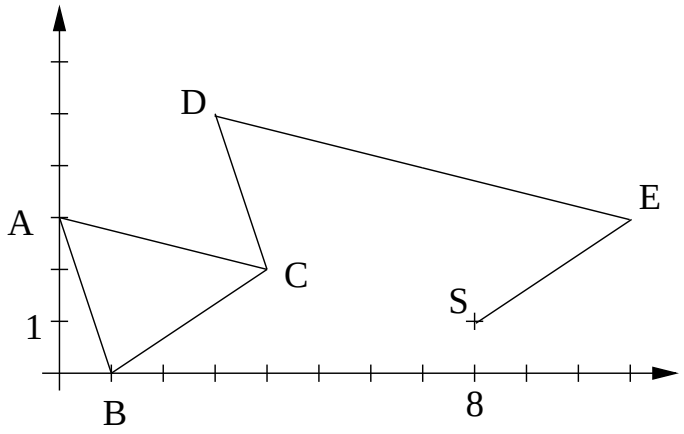
Gymnasium Pegnitz
Grundwissen Js. 7 20. Juli 2007

# Winkel (Lösungen)

07rr053 1. S(8|1)

$\overline{AS} = 8{,}2\,\text{cm}$

$8{,}2\,\text{cm} \cdot 1500 = 123\,\text{m}$




07rr039 2. (a) $k(B; r = \overline{BA}) \cap [BC] = \{E\}$

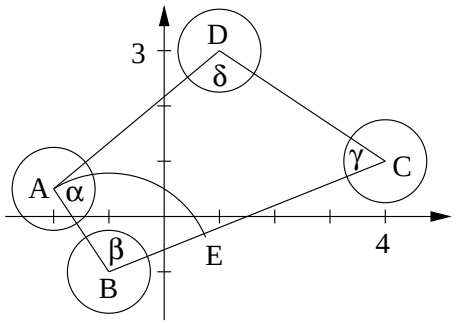
$\overline{BC} - \overline{AB} = \overline{EC} = 3{,}6\,\text{cm}$

(b) $\alpha = 96°$, $\beta = 102°$

$\gamma = 55{,}5°$, $\delta = 106{,}5°$

$\alpha + \beta + \gamma + \delta = 360°$

(c) $(360° - \beta) + (360° - \gamma) + (360° - \delta) + (360° - \alpha) = 3 \cdot 360° = 1080°$




07rr040 3. (a) $120°$, $144°$, $150°$, $247{,}5°$, $187{,}2°$

(b) $15°$, $22{,}5°$, $37{,}5°$, $33{,}75°$, $\left(38\frac{4}{7}\right)°$

07rr041 4. (a) $30°42''$; $55°39'36''$; $240°5'6''$; $22'12''$; $3{,}6''$; $9''$; $4°3'0{,}72''$; $5'$

(b) $35{,}3°$; $200{,}4°$; $0{,}007\overline{3}°$; $0{,}0002\overline{7}°$; $18{,}305°$; $0{,}02°$; $12{,}015°$; $1{,}01694\overline{4}°$

07rr043 5. (a) $303°$, $94{,}35° = 94°21'$, $202°59'13'' = 202{,}98694\overline{4}°$

$346°21'45{,}7'' = 346{,}362694\overline{4}°$

(b) $146°44'32''$, $81°28'55''$, $194°45'23''$

07rr046 6. (a) $17°23'15'' = \left(17 + \frac{23}{60} + \frac{15}{3600}\right)° = \left(17\frac{31}{80}\right)° = 17{,}3875°$

(b) $50{,}101° = 50° + 0{,}101 \cdot 60' = 50° + 6{,}06' = 50°6' + 0{,}06 \cdot 60'' = 50°6'3{,}6''$

07rr042 7. $0{,}0072'' = \frac{0{,}0072°}{3600} = \frac{1°}{500\,000} = 0{,}000\,002°$

07sn005 8. (a) $12{,}35°$ (b) $35°16'12''$

07sn009 9. (a) $27{,}9°$ (b) $14°21'$

07rr044 10. (a)

| | 1 h | 1 min | 1 s |
|---|---|---|---|
| großer Zeiger | $360^\circ$ | $6^\circ$ | $0{,}1^\circ = 6'$ |
| kleier Zeiger | $30^\circ$ | $0{,}5^\circ = 30'$ | $0{,}5' = 30''$ |

(b)
13:00 : $30^\circ$, 04:00 : $120^\circ$
16:15 : $120^\circ + 15 \cdot 0{,}5^\circ - 90^\circ = 37{,}5^\circ$
08:45 : $270^\circ - (8 \cdot 30^\circ + 45 \cdot 0{,}5^\circ) = 7{,}5^\circ$
01:42 : $\underbrace{42 \cdot 6^\circ}_{252^\circ} - \underbrace{(30^\circ + 42 \cdot 0{,}5^\circ)}_{51^\circ} = 201^\circ, \quad 360^\circ - 201^\circ = 159^\circ$
00:00:09 : $9 \cdot 6' - 9 \cdot 0{,}5' = 49{,}5' = 0{,}825^\circ$
07:42:51 : $\underbrace{42 \cdot 6^\circ + 51 \cdot 0{,}1^\circ}_{257{,}1^\circ} - \underbrace{(7 \cdot 30^\circ + 42 \cdot 0{,}5^\circ + 51 \cdot 0{,}5')}_{231{,}425^\circ} = \underbrace{25^\circ 40' 30''}_{25{,}675^\circ}$
03:47:05 : $\underbrace{47 \cdot 6^\circ + 5 \cdot 0{,}1^\circ}_{282^\circ 30'} - \underbrace{(3 \cdot 30^\circ + 47 \cdot 0{,}5^\circ + 5 \cdot 0{,}5')}_{113^\circ 32' 30''} = \underbrace{168^\circ 57' 30''}_{168{,}958\overline{3}^\circ}$

07sn006 11. (a) $95^\circ$ (b) $130^\circ$

07ha016 12. $\alpha = 31{,}1^\circ$, $\beta = 39{,}4^\circ$, $\gamma = 36{,}6^\circ$, $\delta = 146{,}5^\circ$, $\delta - \gamma = 110{,}0^\circ$

07cm012 13. (a) Halbierung des Winkels $\alpha = 130^\circ$ liefert $\alpha' = 65^\circ$.
(b) Halbierung des Winkels $\alpha = 110^\circ$ liefert $\alpha' = 55^\circ$.

07cm013 14. (a) Den Winkel $\beta = 40^\circ$ halbieren und an $\gamma = 75^\circ$ antragen.
(b) Den Winkel $\beta = 60^\circ$ halbieren und an $\gamma = 85^\circ$ antragen.

07cm026 15. (a) $\alpha = \sphericalangle\mathrm{DEF} + \sphericalangle\mathrm{GHL}$ (b) $\beta = \sphericalangle\mathrm{GHL} - 2\,\sphericalangle\mathrm{DEF}$

07cm027 16. (a) $\alpha = \sphericalangle\mathrm{FGH} + \sphericalangle\mathrm{ABC}$ (b) $\beta = \sphericalangle\mathrm{ABC} - 2\,\sphericalangle\mathrm{FGH}$

07sn027 17. (a) $75^\circ = 90^\circ - 60^\circ : 4$
(b) $52{,}5^\circ = 90^\circ : 4 + 60^\circ : 2$

07ha012 18. $60^\circ + \frac{1}{2} \cdot 45^\circ$

07rr074 19. $\alpha = 112{,}5^\circ = 90^\circ + \dfrac{90^\circ}{4}$, $\beta = 225^\circ = 180^\circ + \dfrac{90^\circ}{2}$
$\gamma = 78{,}75^\circ = 90^\circ - \dfrac{90^\circ}{8}$, $\delta = 292{,}5^\circ = 270^\circ + \dfrac{90^\circ}{4}$