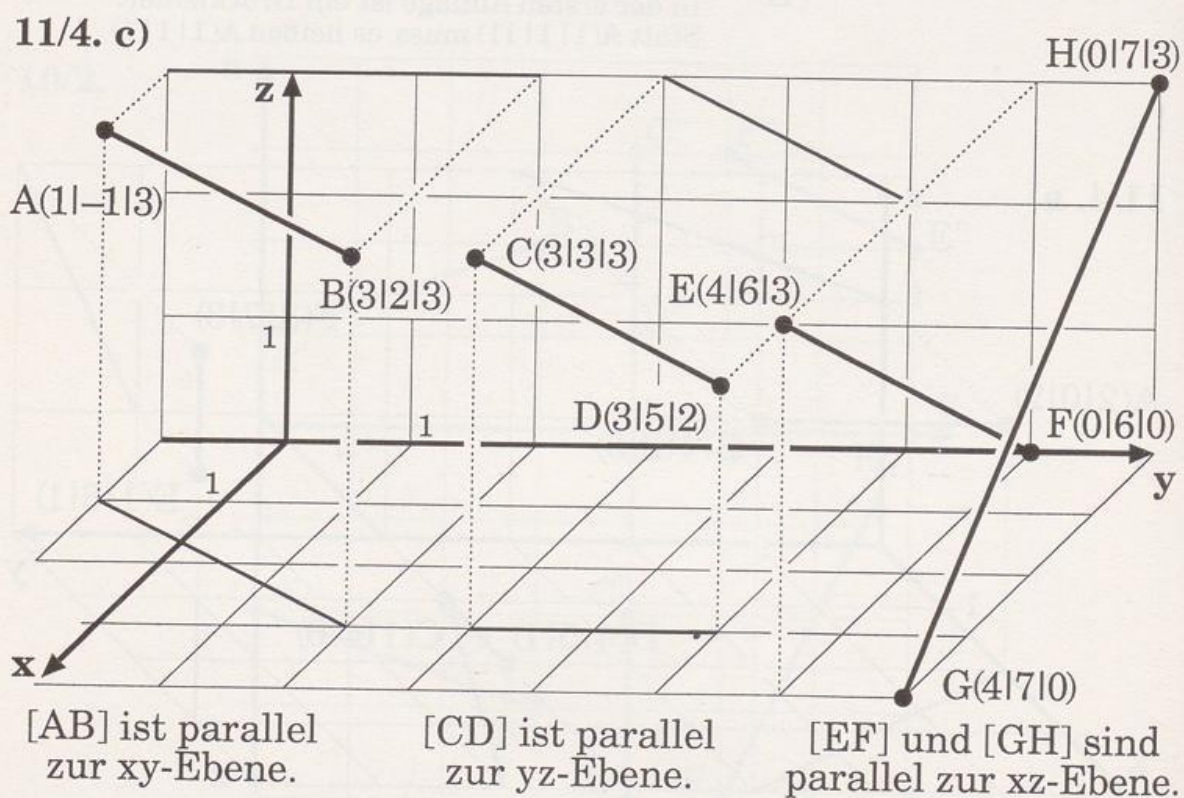
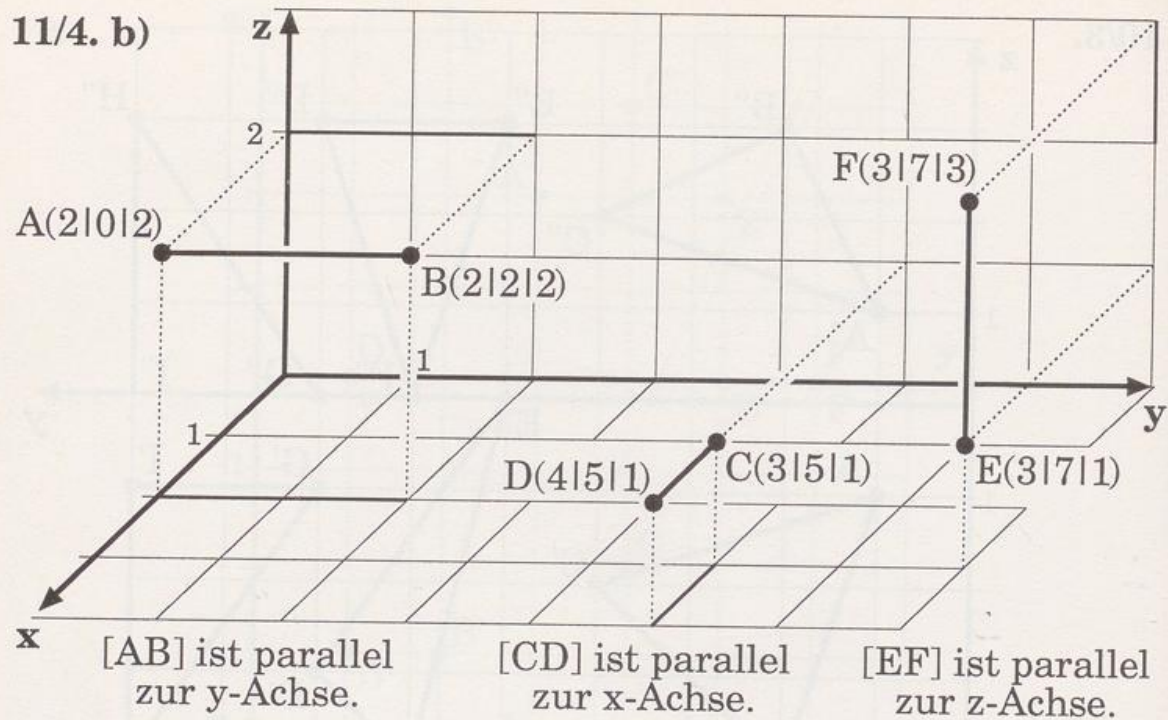
10/3.



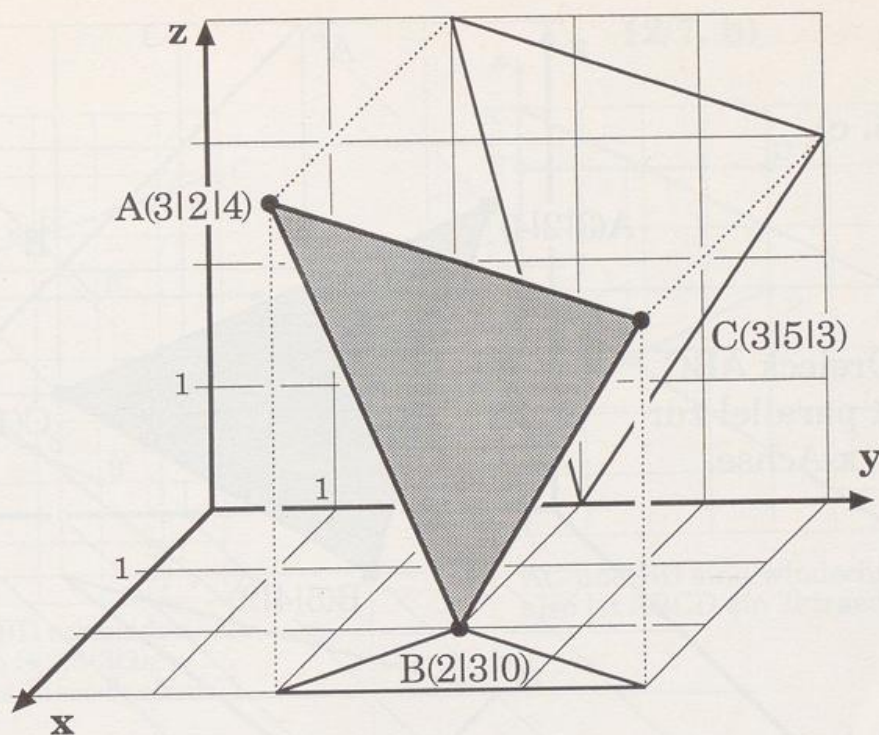
In der ersten Auflage ist ein Druckfehler:
Statt A(1|1|11) muss es heißen A(1|1|1).

11/4. a)



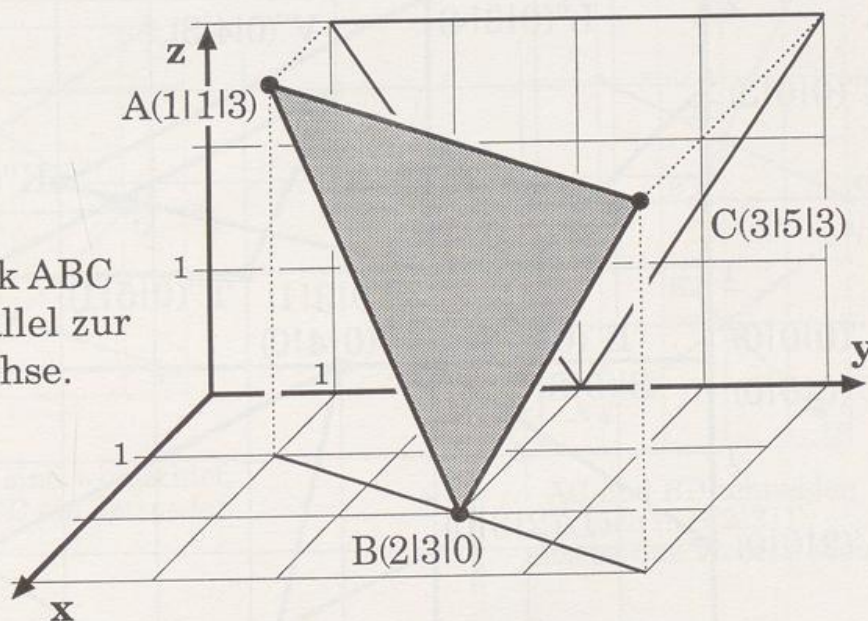


11/5. a)



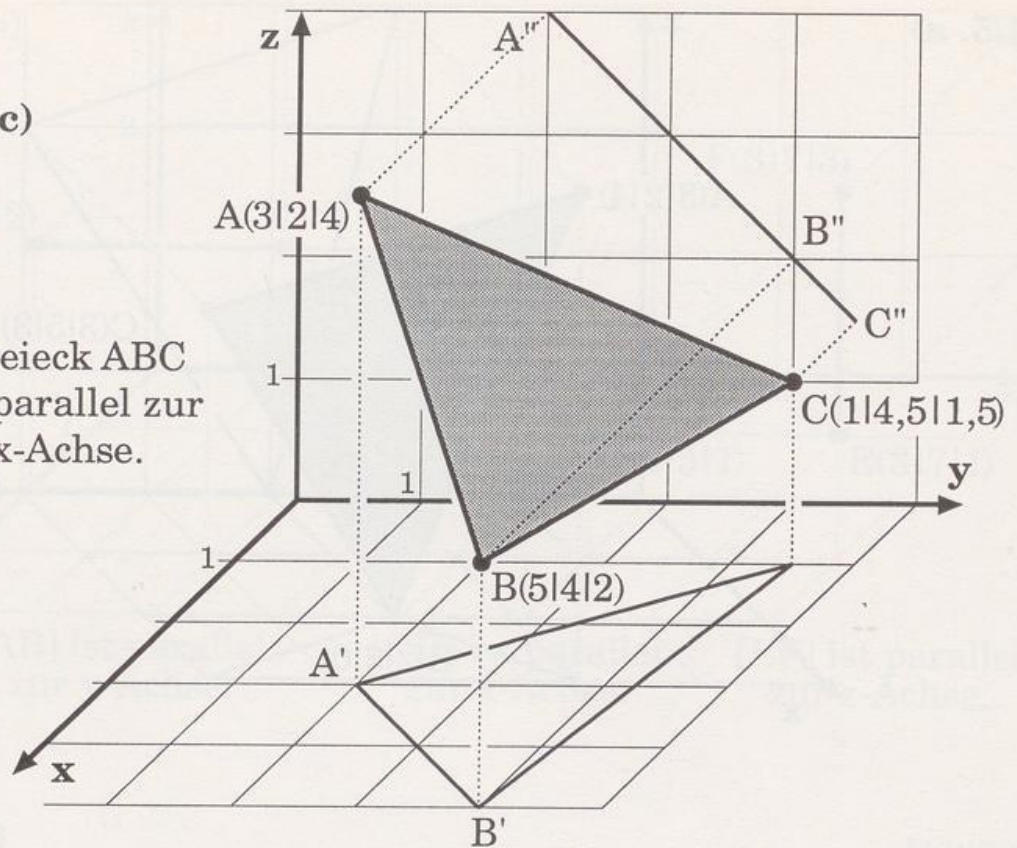
12/5. b)

Dreieck ABC
ist parallel zur
 z -Achse.

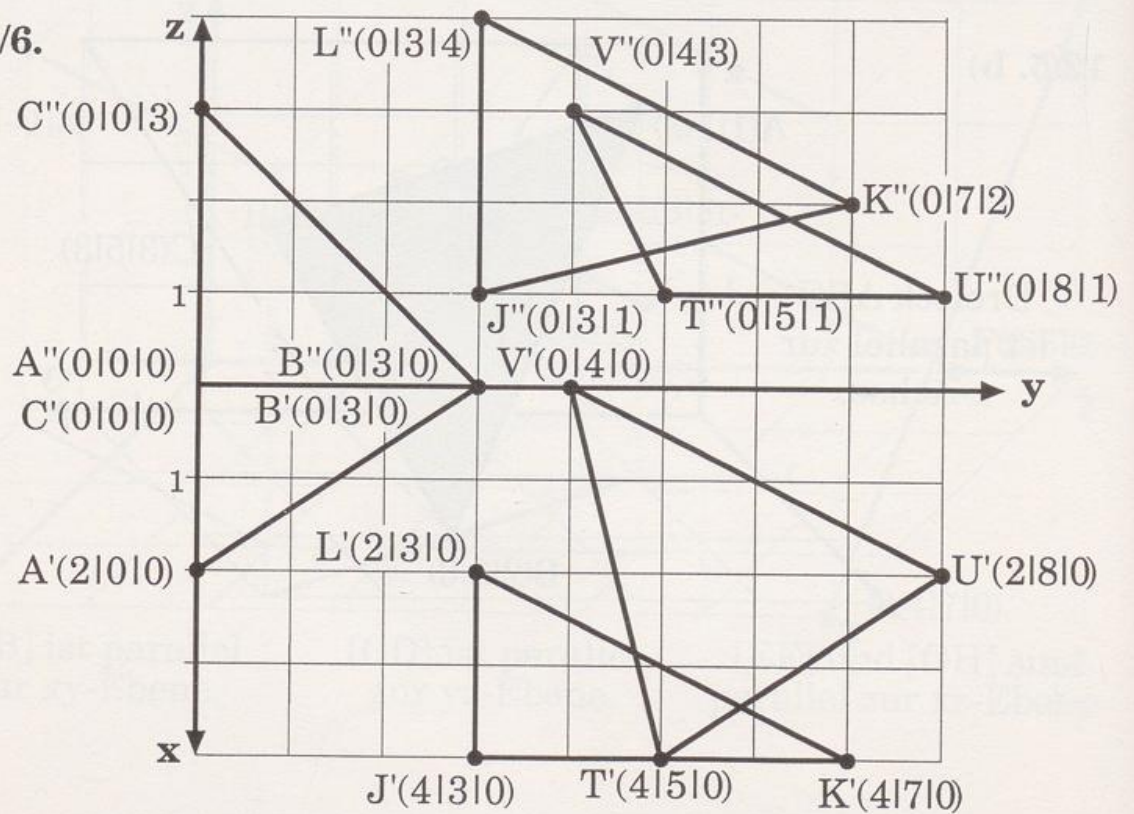


12/5. c)

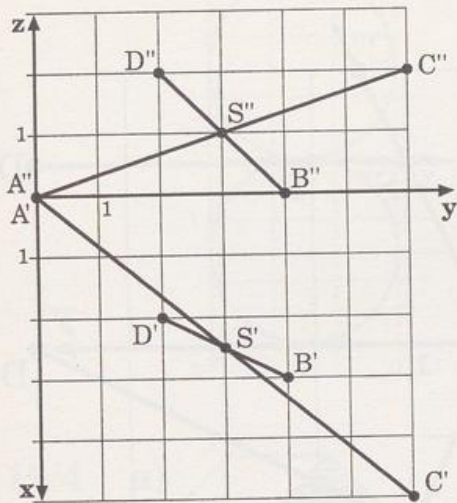
Dreieck ABC
ist parallel zur
x-Achse.



12/6.

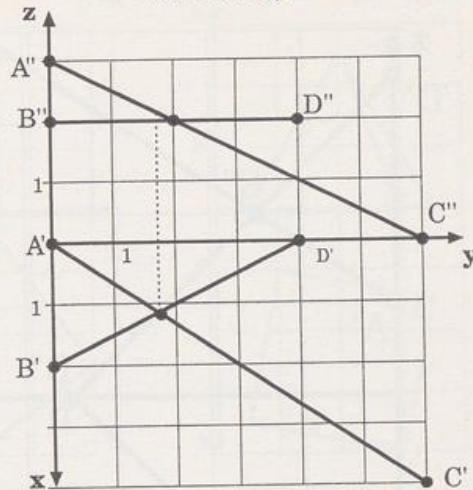


12/7. a)



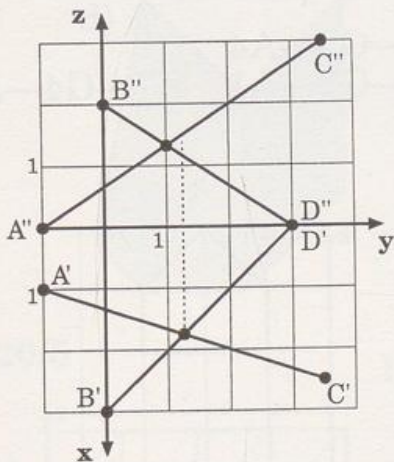
AC und BD schneiden sich in $S(2,5|3|1)$, also ist das Viereck eben.

12/7. b)



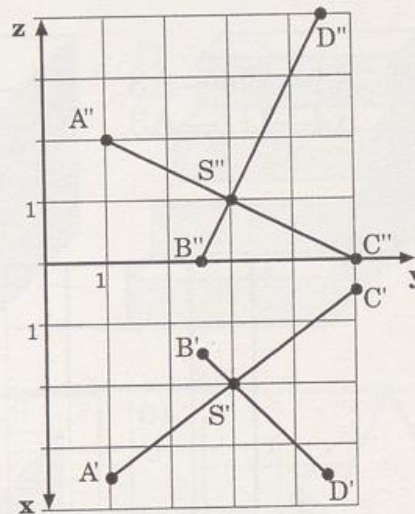
AC und BD sind windschief, also ist ABCD ein Tetraeder.

12/7. c)



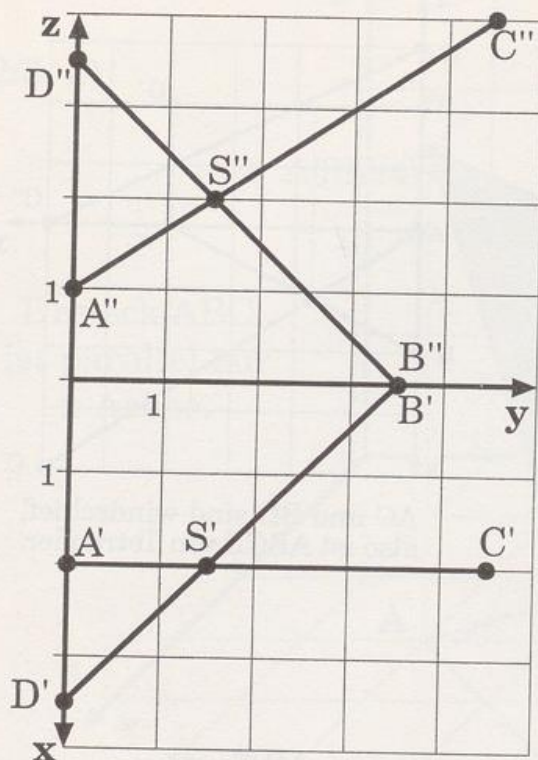
AB und CD sind windschief, also ist ABCD ein Tetraeder.

12/7. d)

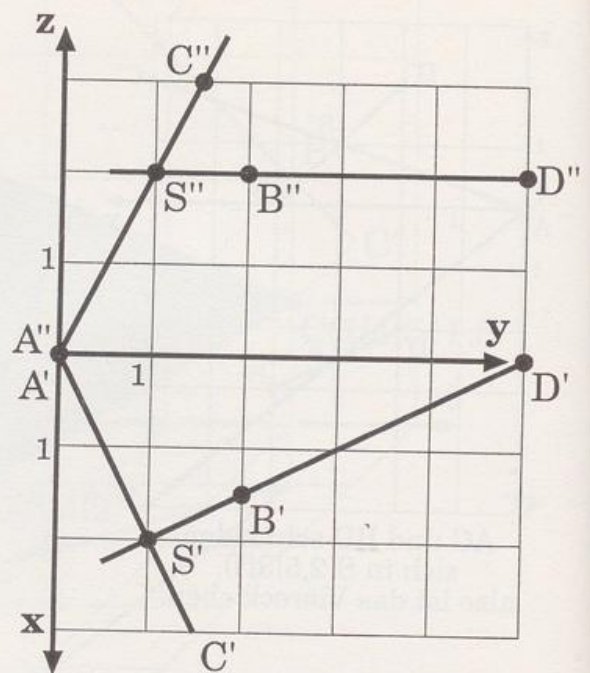


AC und BD schneiden sich in $S(2|3|1)$, also ist das Viereck eben.

12/8. a) $D(3,5|0|3,5)$

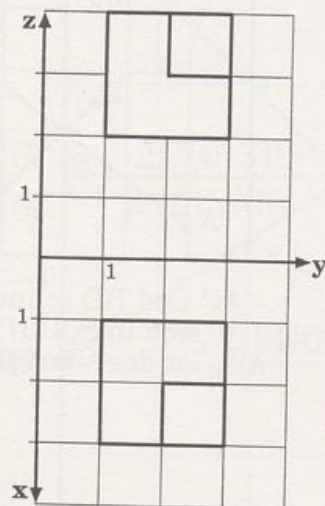


12/8. b) $D(0|5|2)$

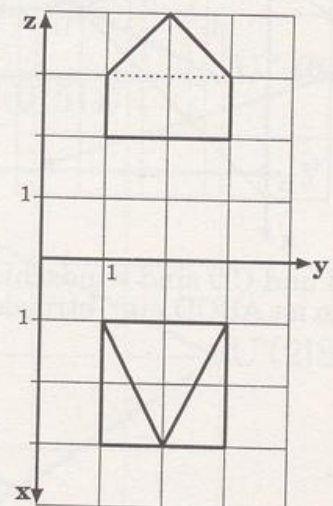


18/1 K1—G4—A3 K2—G3—A2 K3—G3—A4
K4—G1—A3 K5—G5—A1 K6—G2—A1 K7—G4—A3

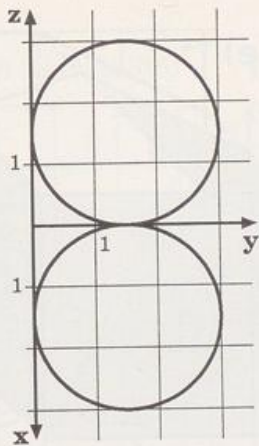
18/2. a)



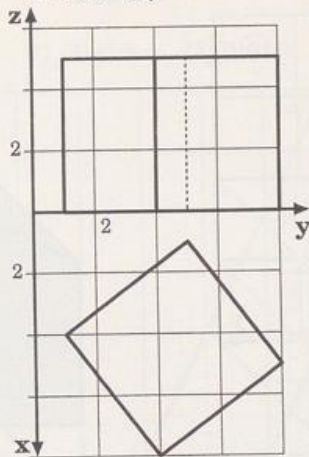
18/2. b)



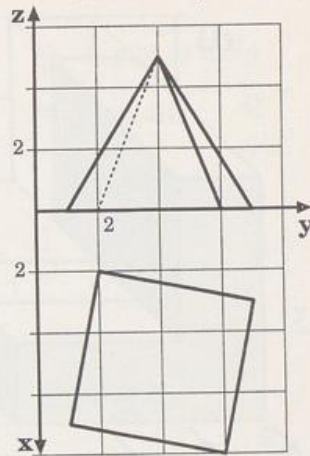
18/3. a)



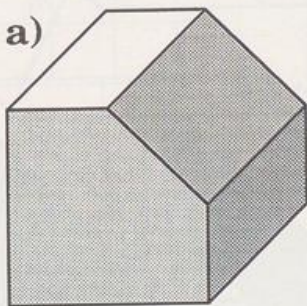
18/3. b)



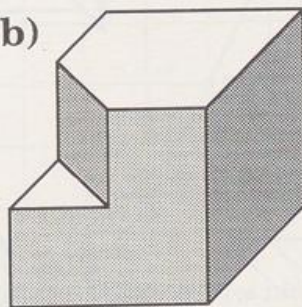
18/3. c)



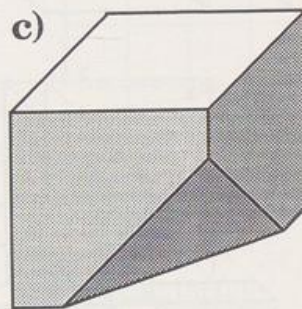
19/4 a)



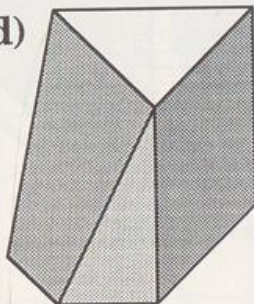
b)



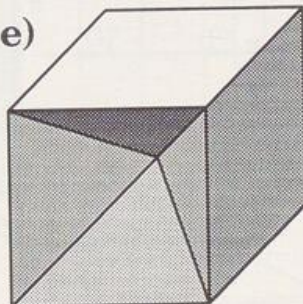
c)



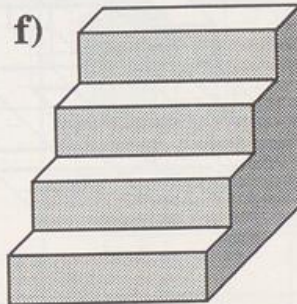
d)



e)

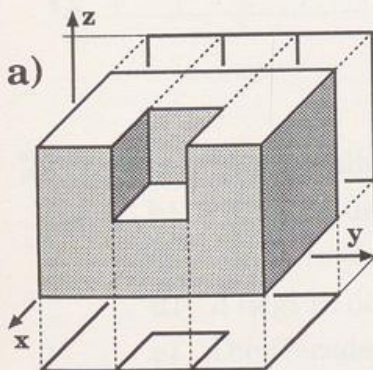


f)

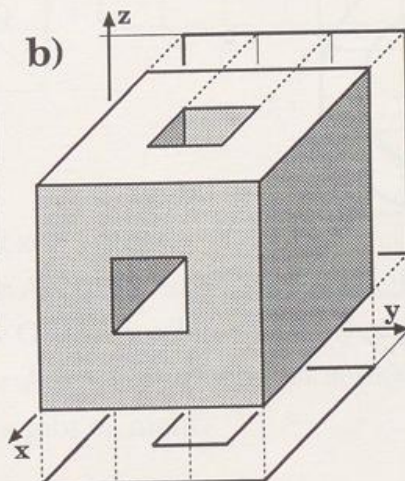


20/5

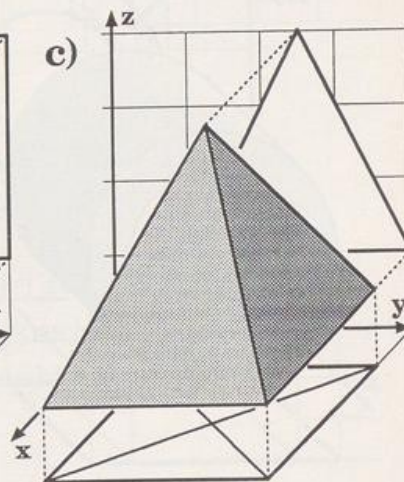
a)



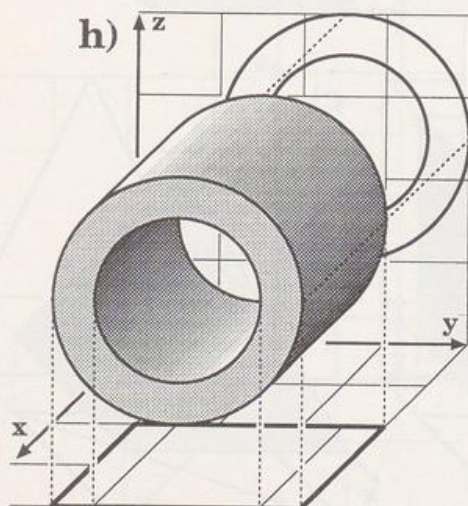
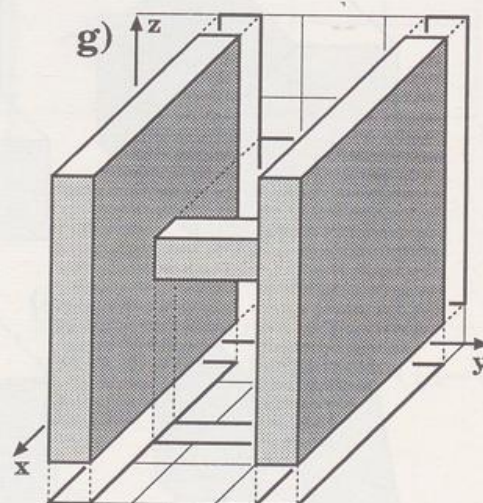
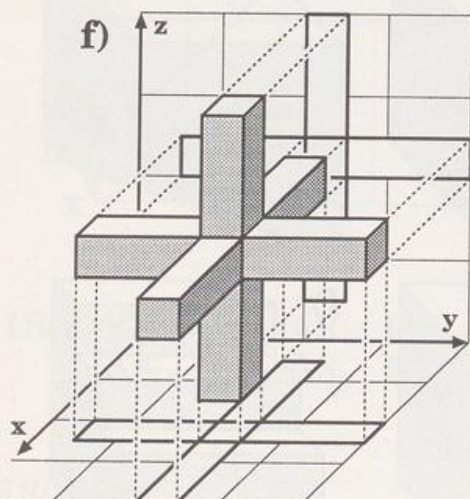
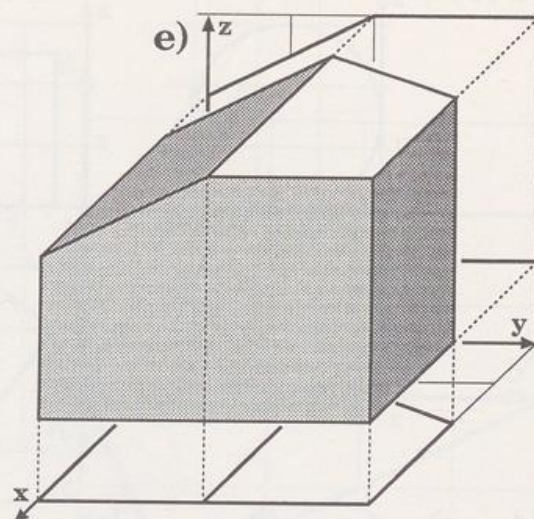
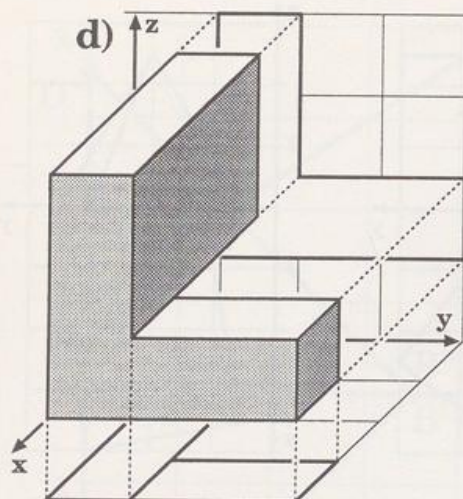
b)



c)

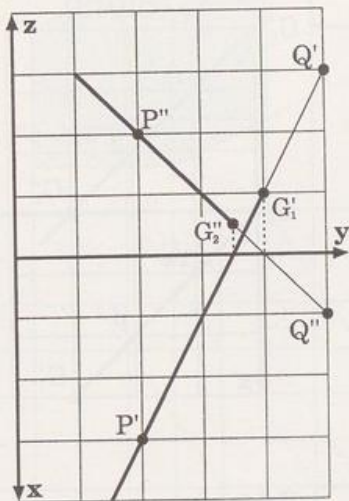


20/5

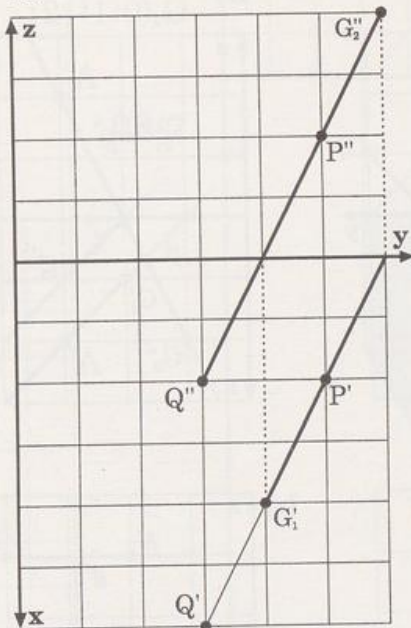


26/1.

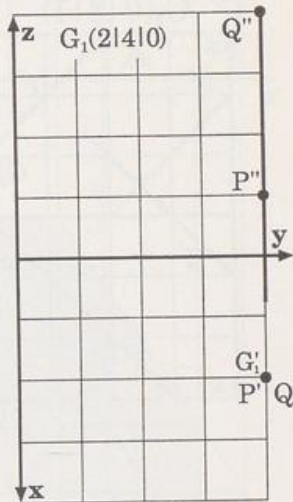
a) $G_1(-1|4|0)$ $G_2(0|3,5|0,5)$



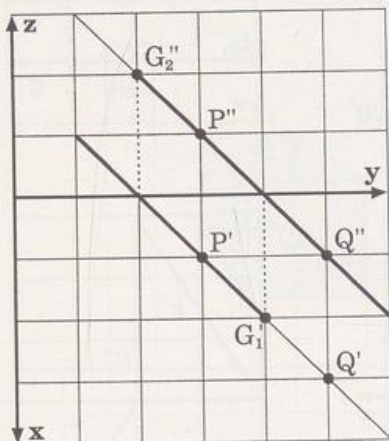
b) $G_1(4|4|0)$ $G_2(0|6|4)$



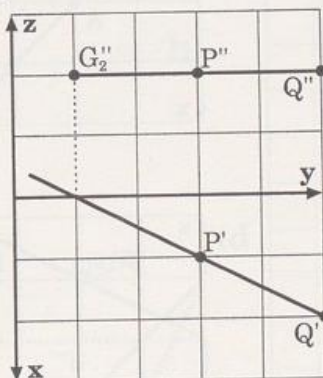
c) G_2 gibt es nicht



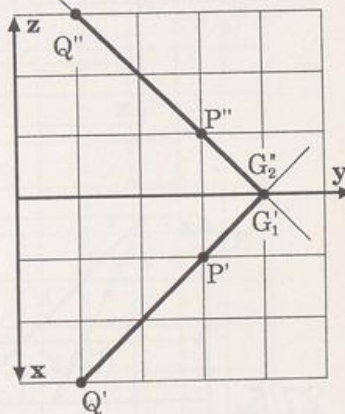
d) $G_1(2|4|0)$ $G_2(0|2|2)$



e) $G_2(0|1|2)$ G_1 gibt es nicht.



f) $G_1 = G_2(0|4|0)$

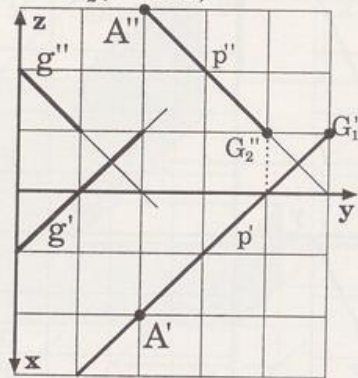


26/2.

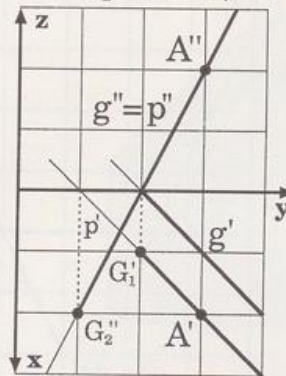
- a ist parallel zur y-Achse
- b liegt in der Aufrissebene und ist parallel zur y-Achse.
- c liegt in der Grundrissebene und ist senkrecht zur y-Achse.
- d liegt in der Aufrissebene und ist senkrecht zur y-Achse.
- Die Gerade e gibt es nicht.

26/3.

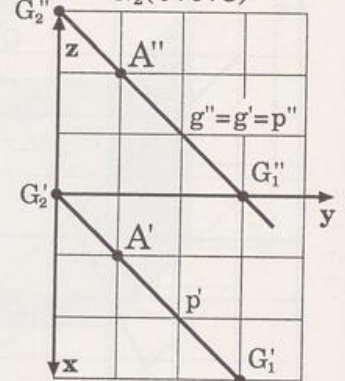
a) $G_1(-1|5|0)$
 $G_2(0|4|1)$



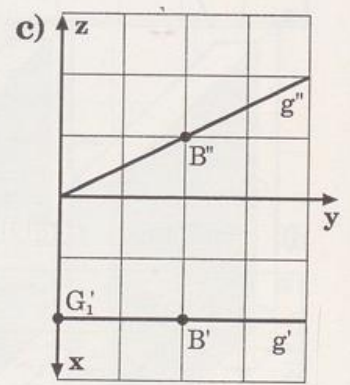
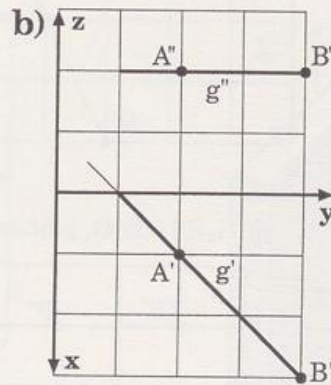
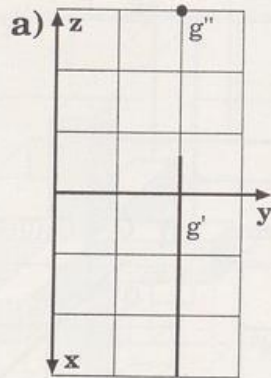
b) $G_1(1|2|0)$
 $G_2(0|1|-2)$



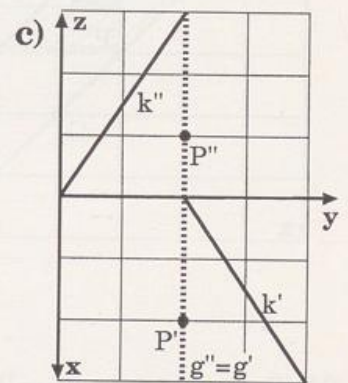
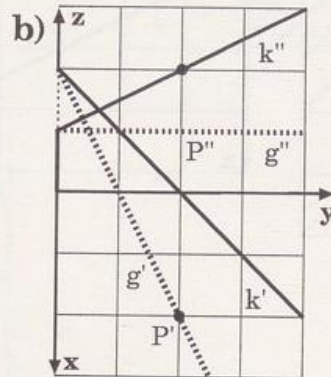
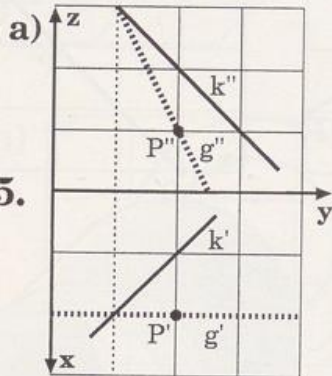
c) $G_1(3|3|0)$
 $G_2(0|0|3)$



26/4.



27/5.



27/6.

a) Schnittpunkt $(-1|1|3)$

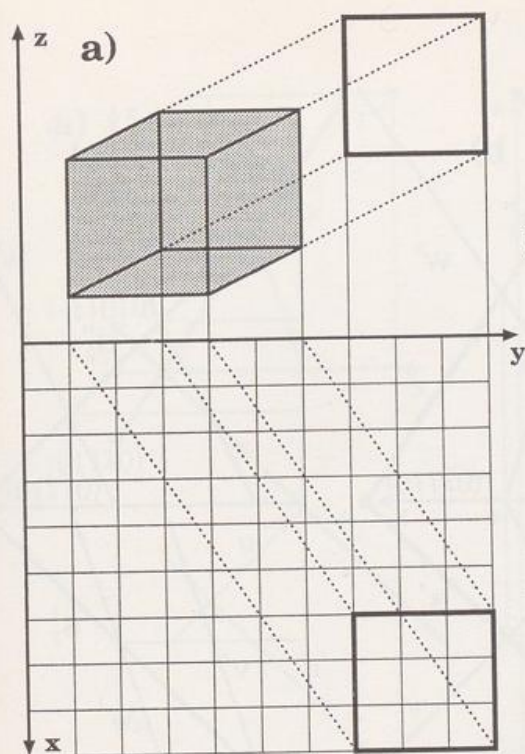
b) Parallelenpaar

c) k liegt vor g, k liegt über g.

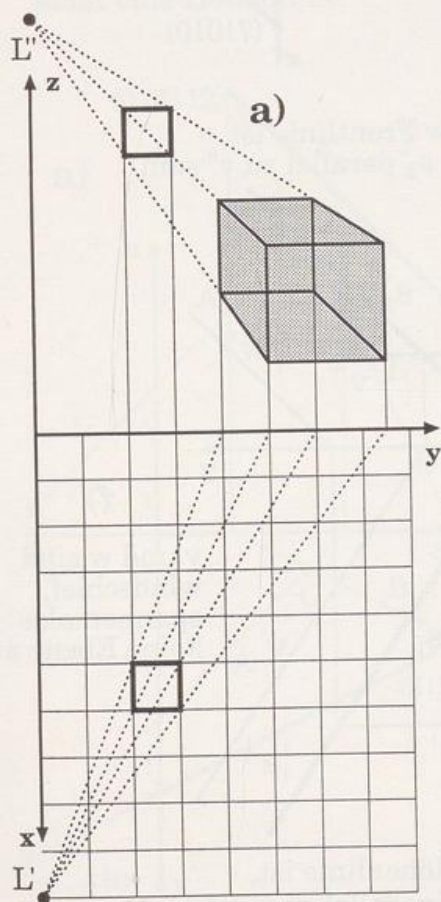
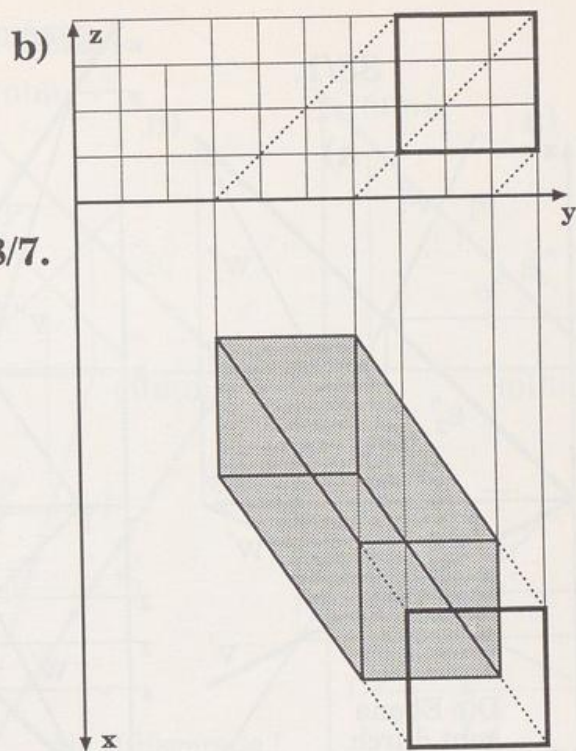
d) Schnittpunkt $(-1|2|-1)$

e) g liegt vor k, k liegt über g.

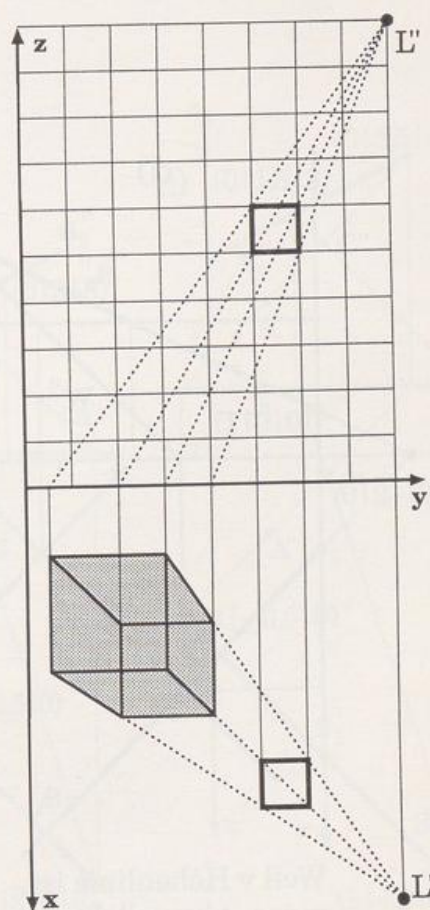
f) Schnittpunkt $(1|2|1)$



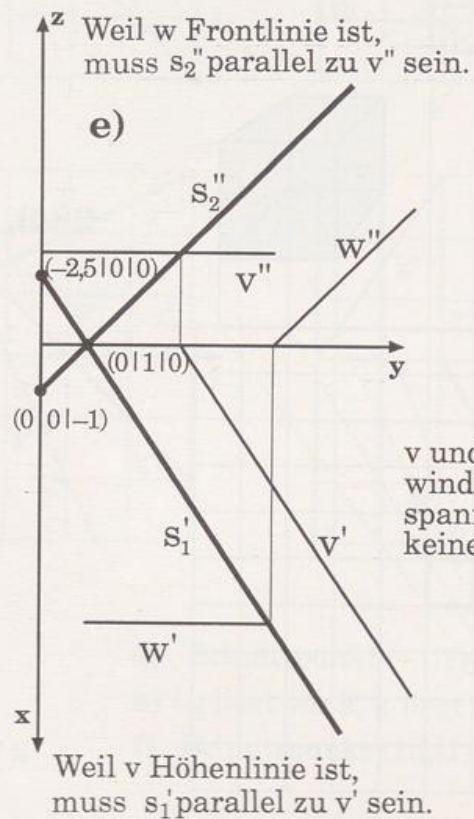
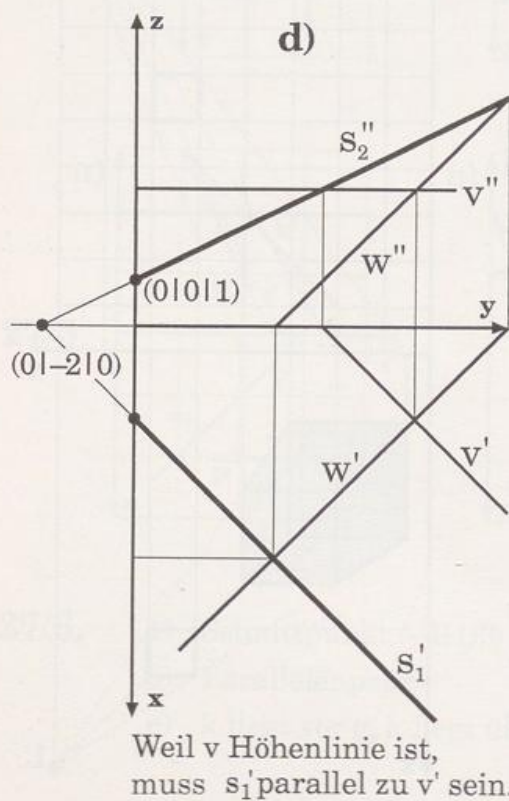
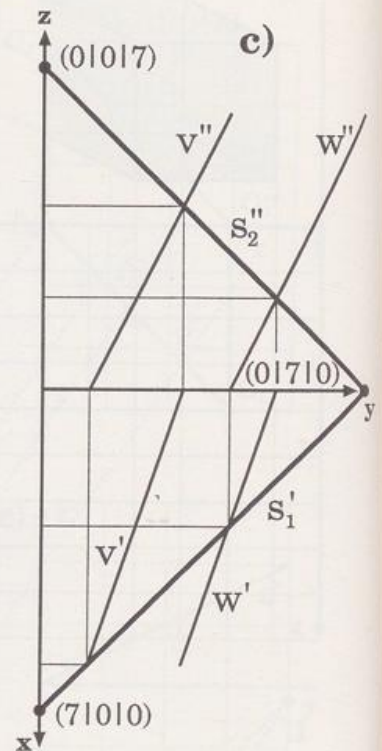
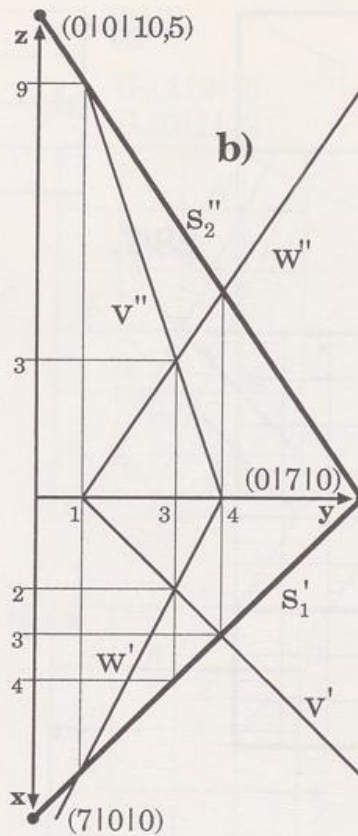
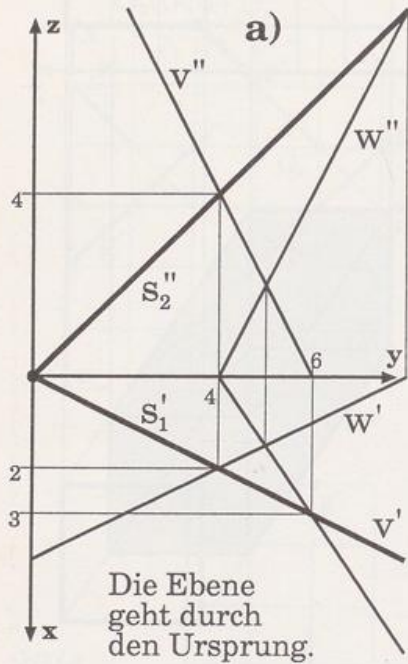
28/7.



28/8.



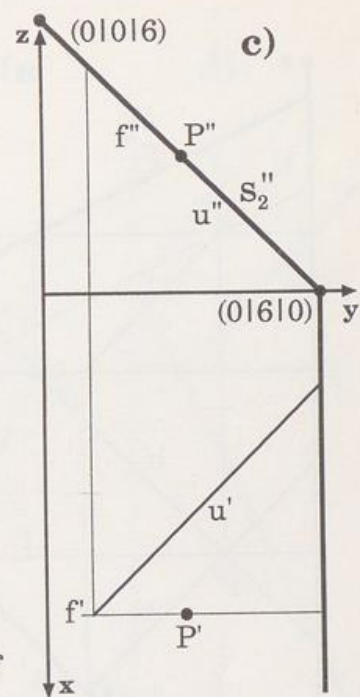
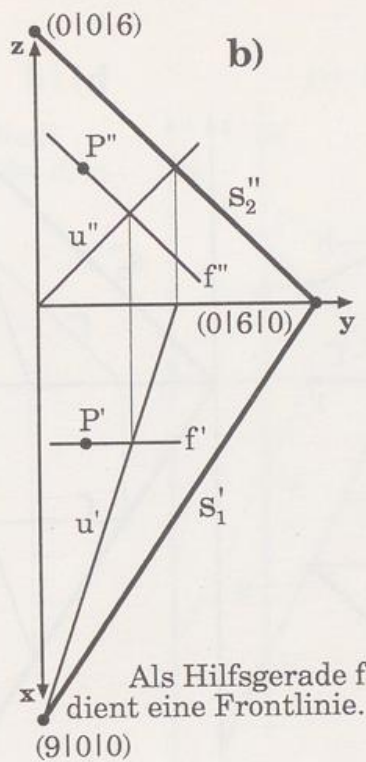
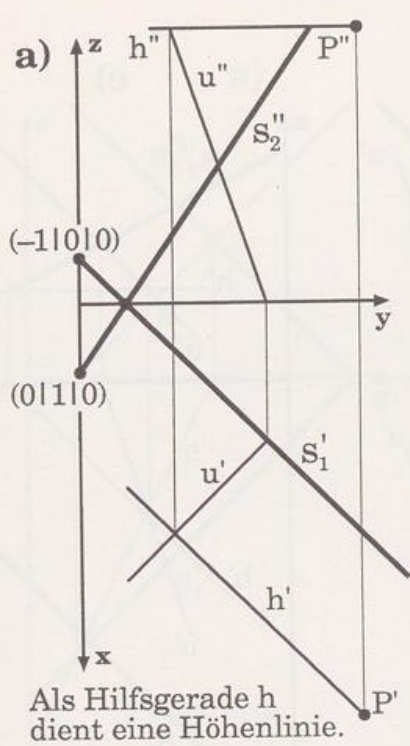
38/1.



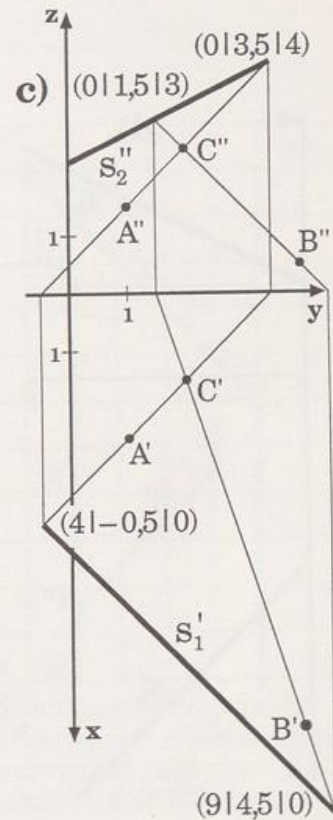
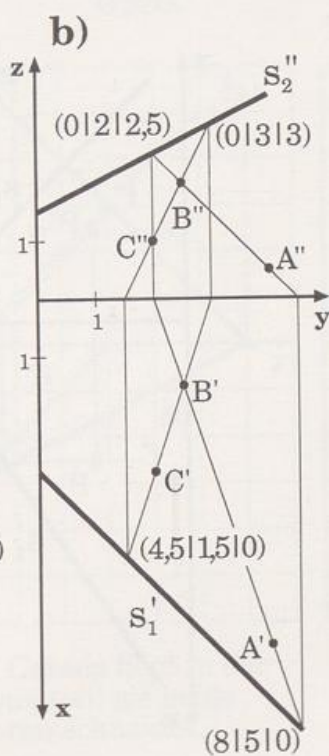
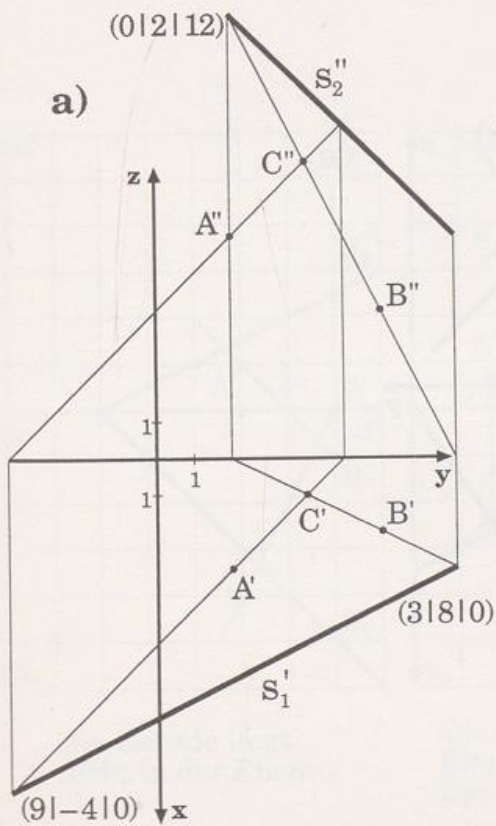
f)

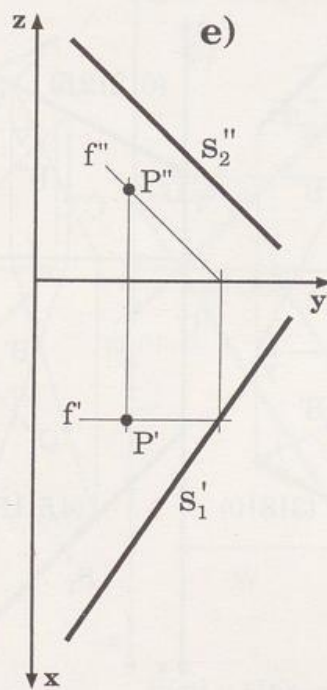
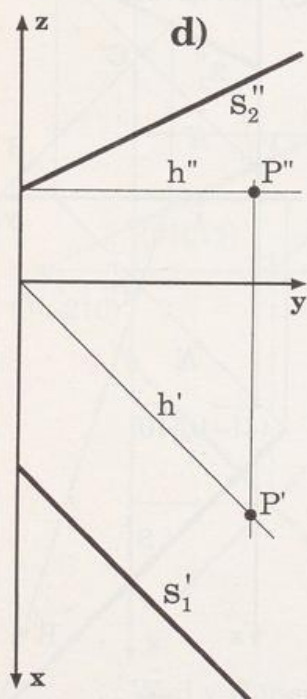
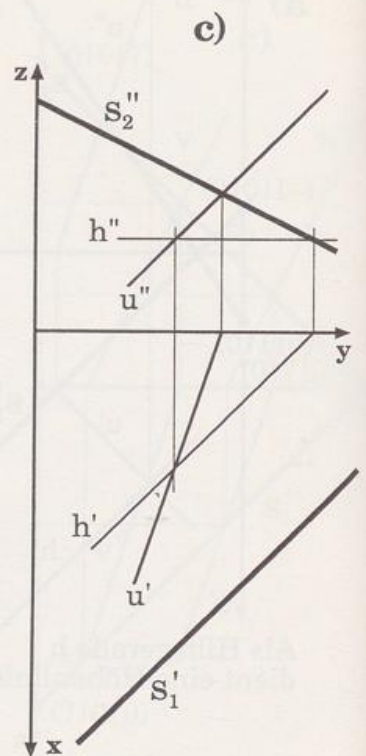
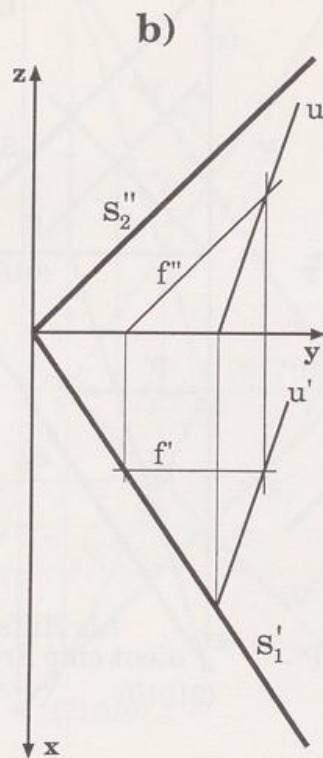
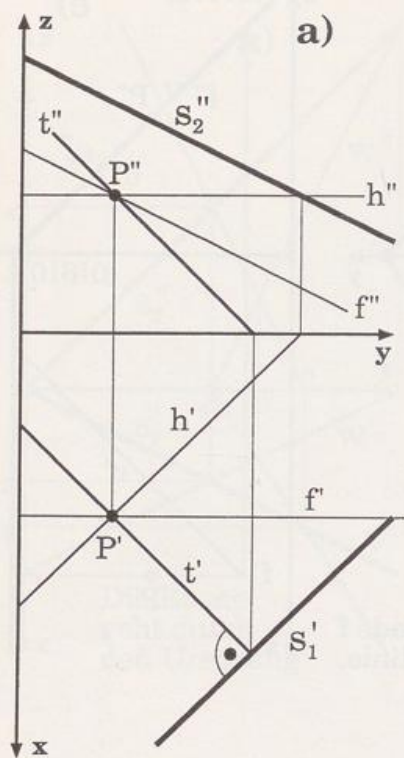
v und w sind windschief, spannen also keine Ebene auf.

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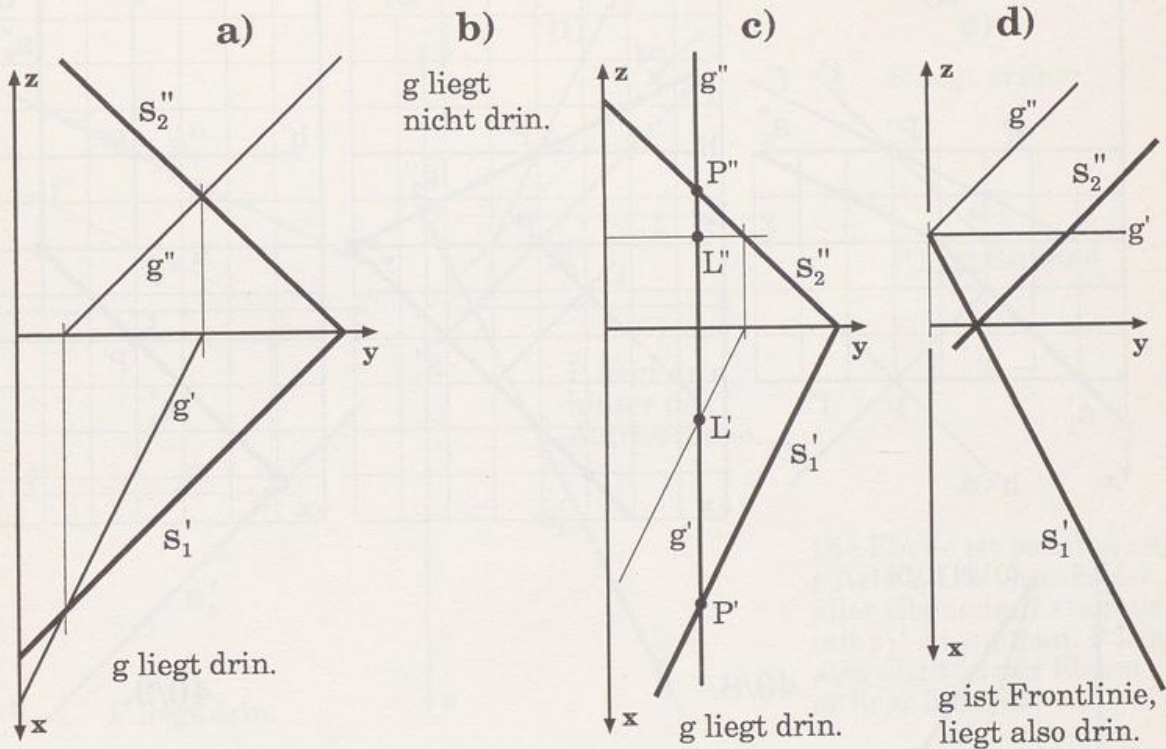


38/3.

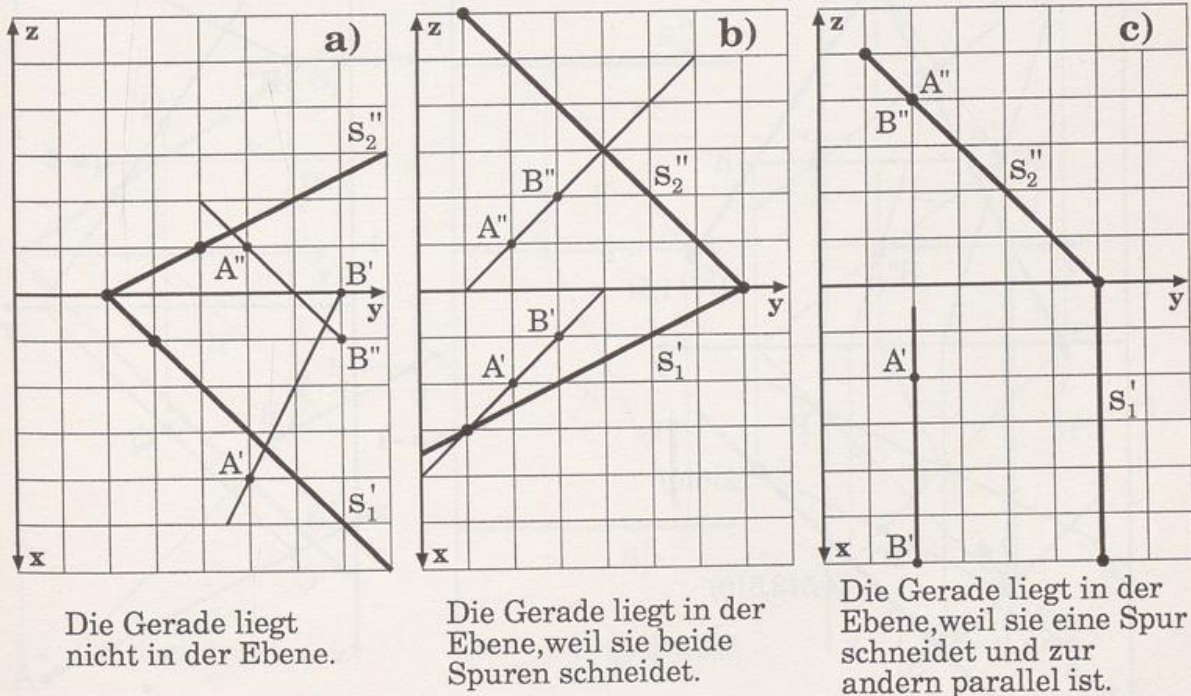




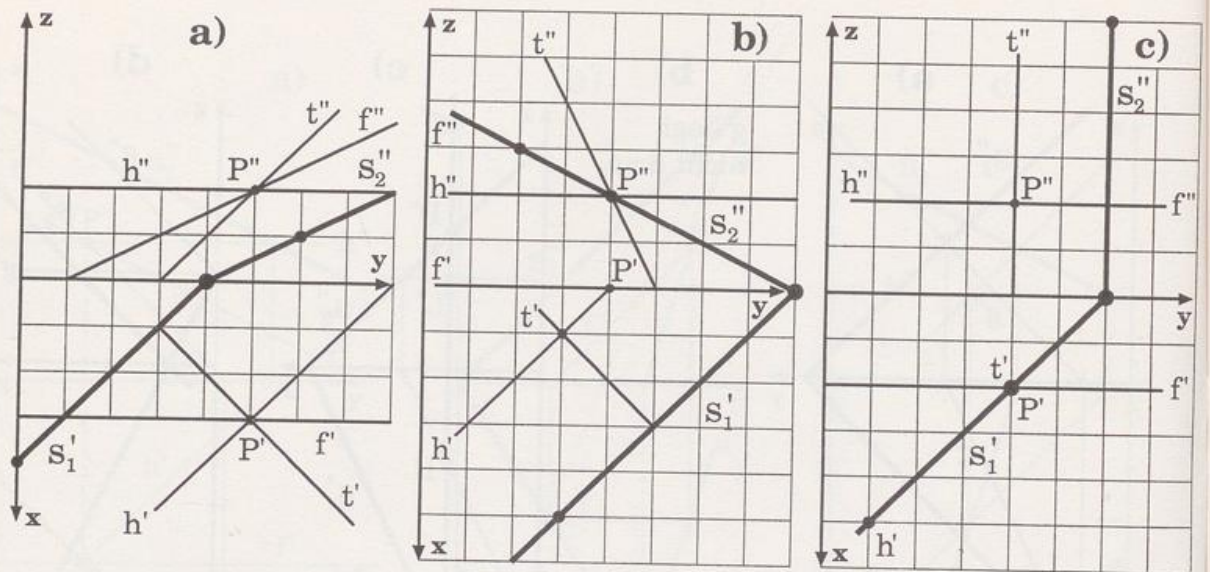
39/5.



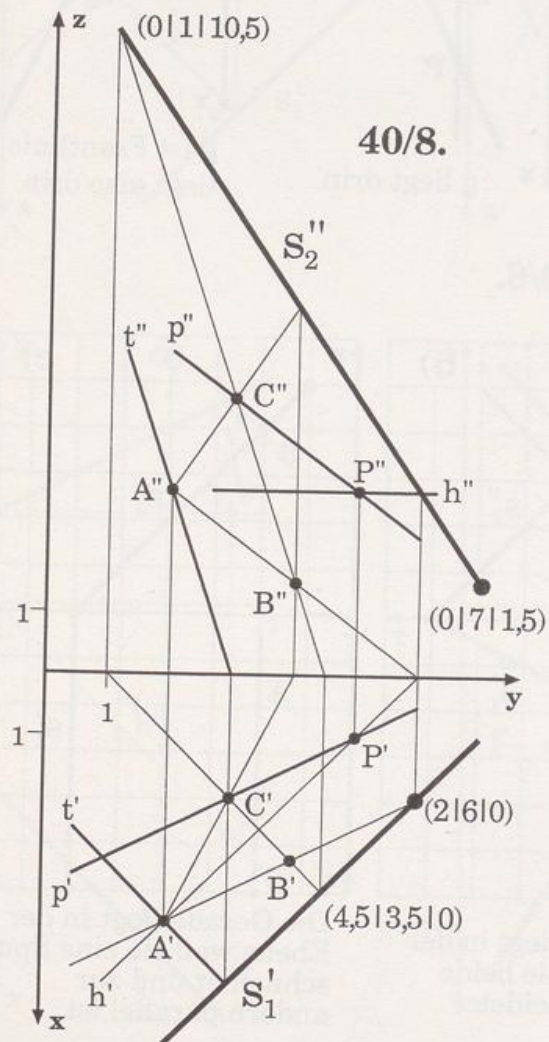
39/6.



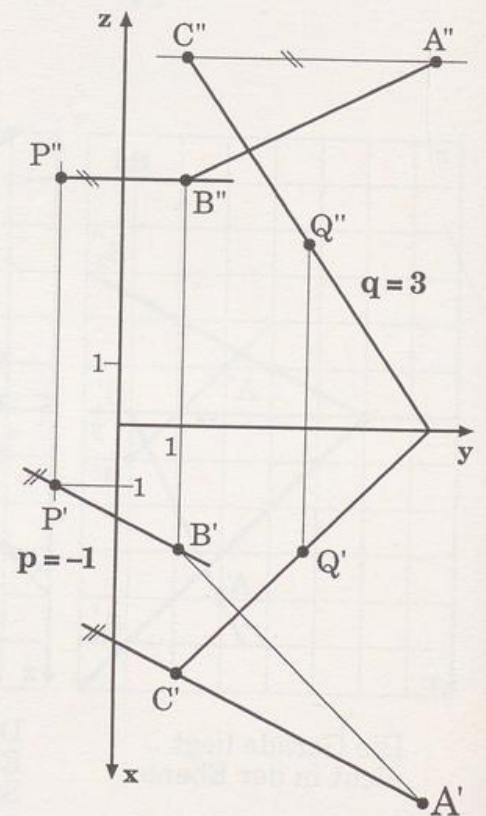
40/7.

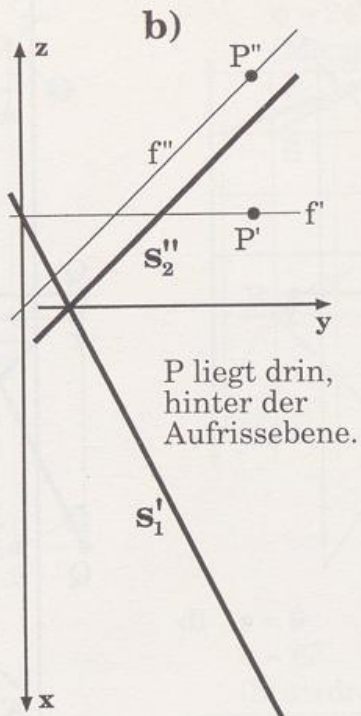
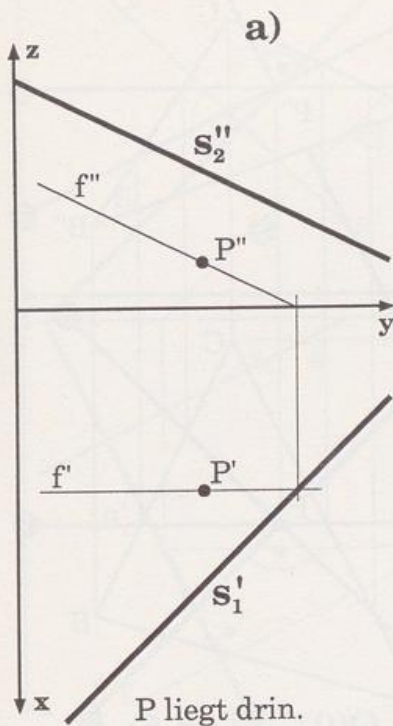


40/8.



40/9.

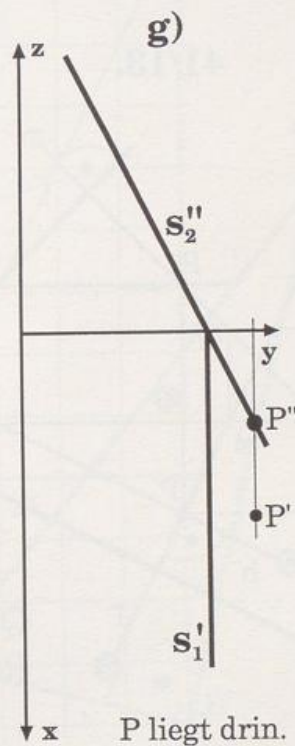
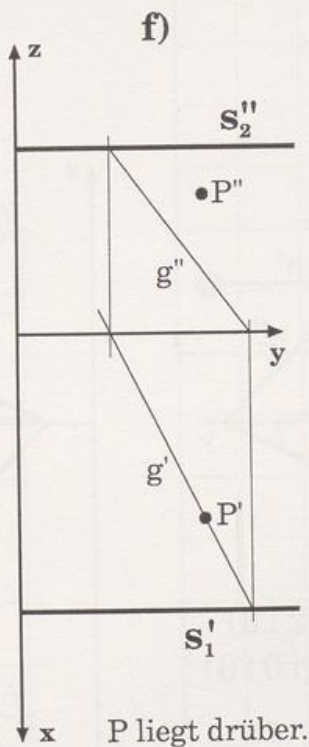
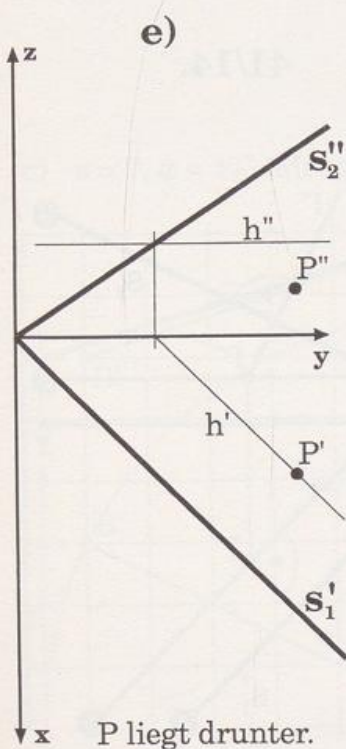




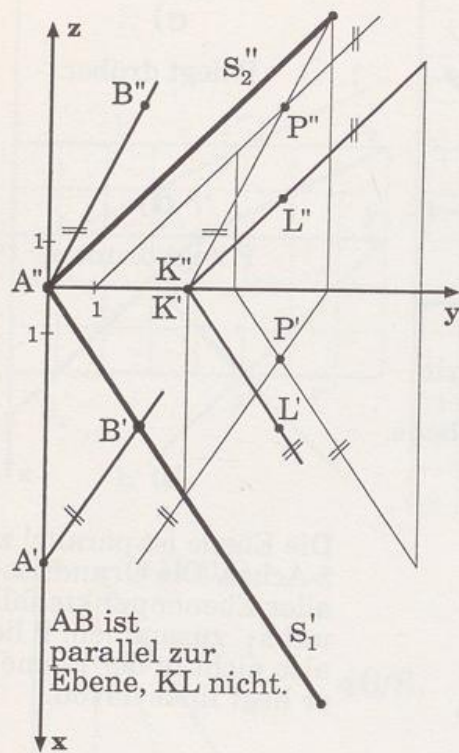
c)
 P liegt drüber.

d)
 P liegt drunter.

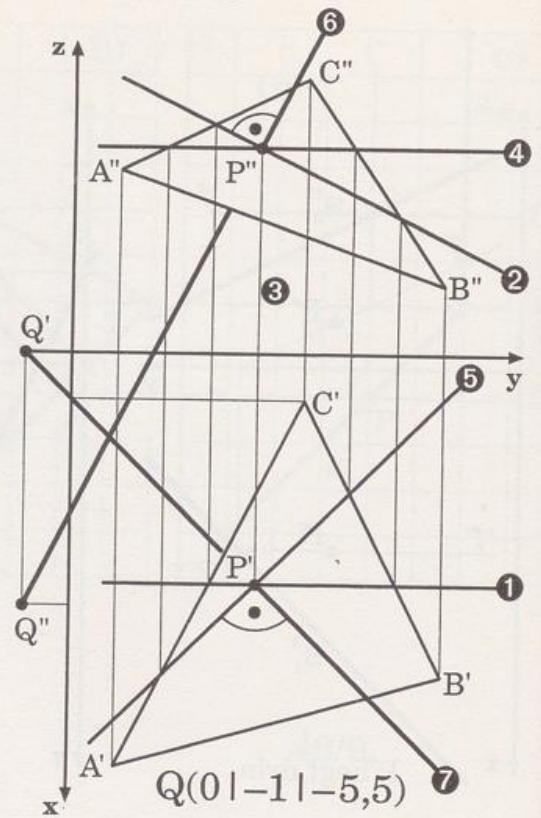
h)
Die Ebene ist parallel zur
 z -Achse. Die Grundrisse
aller Ebenenpunkte fallen
mit s_1' zusammen. P liegt
also nicht in der Ebene,
er liegt links davon.



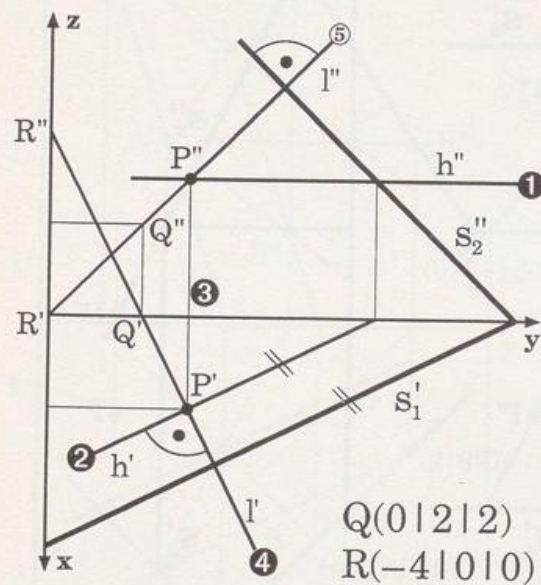
41/11.



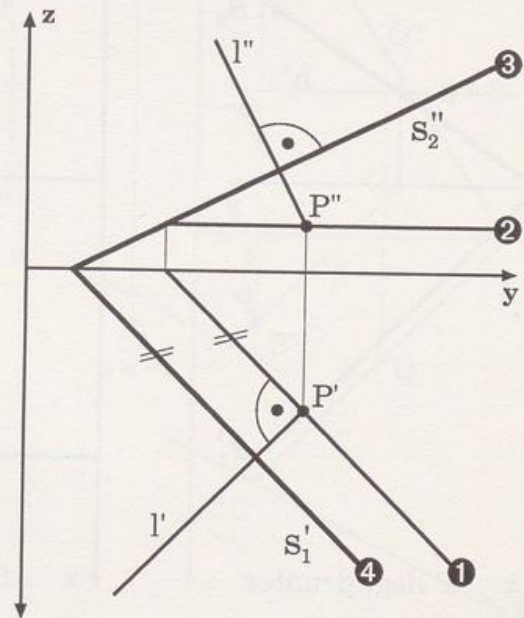
41/12.

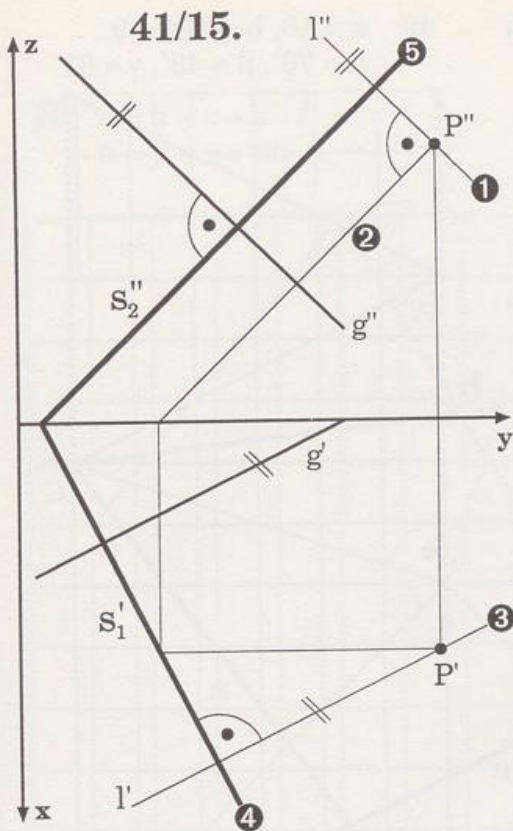


41/13.

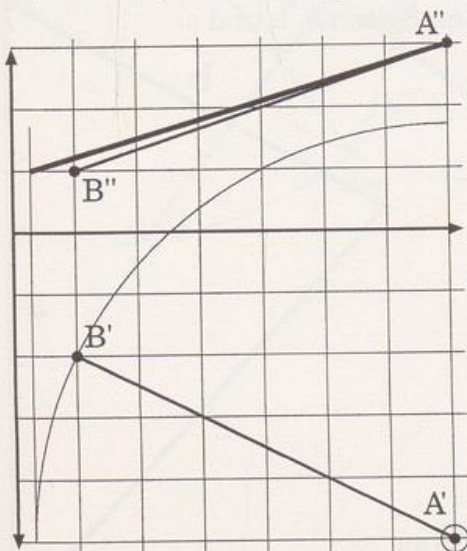


41/14.



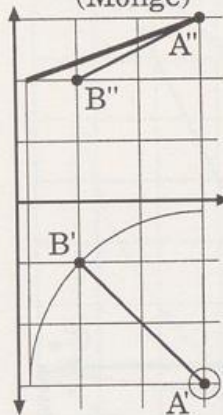


c) $s = 7$, $\varphi \approx 17^\circ$ (Monge)

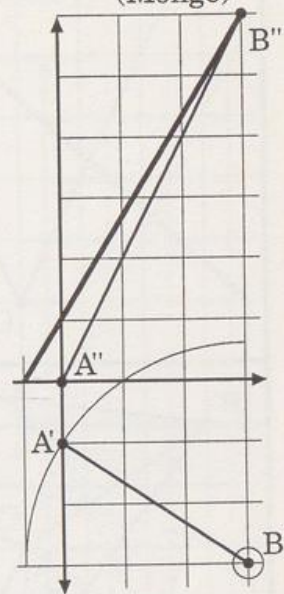


46/1.

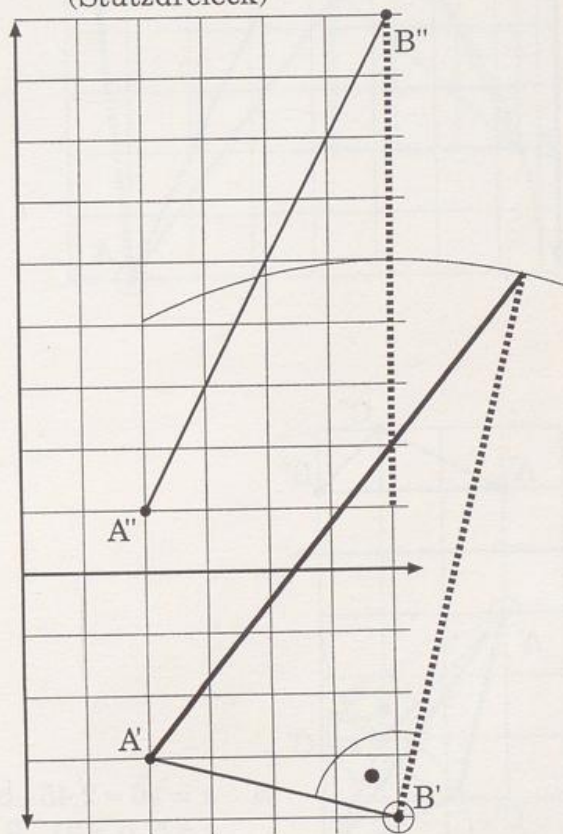
**a) $s = 3$
 $\varphi \approx 24^\circ$
(Monge)**



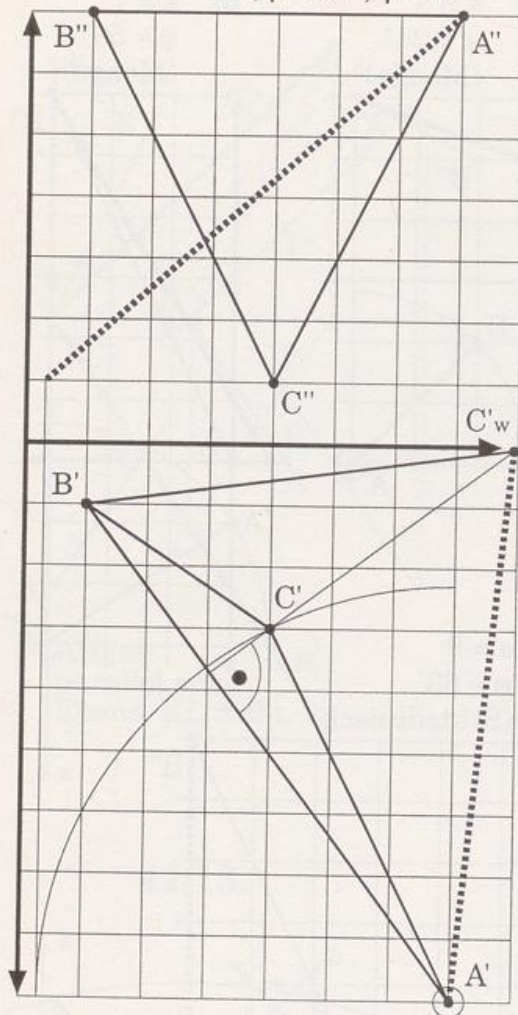
**b) $s = 7$
 $\varphi \approx 59^\circ$
(Monge)**



**d) $s = 9$
 $\varphi \approx 63^\circ$
(Stützdreieck)**

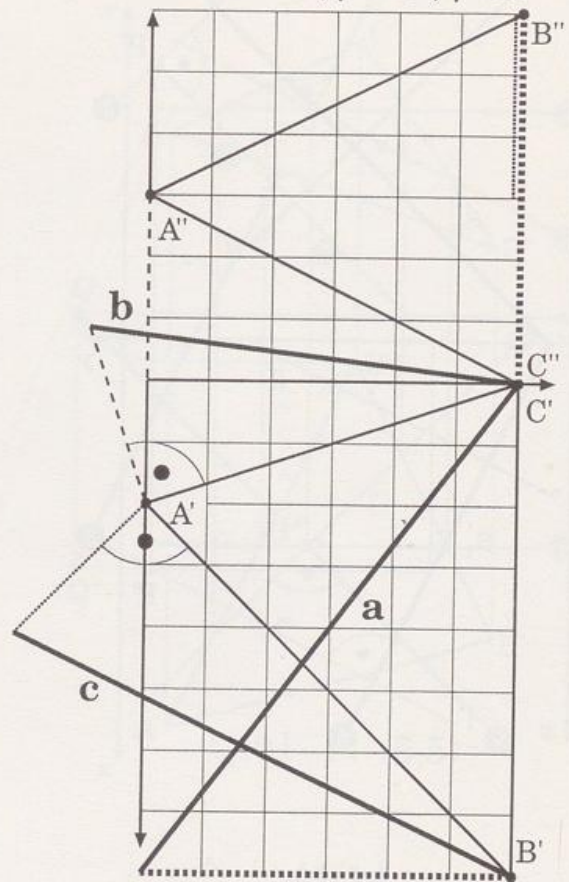


a) $a = 7, b = 9, c = 10$,
 $\alpha \approx 43^\circ, \beta \approx 61^\circ, \gamma \approx 76^\circ$

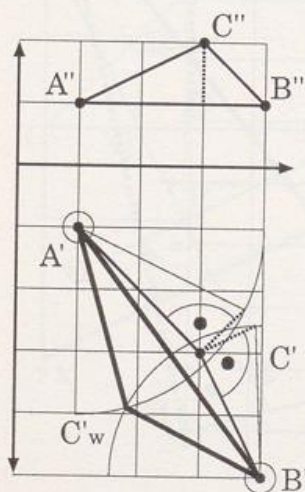
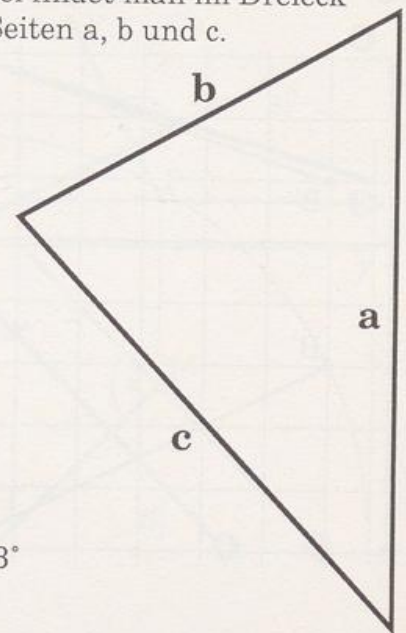


46/2.

b) $a = 10, b = 7, c = 9$
 $\alpha \approx 76^\circ, \beta \approx 43^\circ, \gamma \approx 61^\circ$



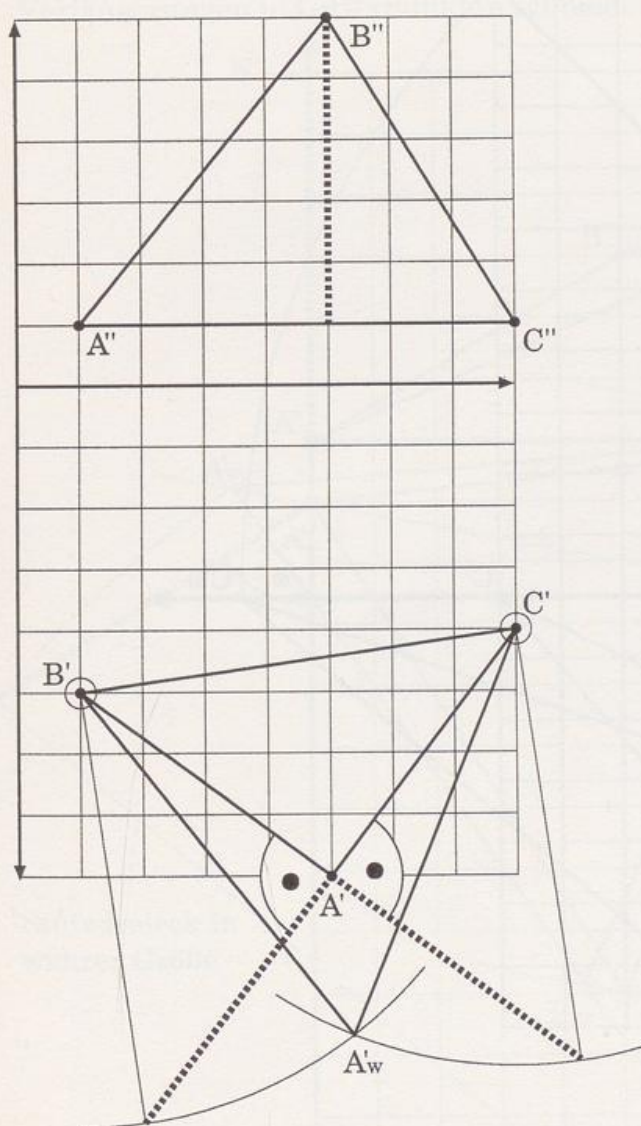
Die Seitenlängen a, b und c sind mit Stützdreiecken konstruiert. Die Winkel findet man im Dreieck mit den Seiten a, b und c .



c) $a = \sqrt{6} \approx 2,45, b = 3,$
 $c = 5, \alpha \approx 21^\circ, \beta \approx 26^\circ, \gamma \approx 133^\circ$

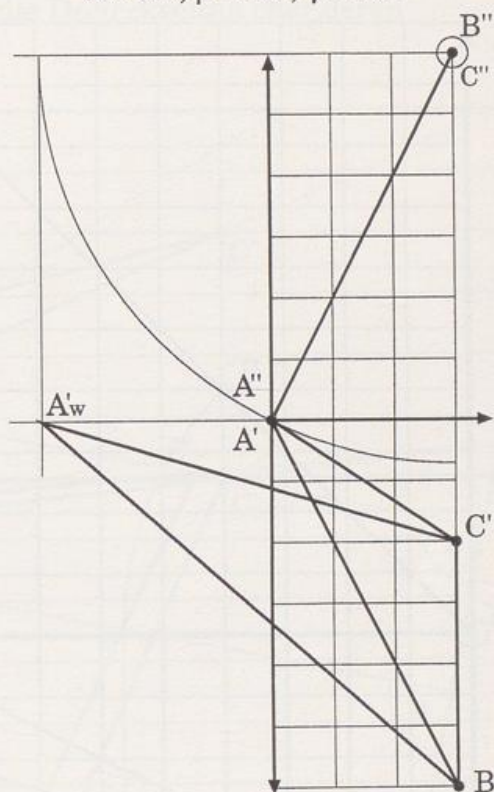
46/2.

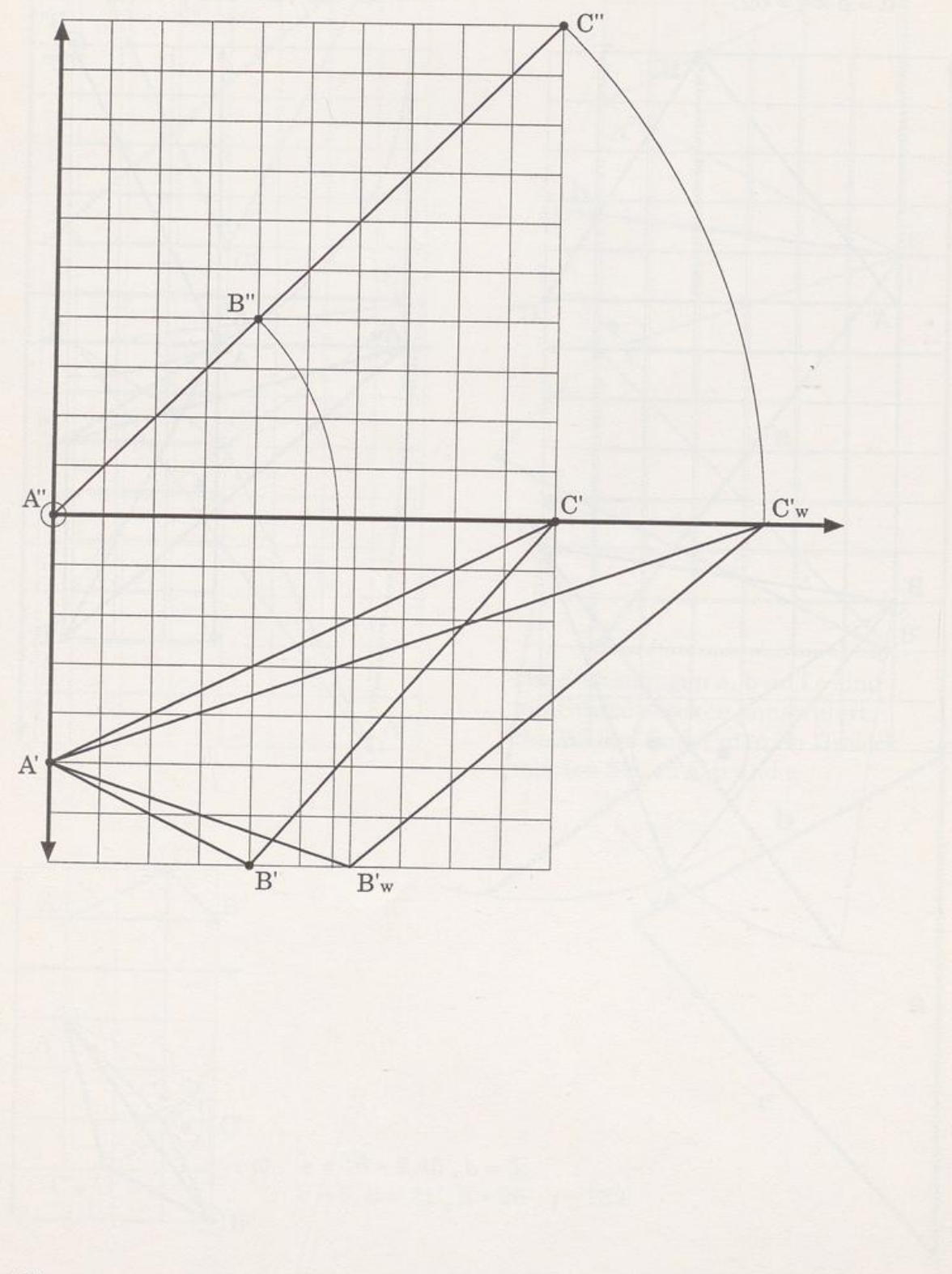
- d) $a = b = c = 5\sqrt{2} \approx 7,07$
 $\alpha = \beta = \gamma = 60^\circ$



47/3.

- a) $a = 4, b = 7, c = 9$
 $\alpha \approx 25^\circ, \beta \approx 48^\circ, \gamma \approx 107^\circ$

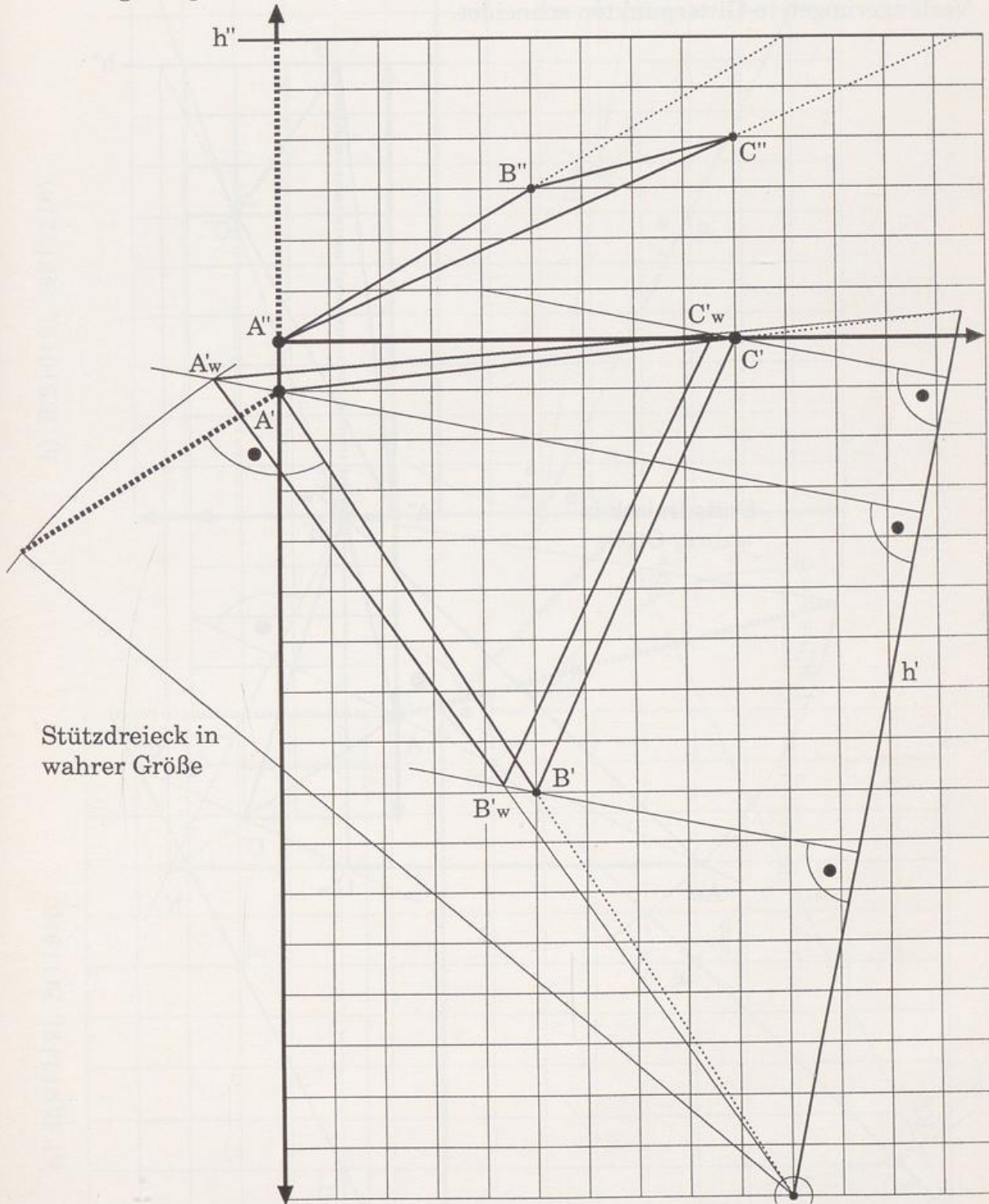




47/3.

c) $a = b = c = 7\sqrt{2} \approx 9,9$, $\alpha = \beta = \gamma = 60^\circ$

Konstruktion mit Schwenk von ABC um Höhenlinie h. Für h wählt man im Aufriss nach Möglichkeit eine Waagrechte, die Dreieckseiten oder deren Verlängerungen in Gitterpunkten schneidet.

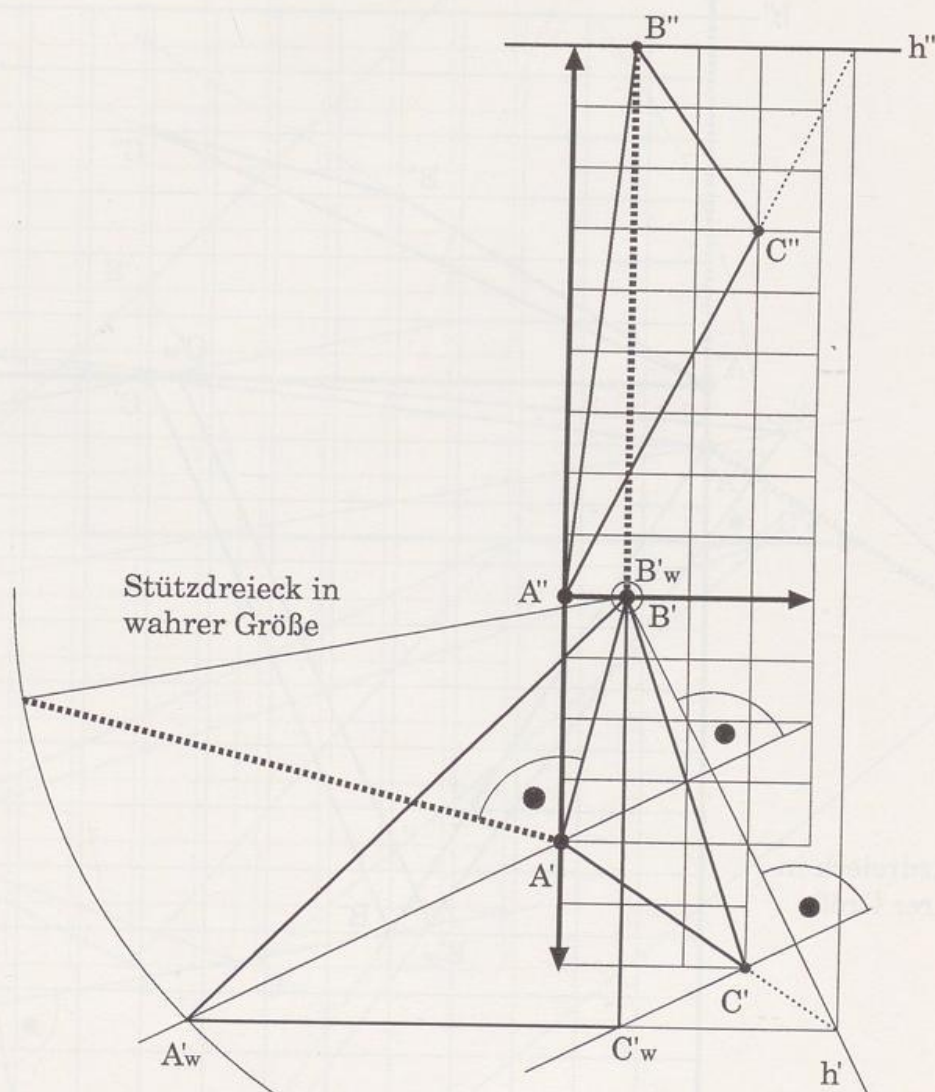


Stützdreieck in
wahrer Größe

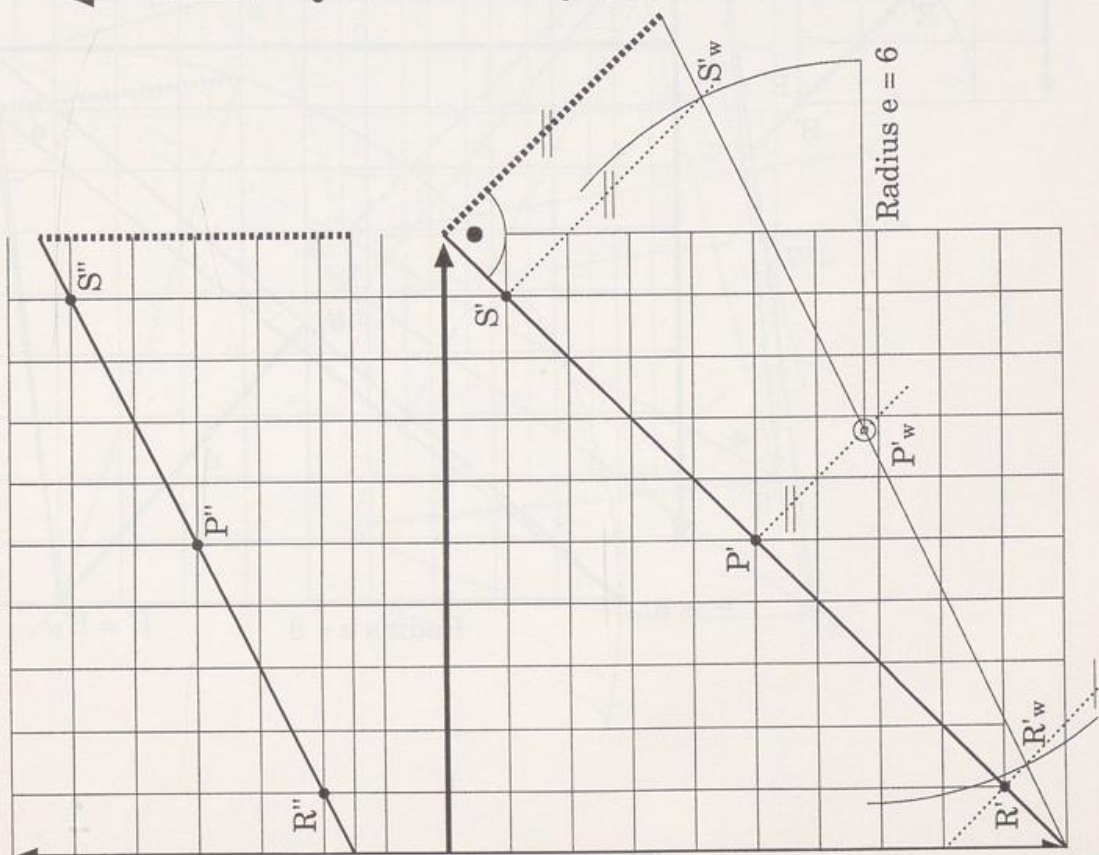
47/3.

d) $a = b = 7, c = 7\sqrt{2} \approx 9,9, \alpha = \beta = 45^\circ, \gamma = 90^\circ$

Konstruktion mit Schwenk von ABC um Höhenlinie h. Für h wählt man im Aufriss nach Möglichkeit eine Waagrechte, die Dreieckseiten oder deren Verlängerungen in Gitterpunkten schneidet.

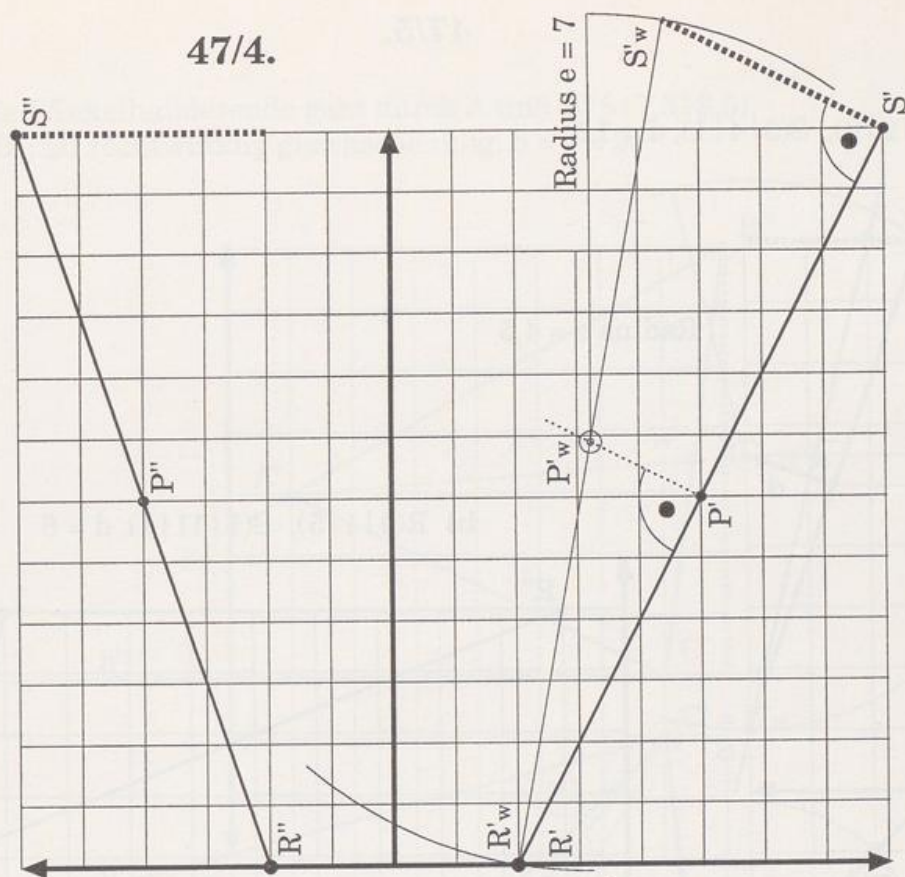


a) $R(9|1|2)$, $S(1|9|6)$

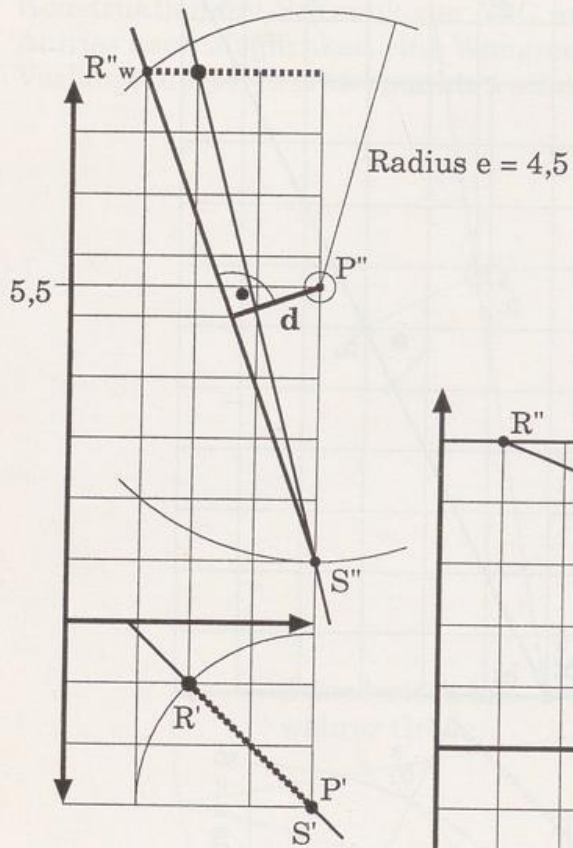


47/4.

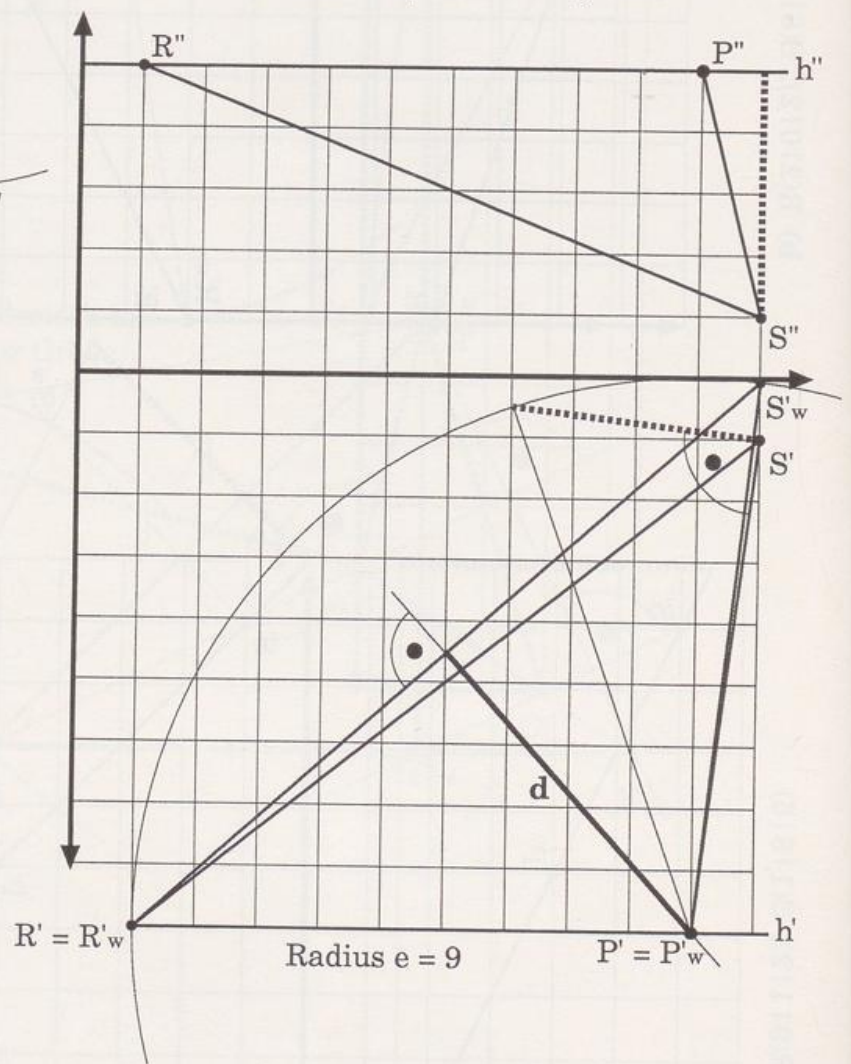
b) $R(2|0|2)$, $S(8|12|6)$



a) $R(1|2|9)$, $S(3|4|1)$, $d = 1,5$

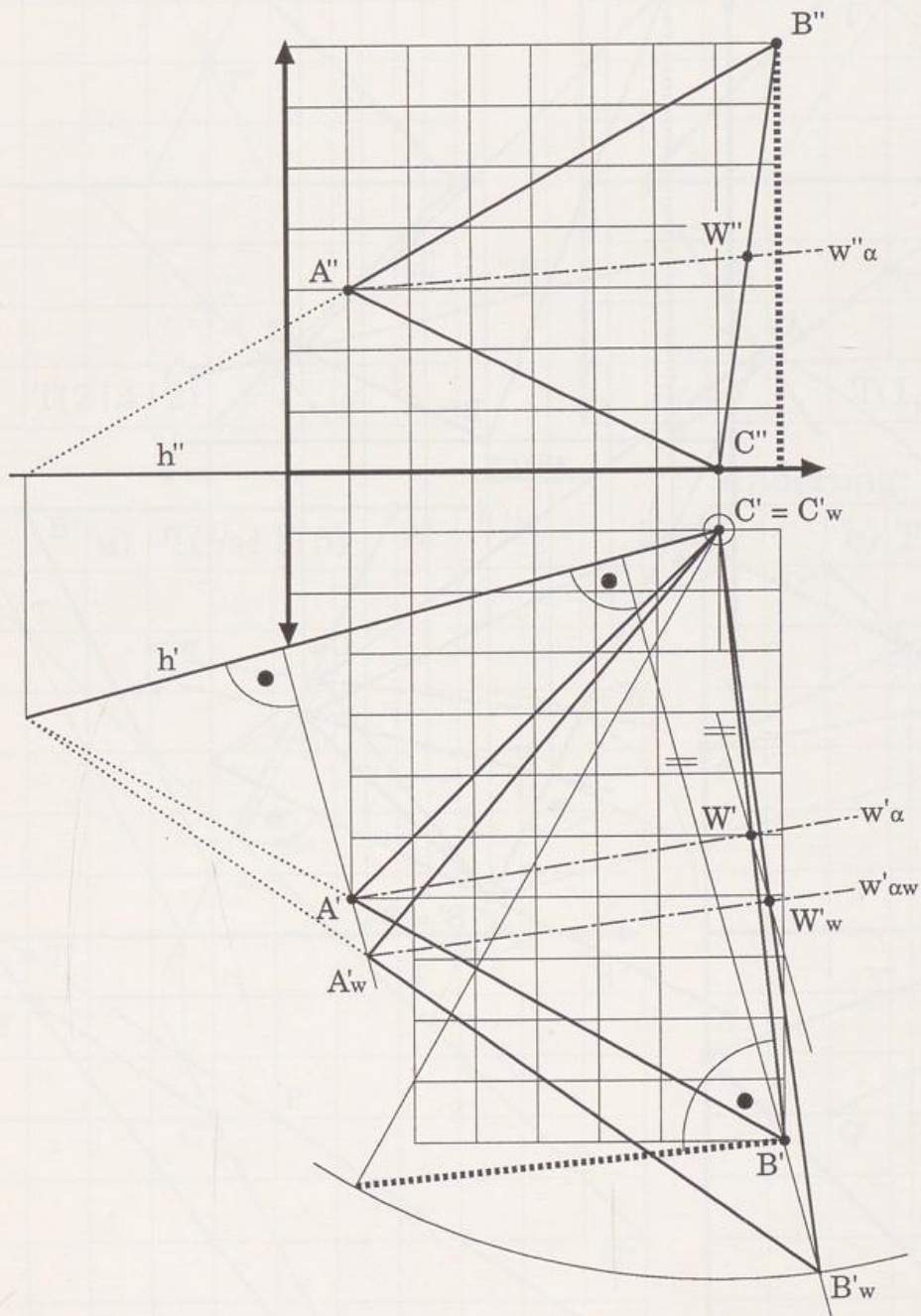


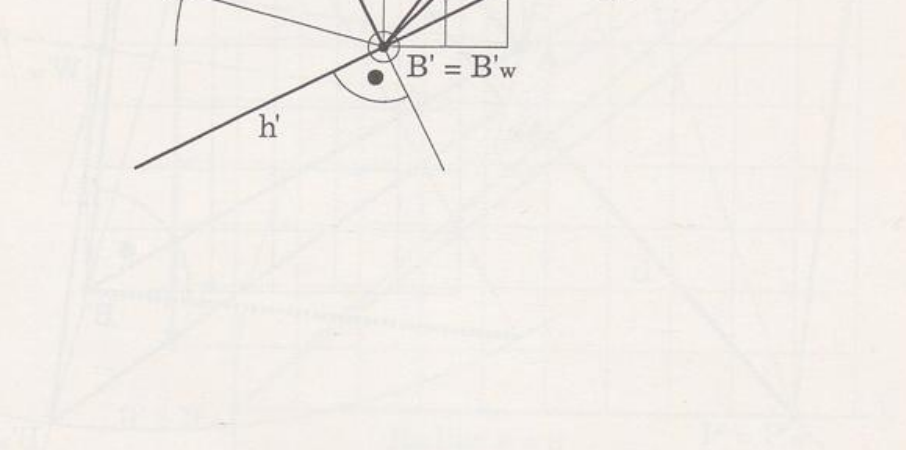
b) $R(9|1|5)$, $S(1|11|1)$, $d = 6$

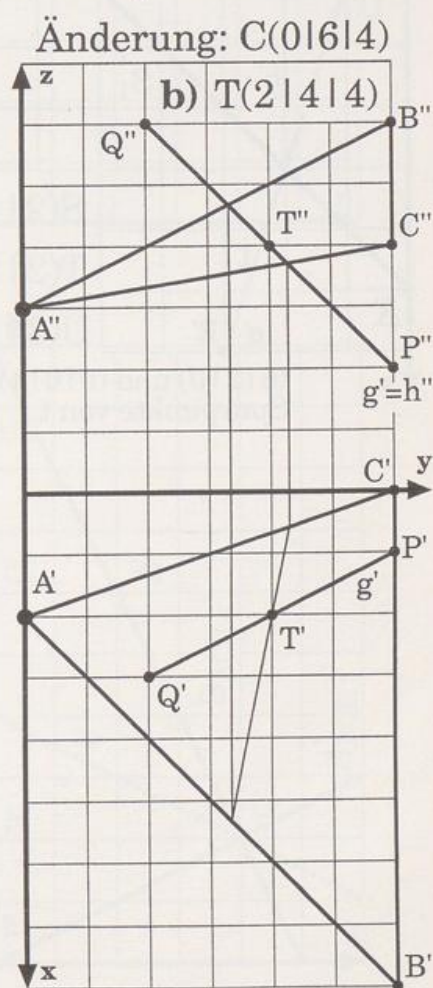
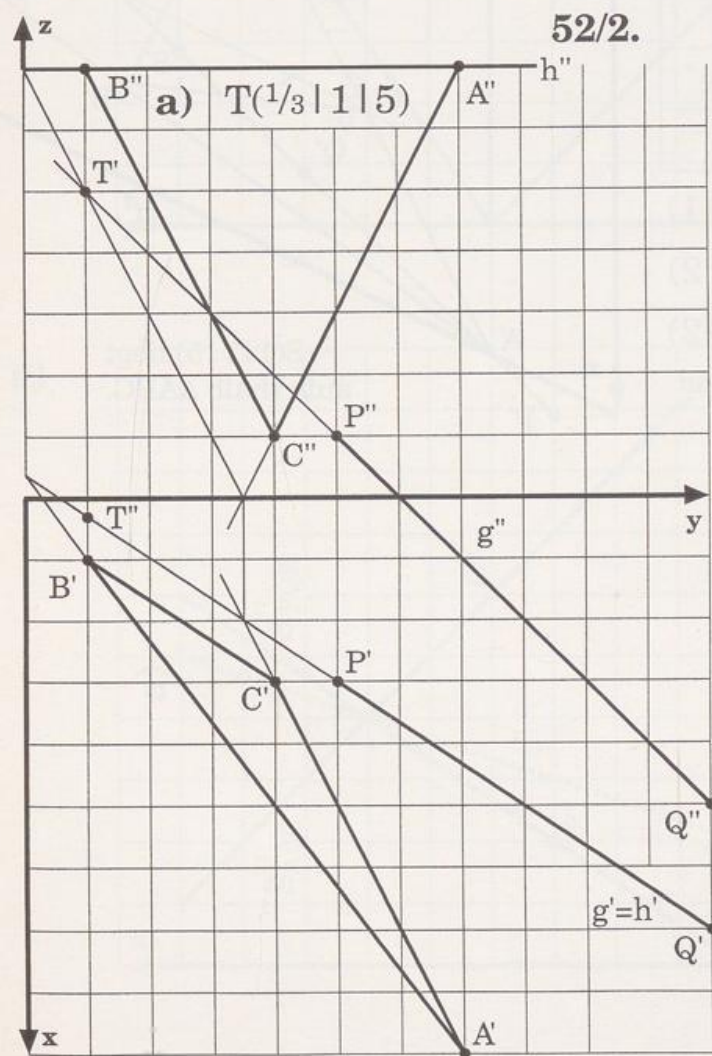
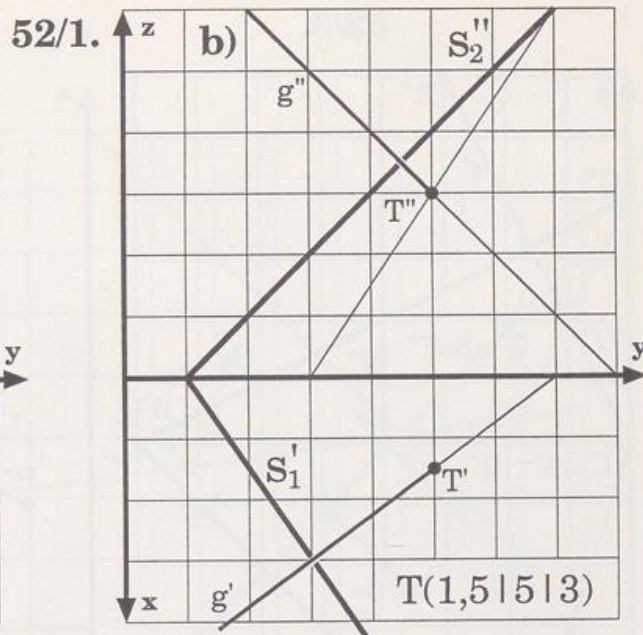
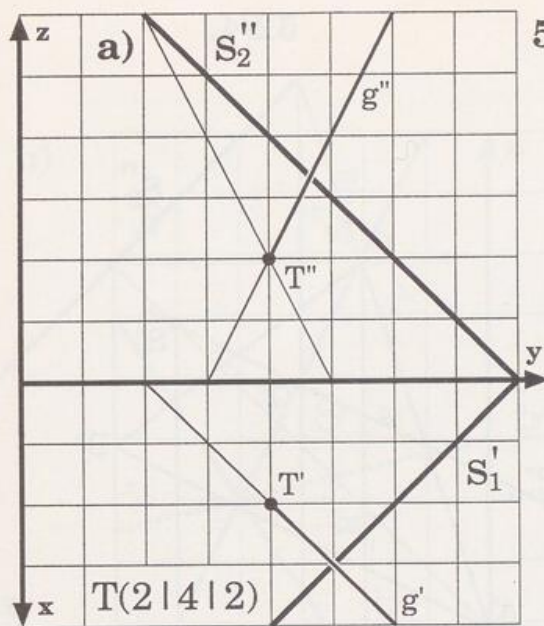


47/6.

- a) Die Winkelhalbierende geht durch A und $W(6|7,5|3,5)$,
 ABC ist rechtwinklig gleichschenkelig: $b = c = 9$

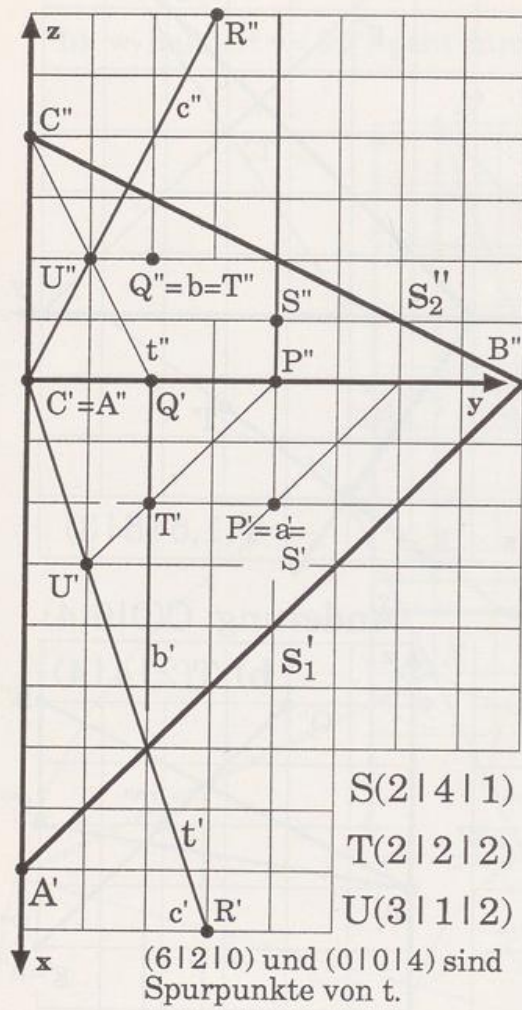




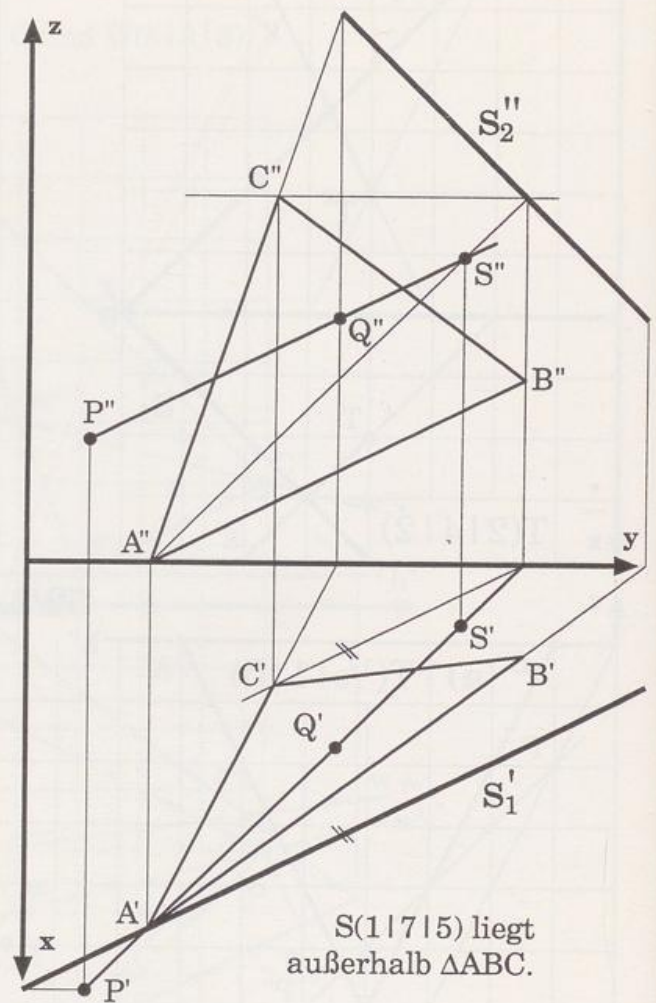


Wenn $C(0|6|0)$, dann
 $T(-2/3|28/3|-4/3)$

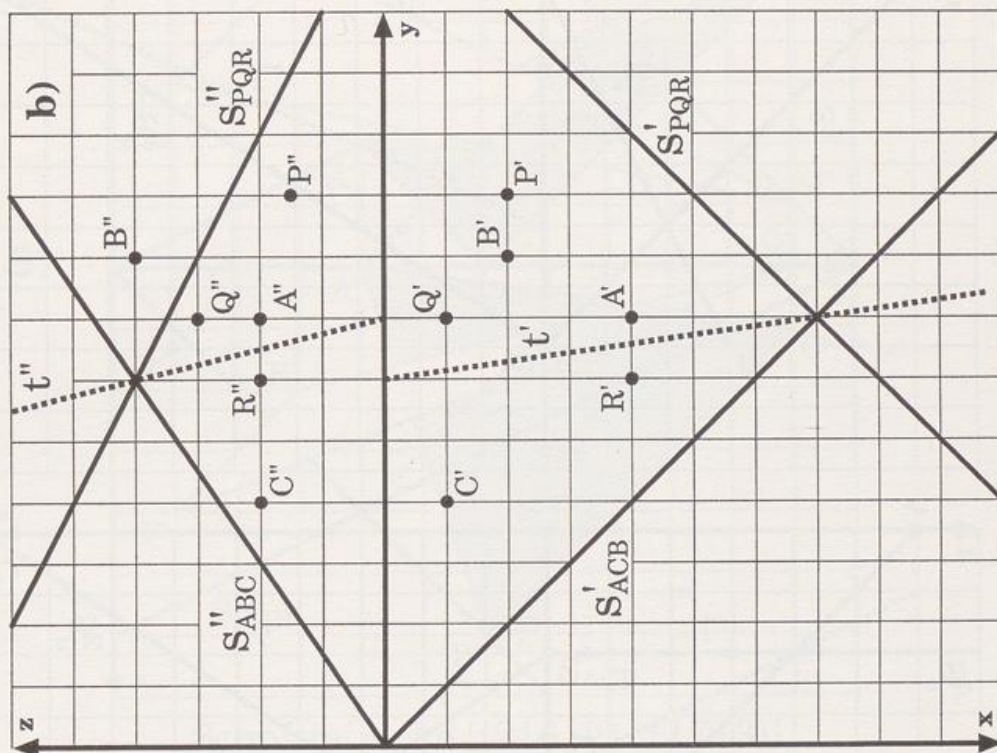
52/3.



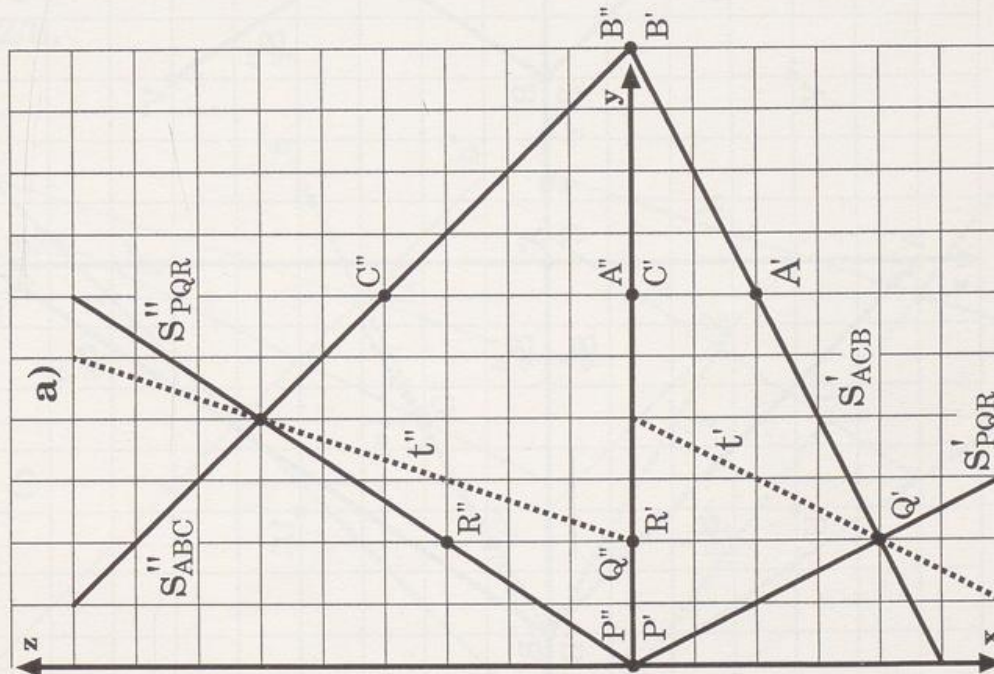
52/4.

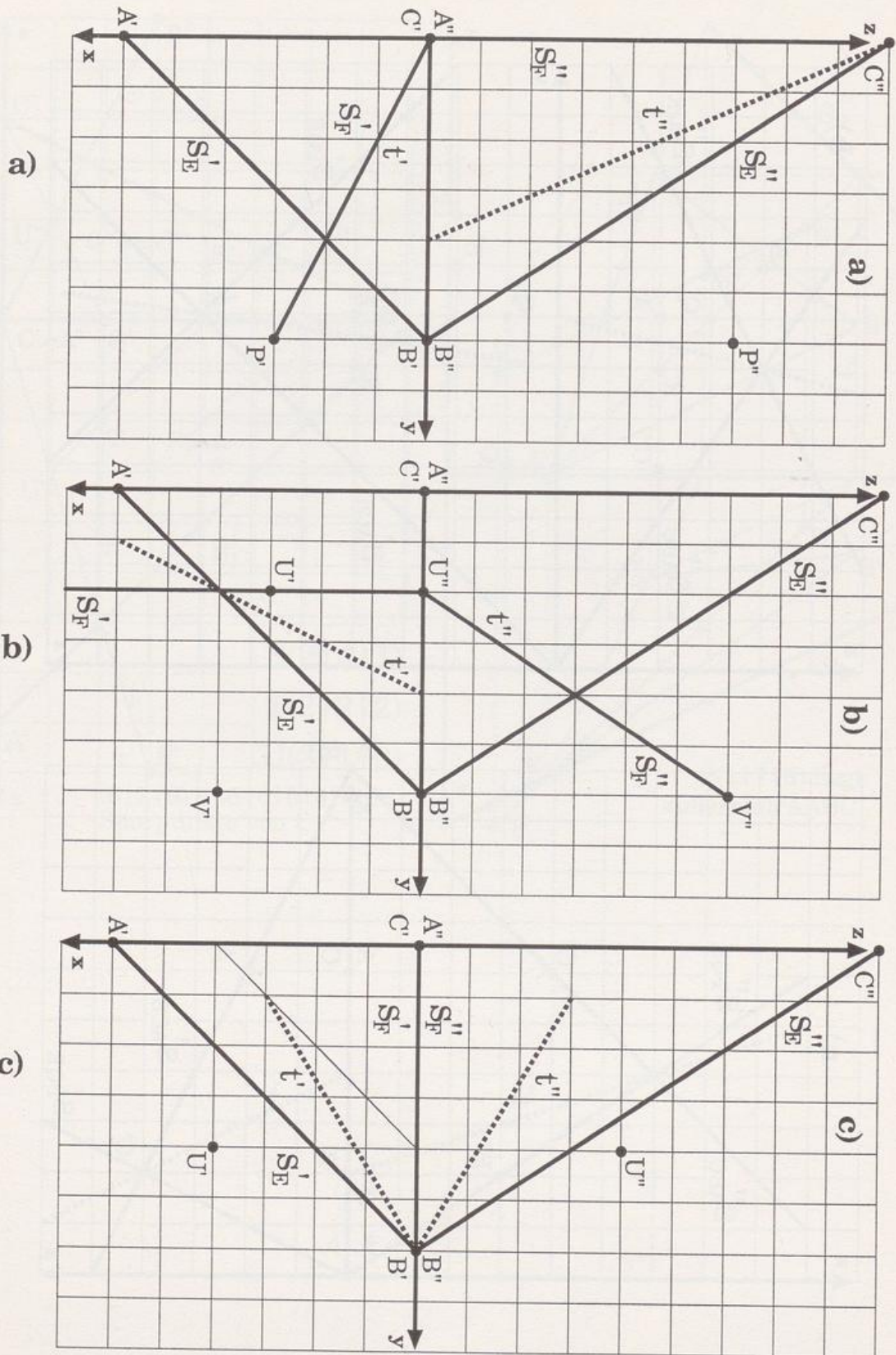


b)

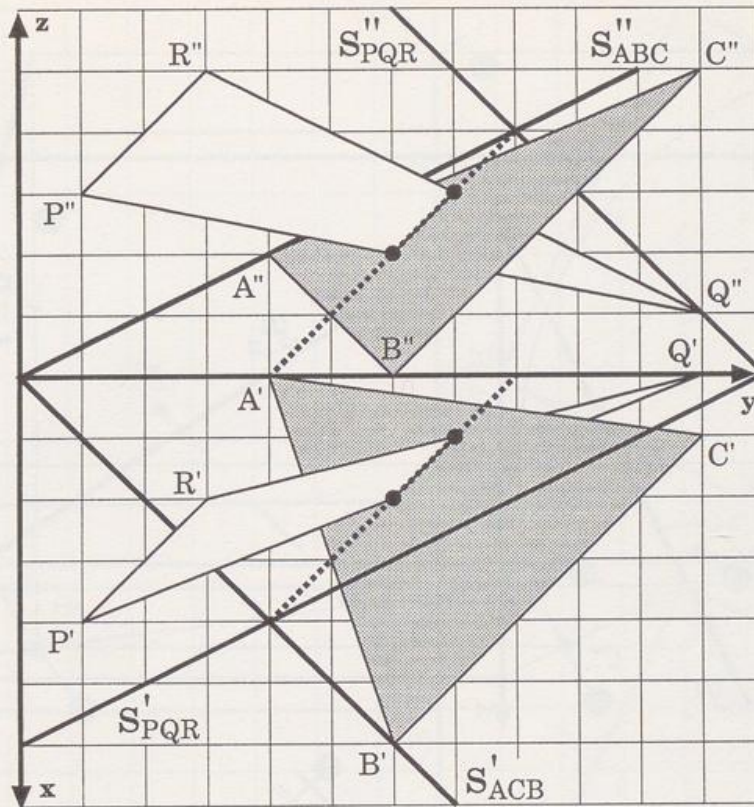


a)





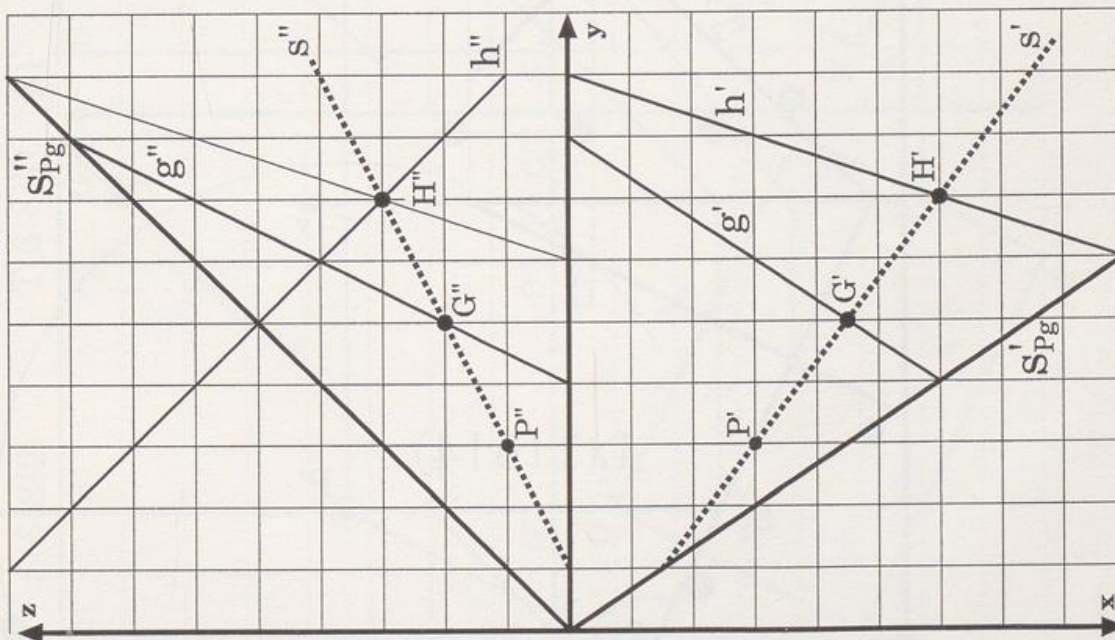
52/7.



Schnittstrecke $[(2|6|2) (1|7|3)]$

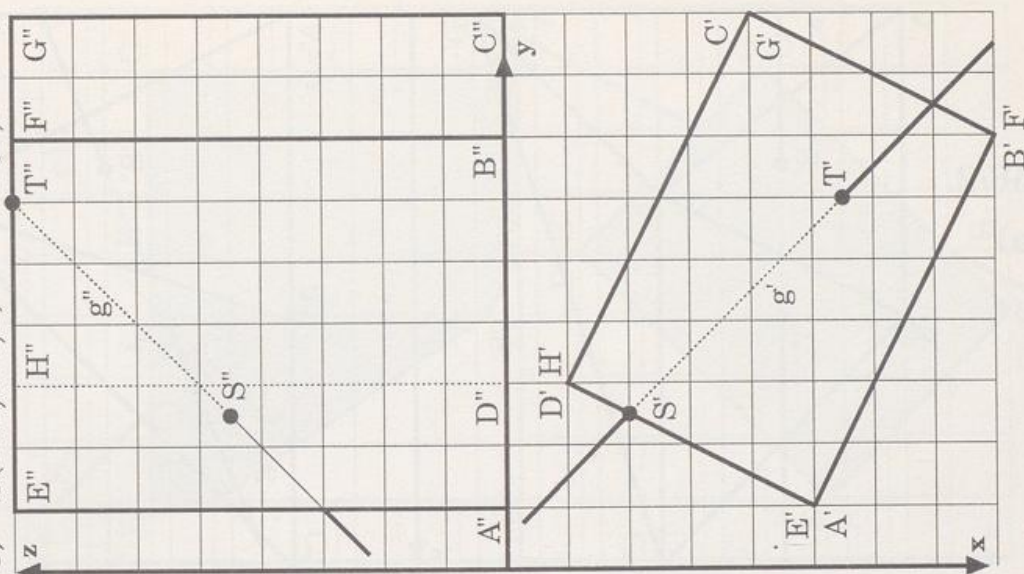
52/8.

Schneide h mit der Ebene, die P und g enthält:
 $H(6|7|3)$. $PH=s$ schneidet g in $G(4,5|5|2)$.

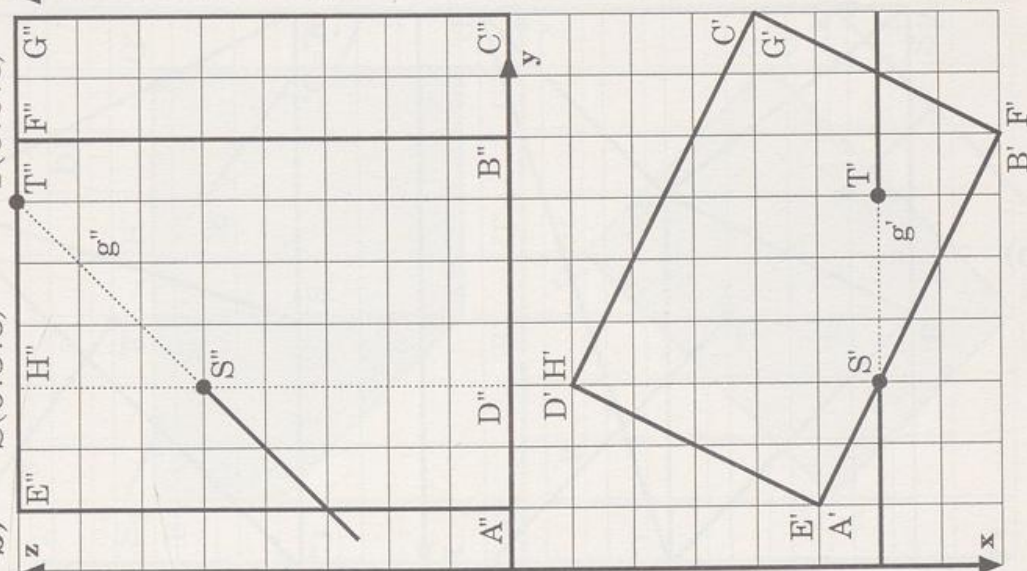


55/1.
c)

c)

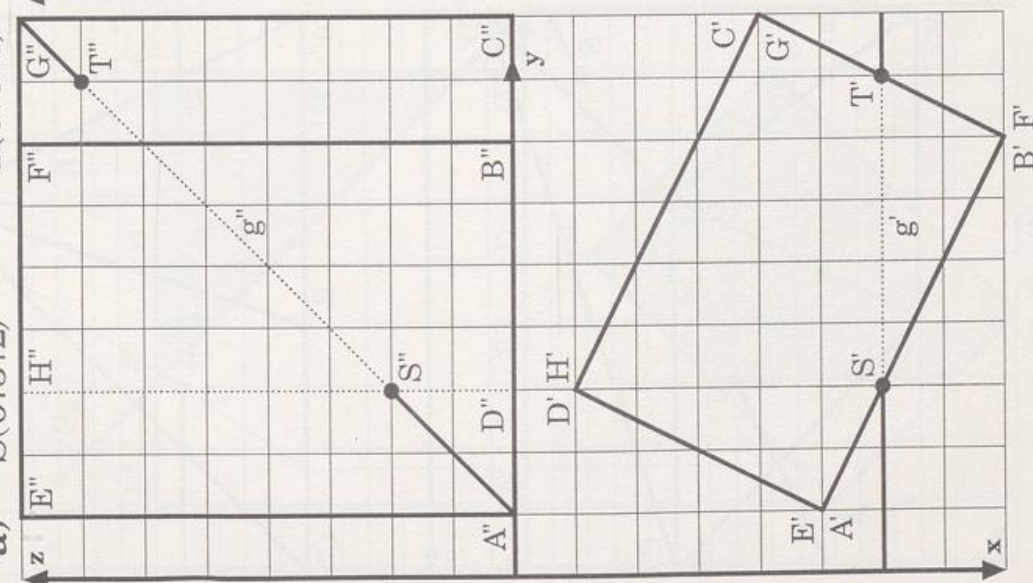
 $T(5,5|6|8)$ c) $S(2|2,5|4,5)$ 

b)

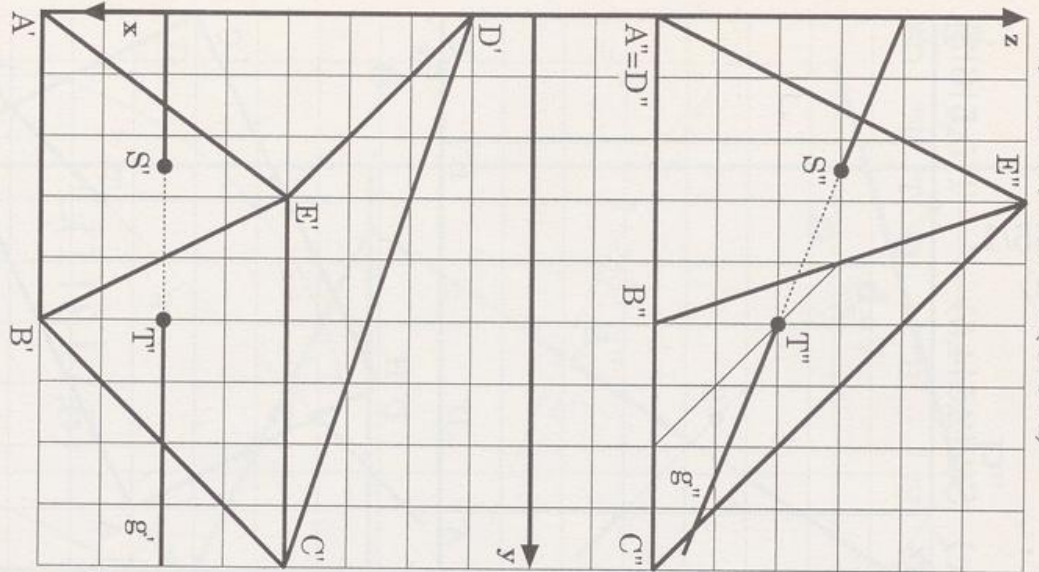
 $T(6|6|8)$ b) $S(6|3|5)$ 

a)

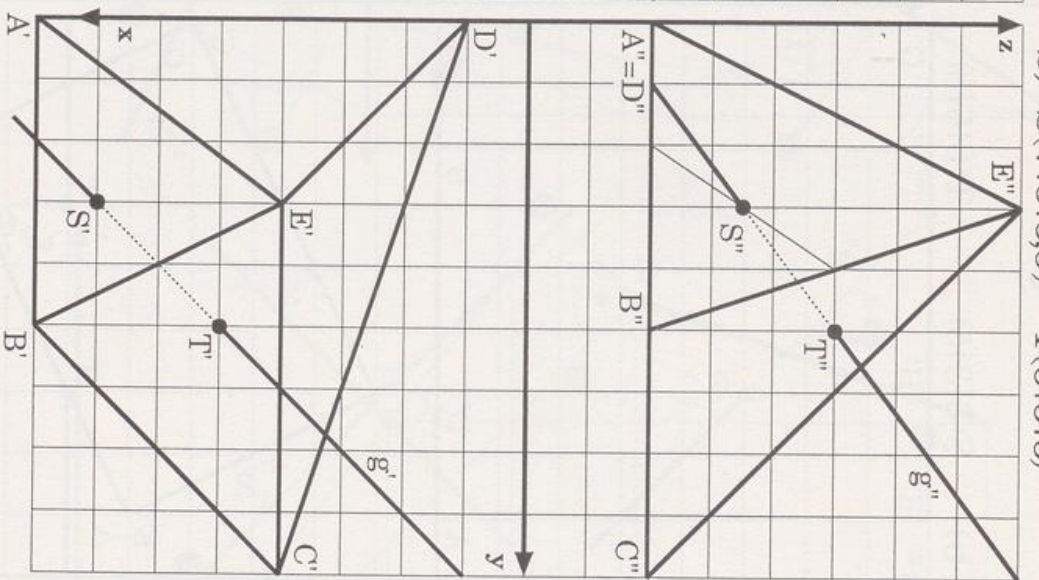
T(6|8|7)

a) $S(6|3|2)$ 

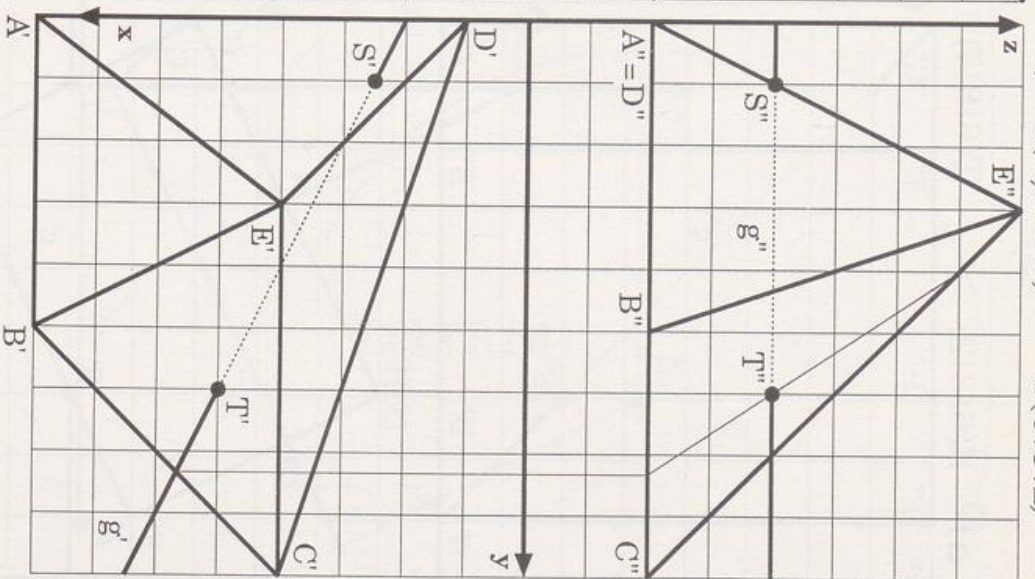
a) $S(6|2,5|5)$ $T(6|5|4)$



b) $S(7|3|3,5)$ $T(5|5|5)$



c) $S(2,5|1|2)$ $T(6|5|2)$

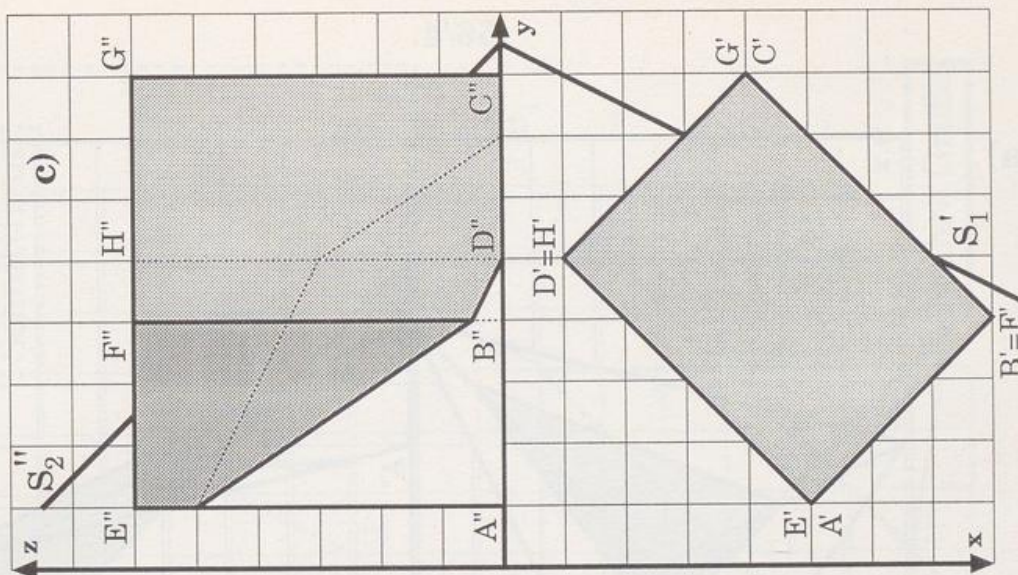


56/2.
a)

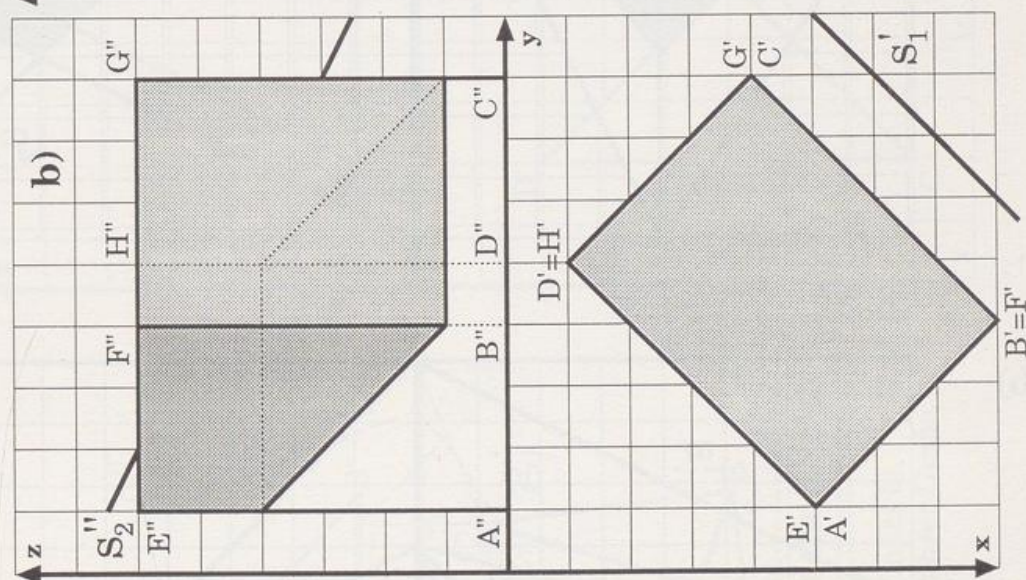
b)

c)

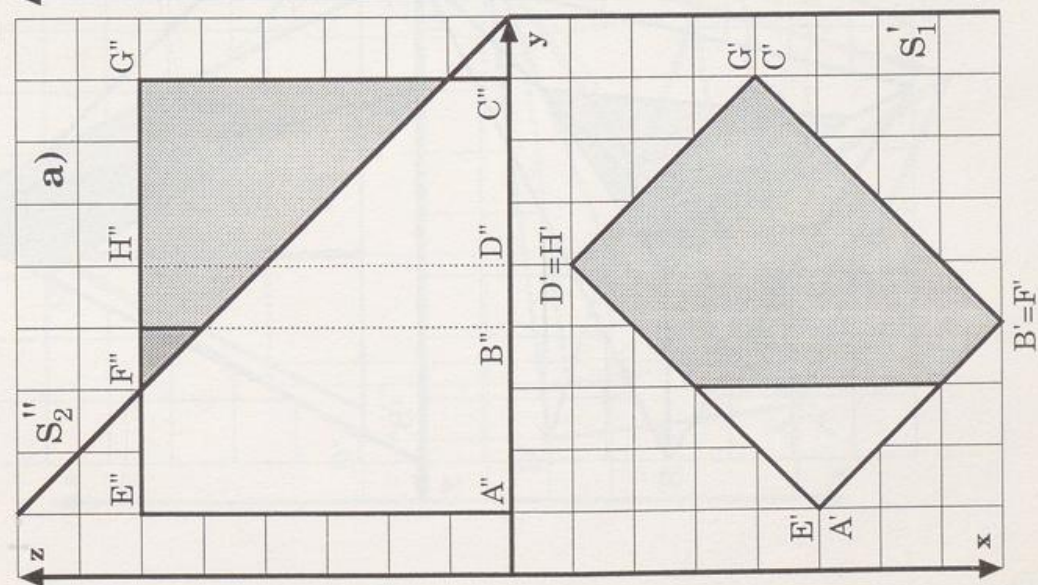
c)



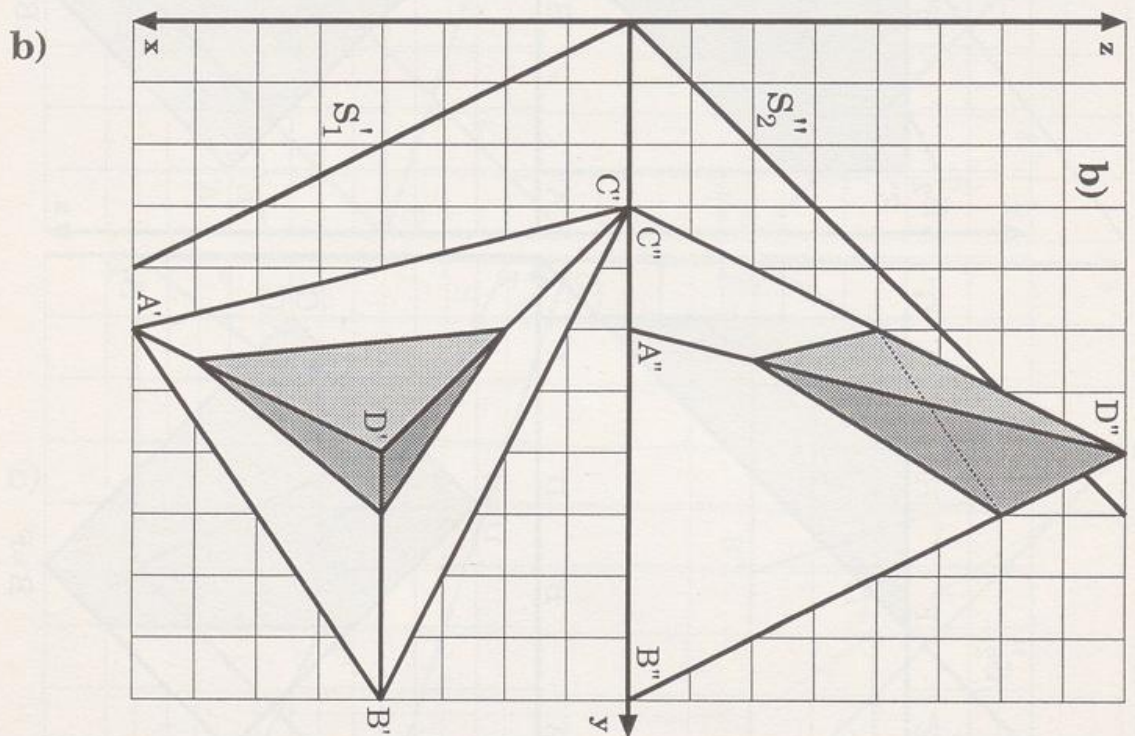
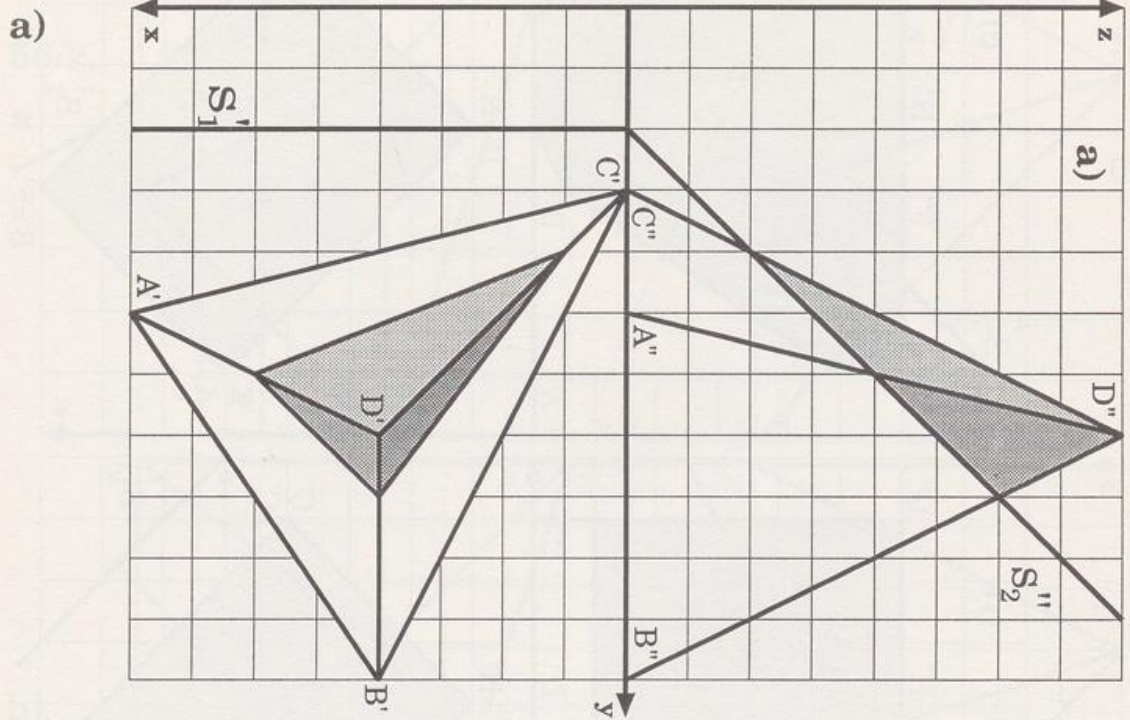
b)



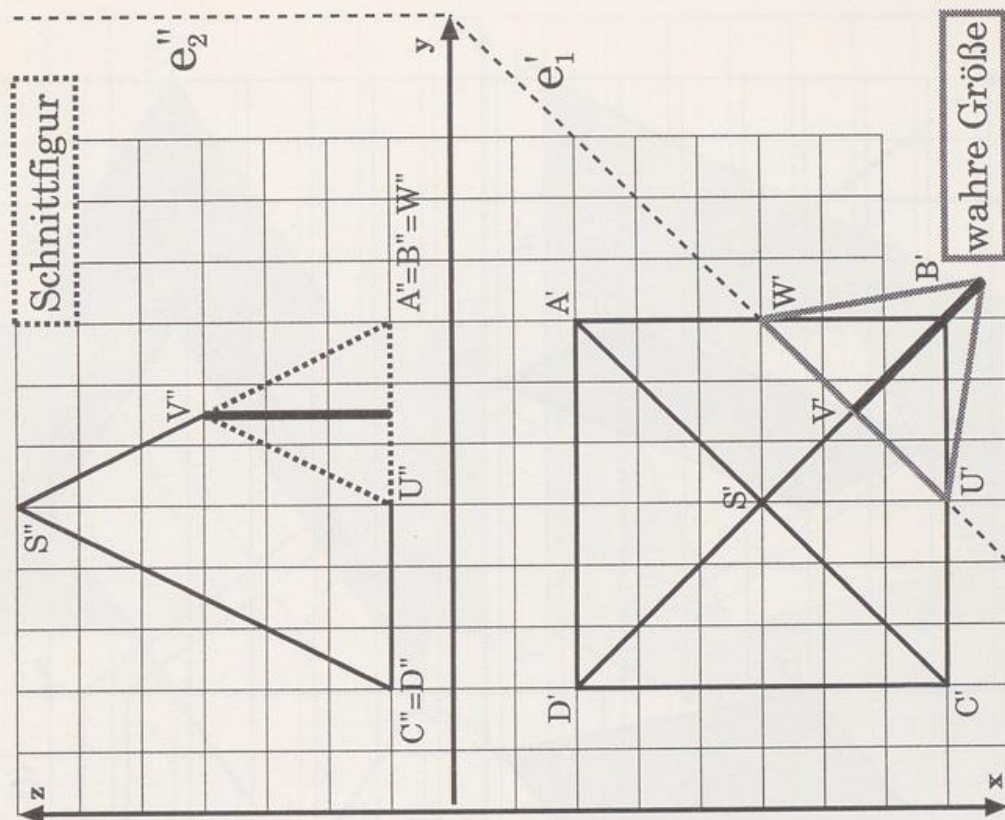
a)



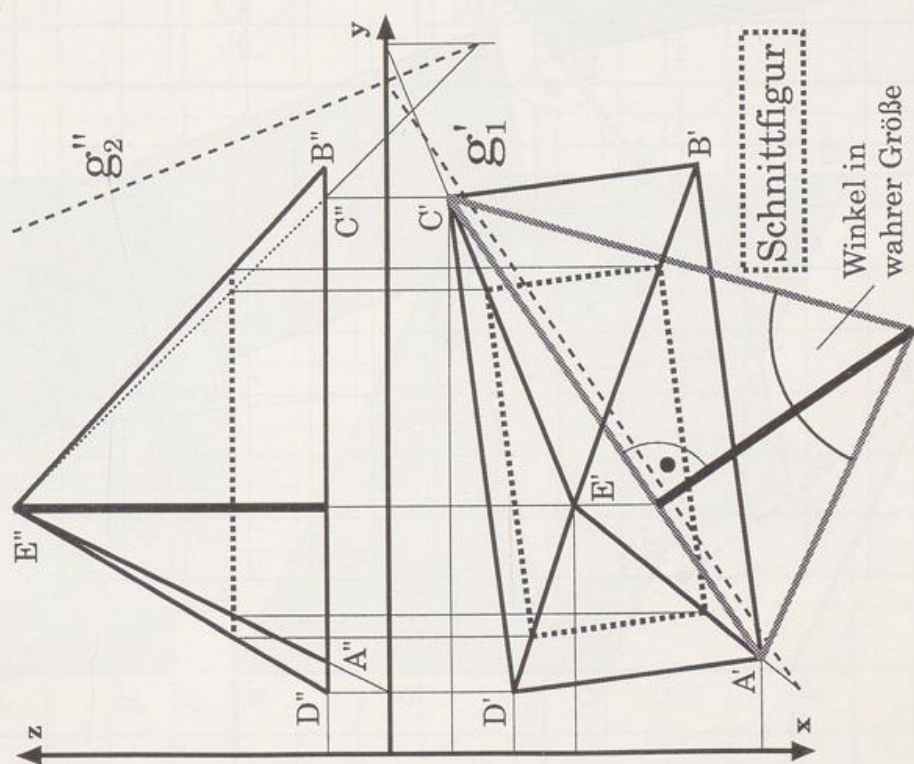
56/4.

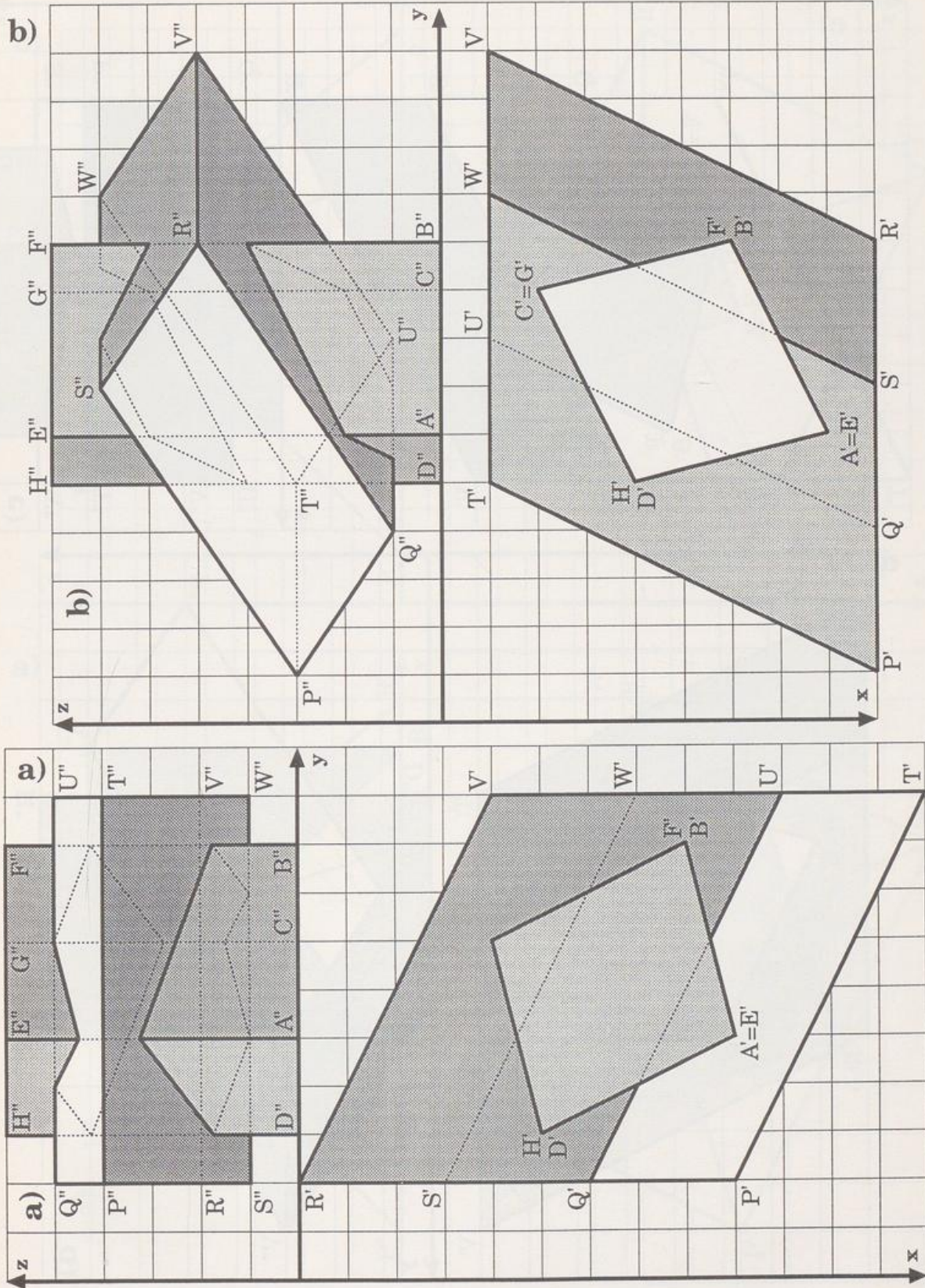


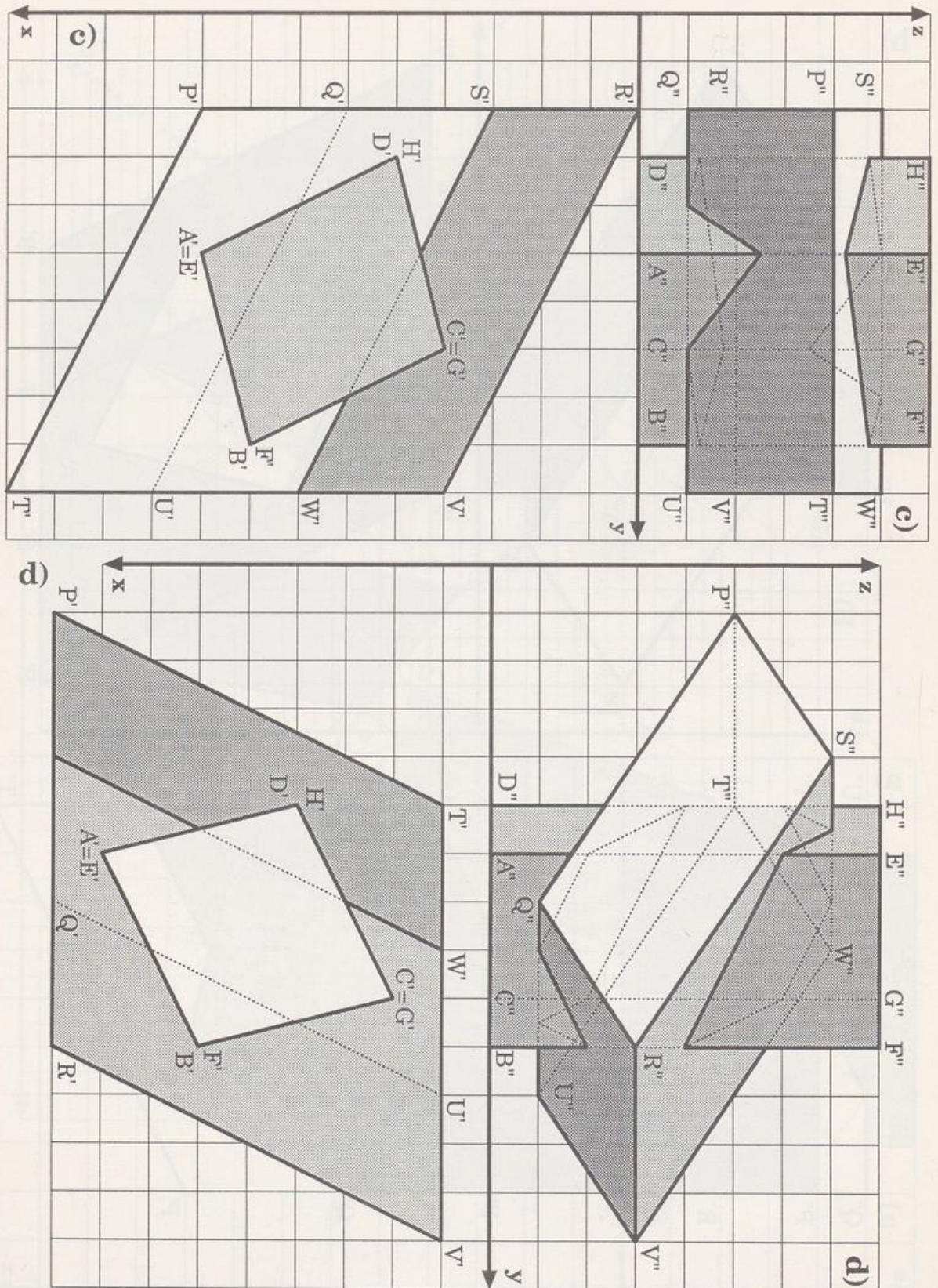
56/5.



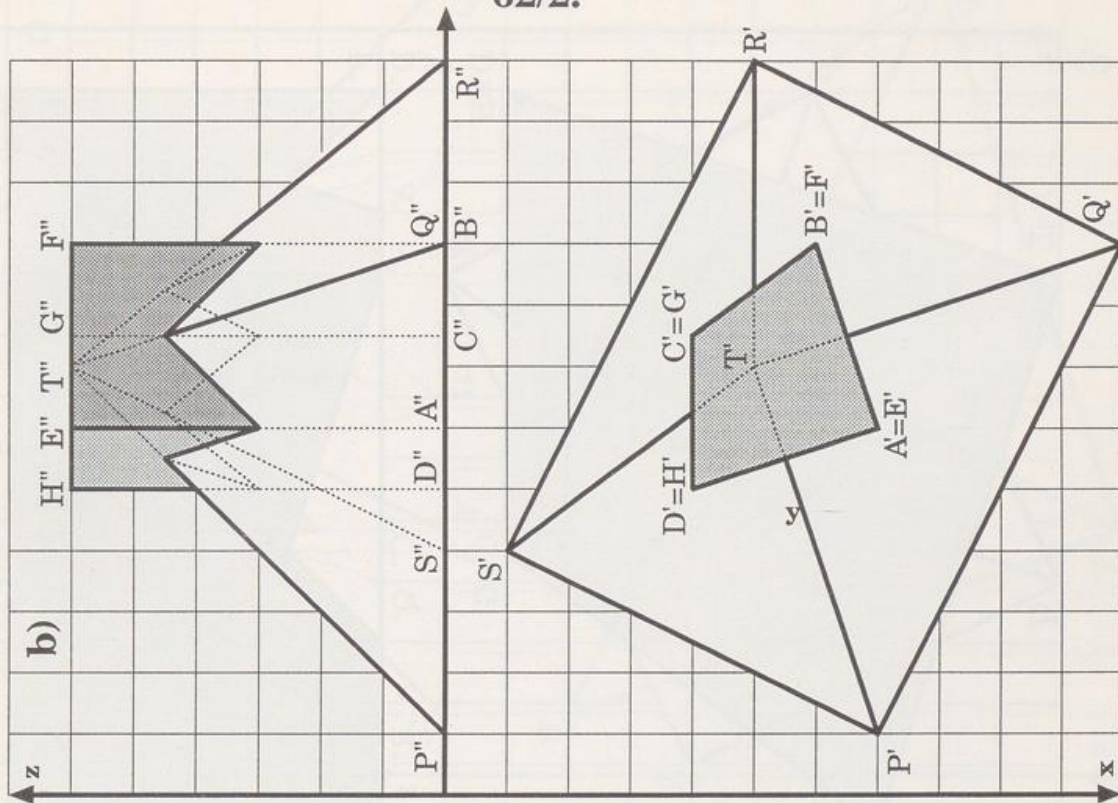
57/6.



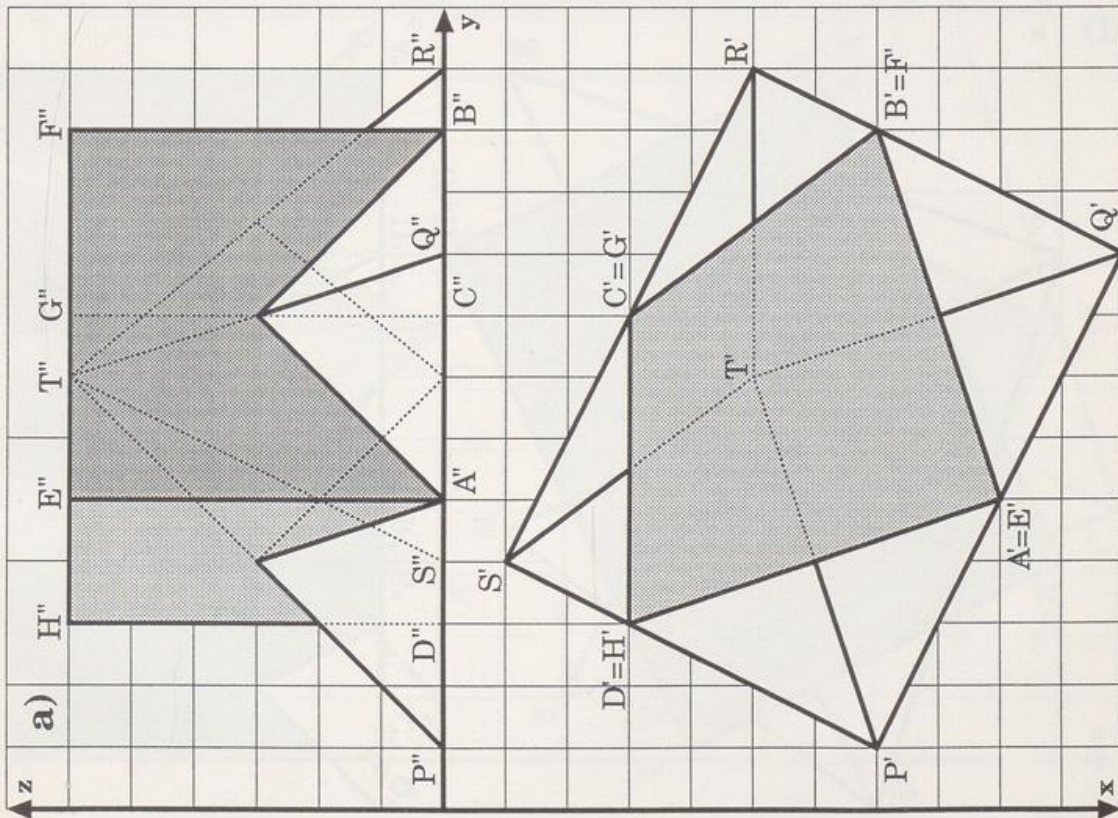


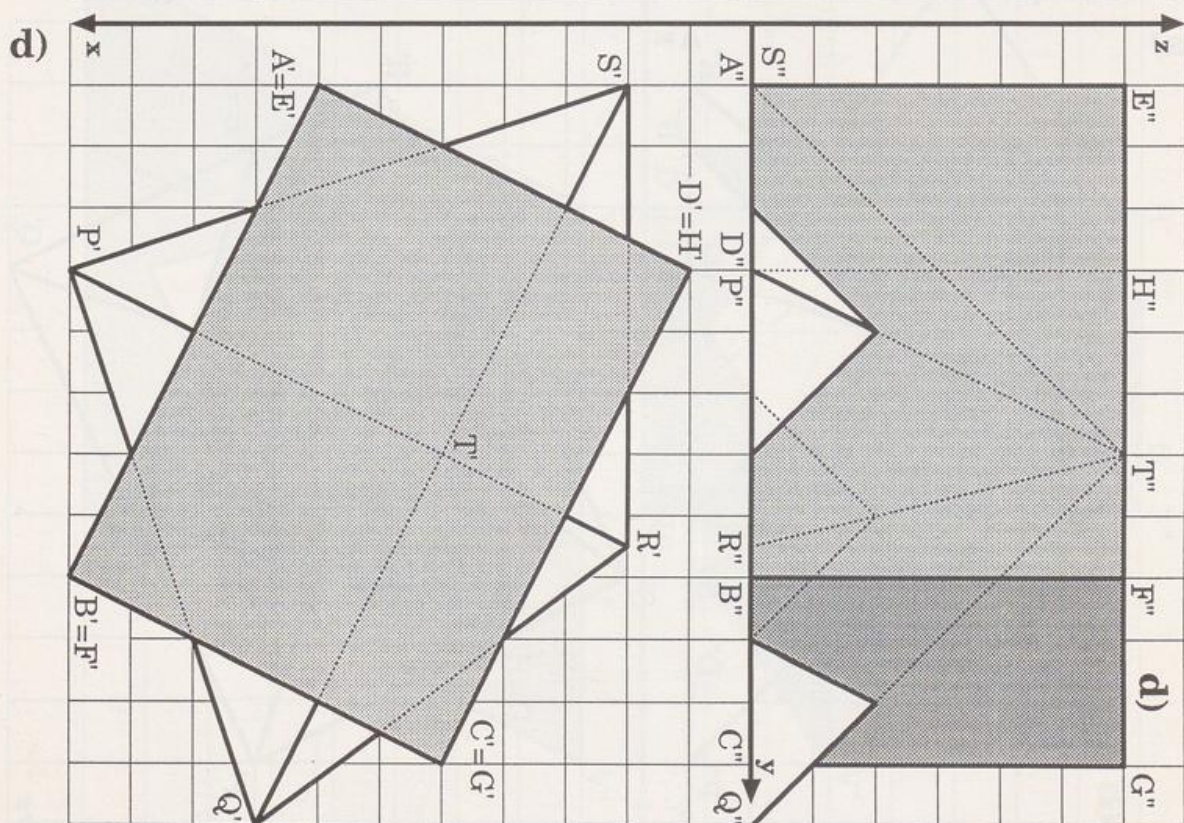
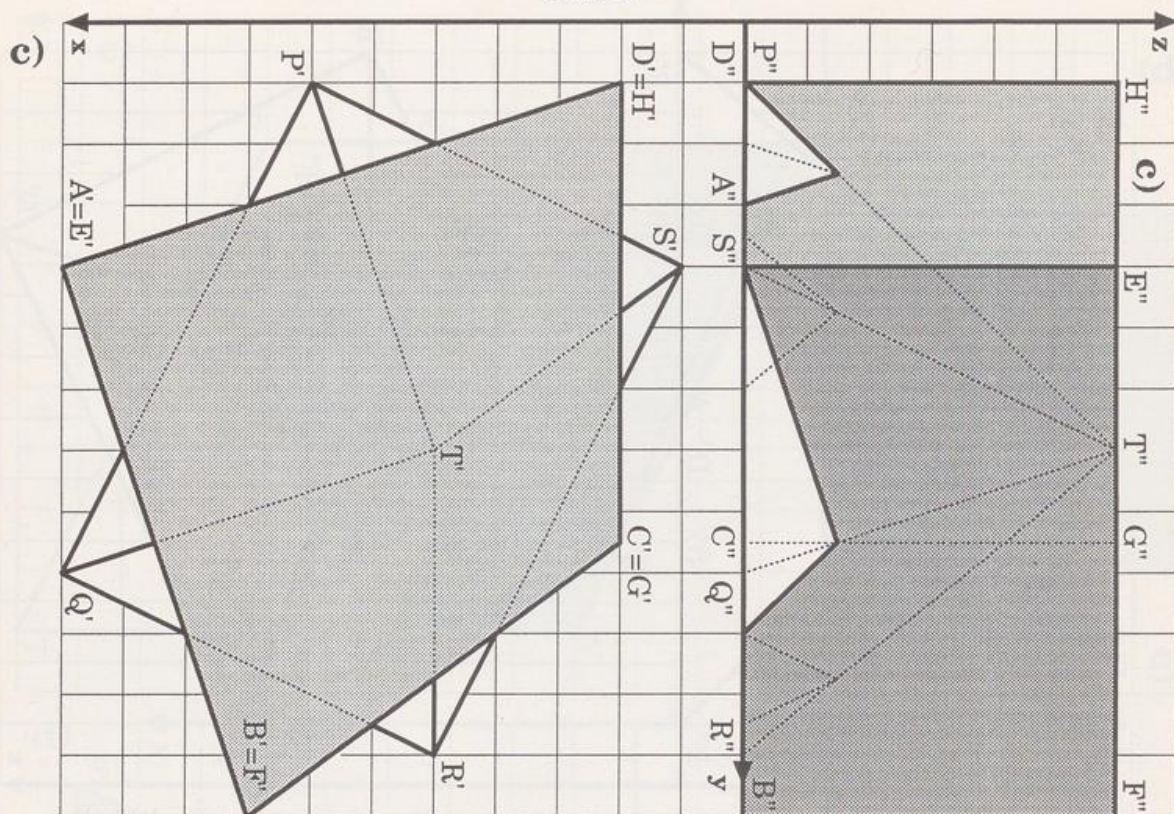


b)

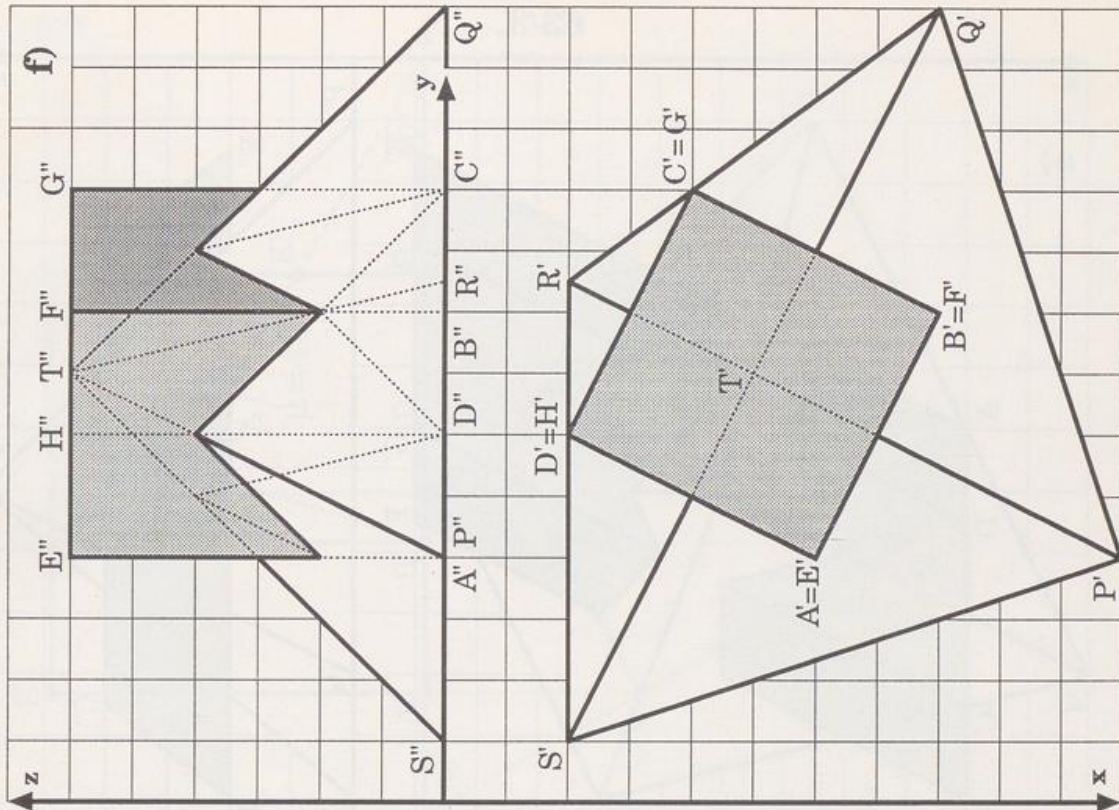


a)

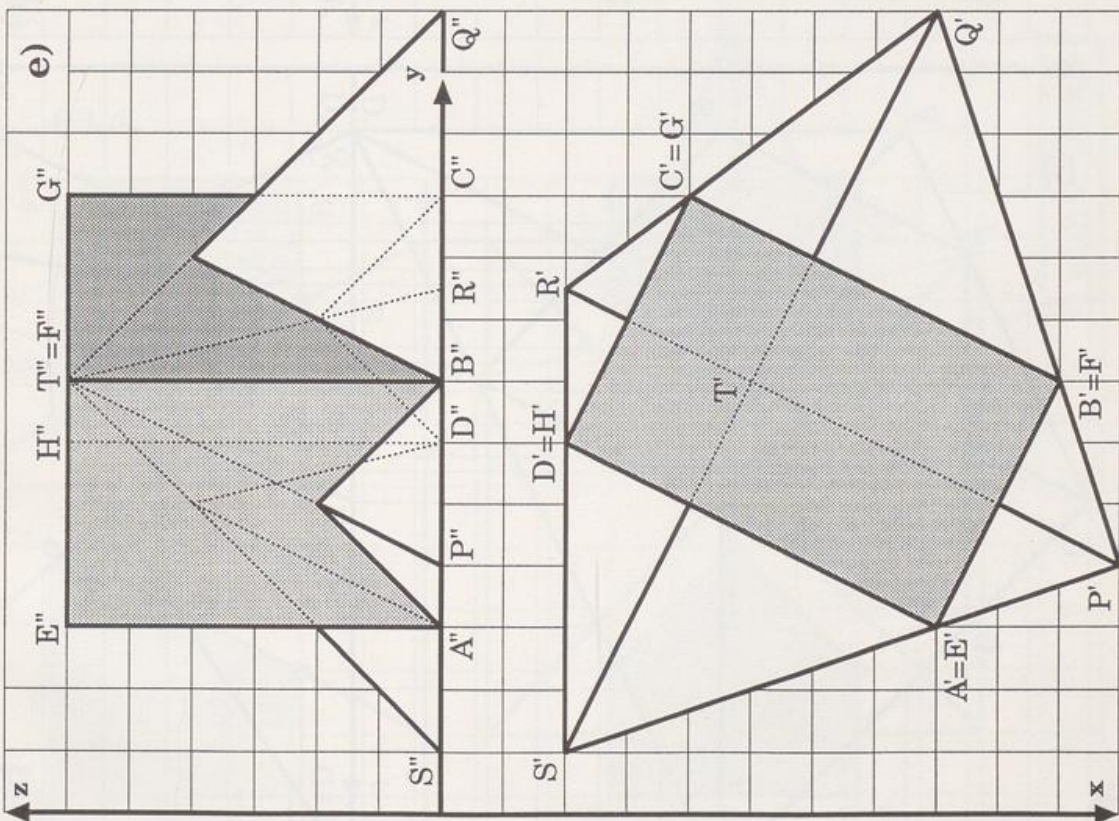


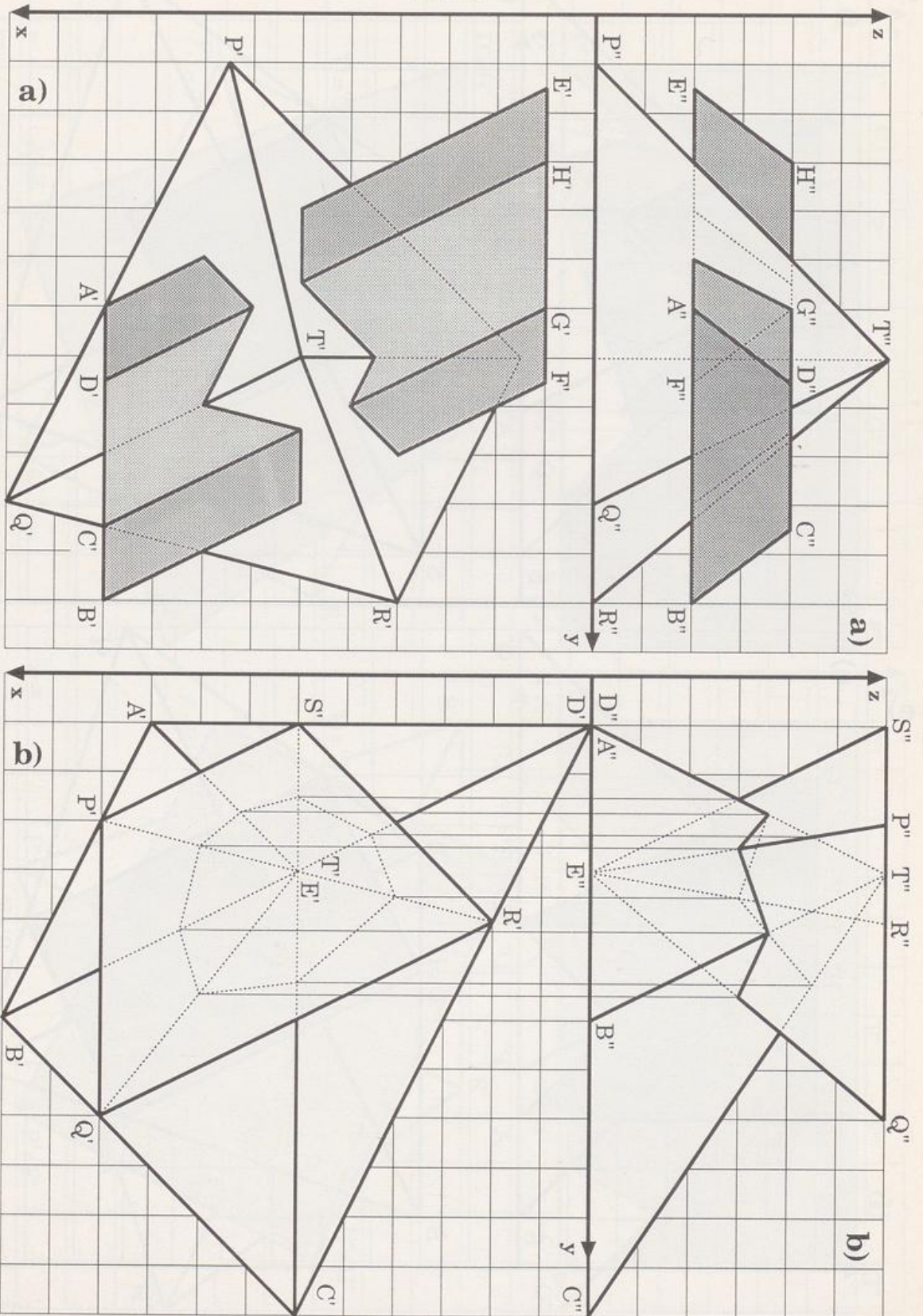


f)

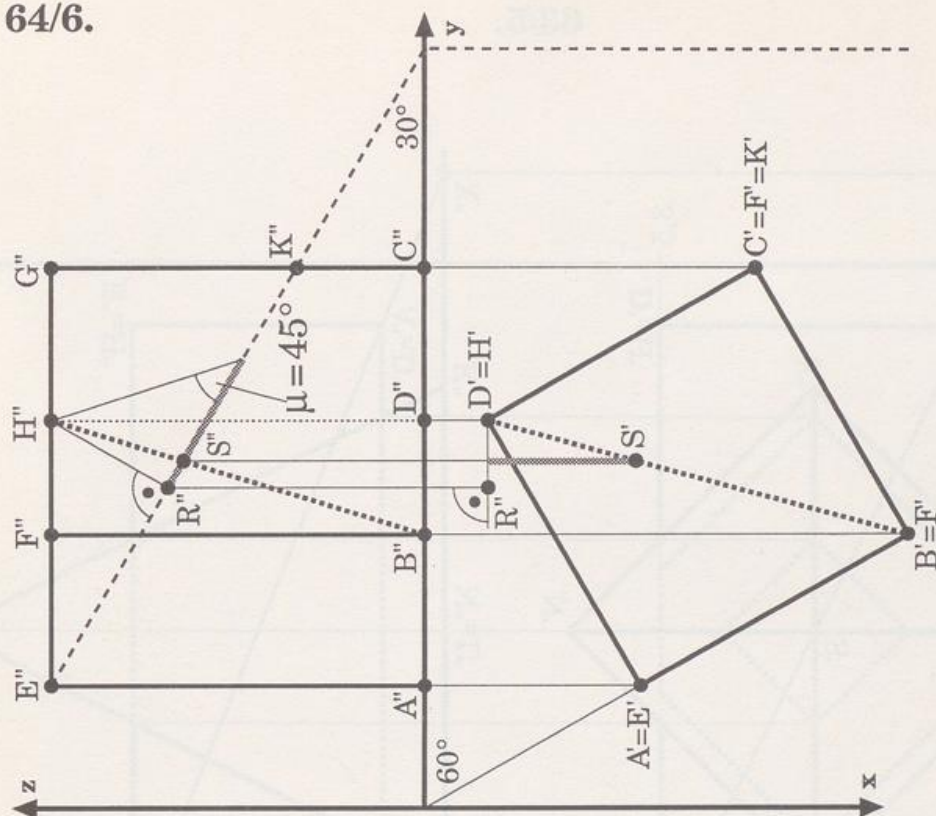


e)

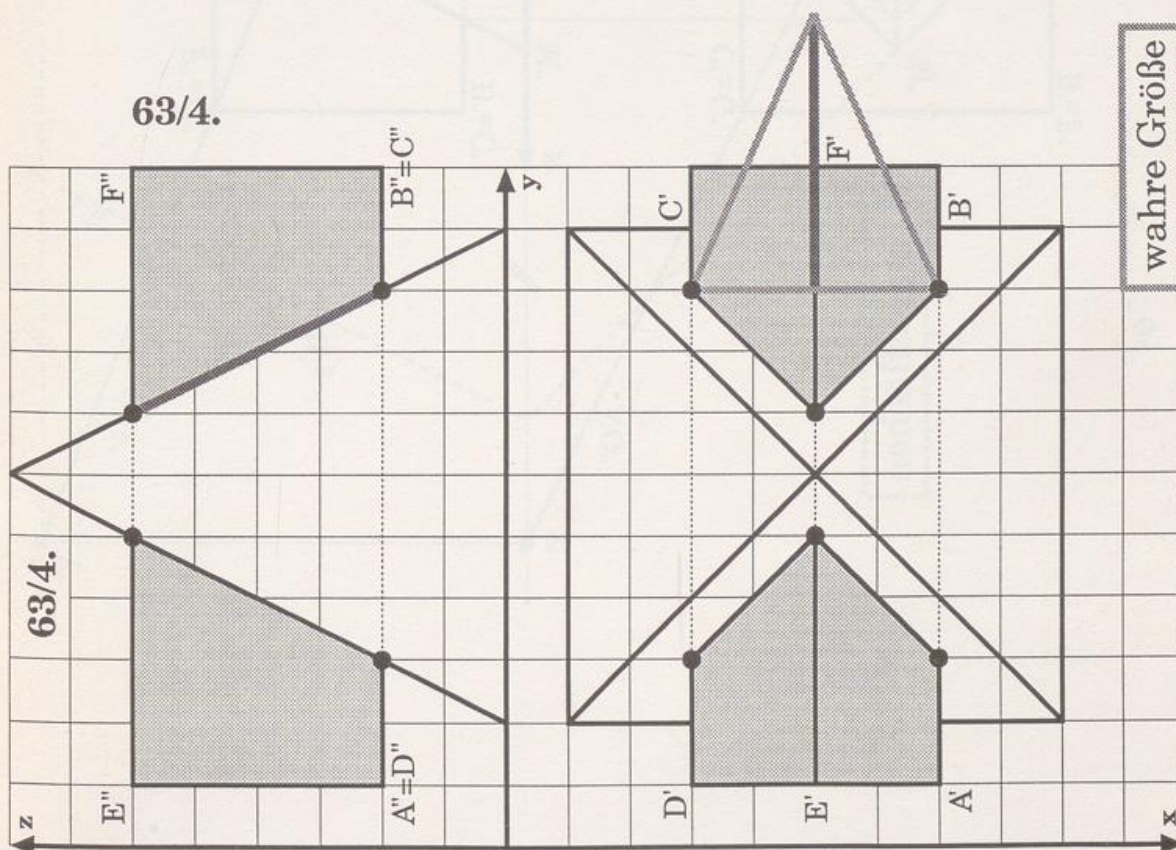




64/6.



63/4.



wahre Größe

