Gymnasium Pegnitz
Wiederholung JS 8 Juli 2007

Strahlensatz: Berechnungen (Lösungen)

1. (a) $x = \dfrac{10}{3}\,, \quad y = 4,5\,, \quad z = \dfrac{20}{3}$ (b) $x = 7,5\,, \quad y = 2\,, \quad z = 4,5$
2. $x = 8$, $y = 12$
3. (a) $x = 2,4\,, \quad y = \dfrac{10}{3}$ (b) $x = 6\,, \quad y = 12$
4. $x = \dfrac{b\,c}{a-c}$ $y = \dfrac{d\,c}{a-c}$
5. (a) $\dfrac{e}{b} = \dfrac{d}{c} = \dfrac{f}{a} = \dfrac{e+f}{b+a}$

   (b) $\dfrac{x}{y} = \dfrac{f+e}{e} = \dfrac{a+b}{b}$

   (c) $\dfrac{f+e}{f} = \dfrac{b+a}{a}$
6. (a): $\overline{BC} = 4,2\,\text{cm}$, $\overline{AD} = 2,8\,\text{cm}$ (b): $A_{ABCD} : A_{DCS} = 119 : 25$
7. $\overline{DT} = 4,5\,\text{cm}$. Die Diagonalen teilen sich im Verhältnis $5:3$, daraus ergibt sich $\overline{AC} = 4\,\text{cm}$.
   $\overline{AE} = \frac{5}{8} \cdot 3\,\text{cm}$.
8. $A = \dfrac{c^2\,d}{2\,(a-c)} = 8\,\text{cm}^2$
9. (a) $x = 4,9\,\text{cm}$ (b) $y = 3,9\,\text{cm}$ (c) $z = 5,25\,\text{cm}$
10. $\overline{DE} = 7,5\,\text{cm}$, $\overline{CE} : \overline{CB} = \overline{DE} : \overline{AB} = \overline{DC} : \overline{AC} = \frac{5}{7}$
11. $\overline{AF} = 4,2\,\text{cm}$; $\overline{BF} \approx 5,0\,\text{cm}$; $\overline{CD} \approx 2,7\,\text{cm}$; $\overline{AC} \approx 7,0\,\text{cm}$
12. $\overline{PR} = 9\,cm$; $\overline{AQ} = 2\,cm$
13. (a): $35\,cm$ (b): $-2,5$ (c): $10\,cm$
14. (b): $7\,cm$ (c): $\overline{CE} = 12\,cm$ (e): $\overline{HC} : \overline{HE} = 7:3$
15. (c): $\overline{AS} : \overline{SE} = 11 : 10$
    (d): $\overline{SC} : \overline{CE} = 11 : 21$
16. (a): $\overline{CG} = 1,75\,cm$
    (c): $\overline{HD} = 1\,cm$
    (d): nein, da $\frac{\overline{KC}}{\overline{BC}} = \frac{5}{4} \neq \frac{1}{1} = \frac{\overline{AC}}{\overline{CT}}$!

17. $x = 10,4\,\text{cm}$, $y = 9,9\,\text{cm}$, $z = 8,4\,\text{cm}$

18. $h = 1,20\text{m}$, der Abstand d beeinflußt h nicht.

19. (a) $\sphericalangle AFB = \sphericalangle EFG \implies \Delta AFB \sim \Delta EFG$, $d + e = 12,5\,\text{cm}$

    (b) Alle Angaben in cm: $d = 8$; $e = 4,5$; $x = 6$; $y = 3,375$; $h = 3,6$; $u + v = 5,625$; $f + g = 7,5$; $g = 1\frac{67}{68}$; $f = 5\frac{35}{68}$; $u = 1\frac{133}{272}$ und $v = 4\frac{37}{272}$