1.)

a)

Kompass = 360°, Himmelsrichtungen = 16

360° ÷ 16 = 22, 5°

NO→ONO = 1 = 22, 5°

b)   1.1

AFC = cos (γ) = (15² km+ 16, 9 km - 29, 5² km) ÷ (2 · 15km · 16, 9km) [Kosinussatz]
AFC = 135, 2°

1.2

CFA = 135, 2° ≅ 135° = SO

c)

AFC = 135°, FG ≅ OSO = 112, 5°

135, 2° - 112, 5° = 22, 7°

180° - 63° - 22, 7° = 94, 3°

a = 15 · sin (22, 7°) ÷ sin (63°) [Sinussatz]
a = 6, 5 km

b = 15 · sin (94°) ÷ sin (63°) [Sinussatz]
b = 16, 8 km

16, 8km + 6,5 km = 23, 3 km

a)

Planfigur:

4,5 cm

5,5 cm

b)

Planfigur:

6,8 cm   6,8 cm

h

30°

b
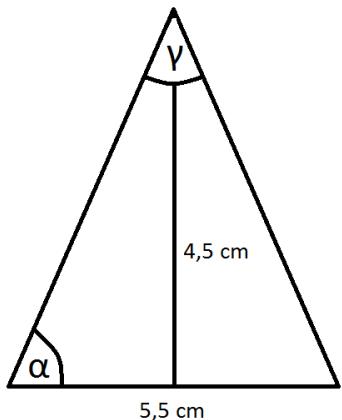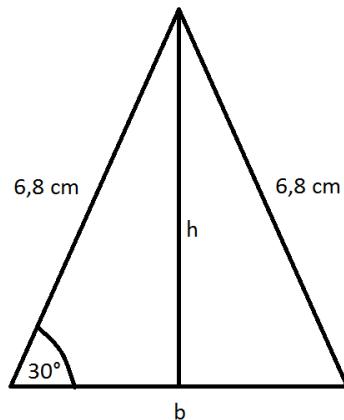
2.)

a)

Rechnung:

5, 5 cm ÷ 2 = 2, 75 cm

$\sqrt{}$ (4, 5 cm)² + (2, 75)² = 5,3 cm

cos (α) = 2, 75 cm ÷ 5,3 cm
cos (α) = 0,519
cos -1 (α) = 58, 7°
cos (γ) = 4,5 cm ÷ 5,5 cm
cos (γ) = 0,818
cos -1 (γ) = 35,1°
35, 1° · 2 = 70, 2°

u = 2 · 5, 3 + 5, 5
u = 16, 1 cm²
A = 0, 5 · 5, 5 · 4, 5
A = 12, 4 cm²

b)

cos (30°) = AK ÷ 6,8
AK = 6,8 cm · cos (30°)
AK = 5,9 cm
$\sqrt{}$(6, 8 cm)² - (5, 9 cm)² = 3,4cm

u = 2 · 6, 8 cm + 3, 4 cm
u = 17 cm

A = 0, 5 cm · 5, 9 cm · 3, 4 cm
A = 10 cm²

3.)

    d) $\cos(\alpha) = (9^2 + 7^2 - 11) \div (2 \cdot 9 \cdot 7)$ [Kosinussatz]

        $\cos(\alpha) = 0,071$

        $\cos-1(\alpha) = 85,9°$

    e)

        $\cos(\beta) = (2,3^2 + 4,5^2 - 3,4^2) \div (2 \cdot 2,3 \cdot 4,5)$ [Kosinussatz]

        $\cos(\beta) = 0,675$

        $\cos-1(\beta) = 47,5°$

4.)

    a)

        $2x - 21 = 4(6+5x)$

        $2x - 21 = (4 \cdot 5x + 4 \cdot 6)$

        $2x - 21 = 20x + 24$

        $18x-21 = 24$

        $-18x = 45$

        $x = -2,5$

        Probe: $2 \cdot -2,5 - 21 = (4,5 \cdot -2,5 + 4 \cdot 6)$

        $-26 = -26$

    b) $8,4 < 12x + 75$

        $-66,6 < 12x$

        $-5,55 < x$

    c)

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