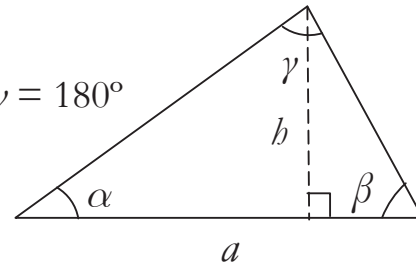




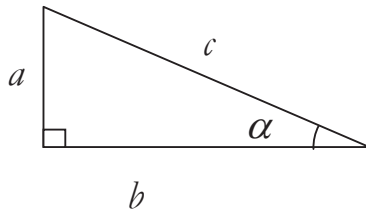
## Kolmio

Kolmion kulmien summa  $\alpha + \beta + \gamma = 180^\circ$

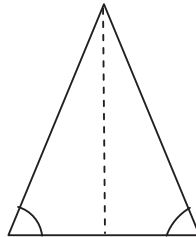
Kolmion pinta-ala  $A = \frac{a \cdot b}{2}$



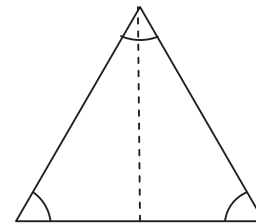
**Suorakulmainen kolmio**



**Tasakylkinen kolmio**



**Tasasivuinen kolmio**



**Pythagoraan lause**

$$a^2 + b^2 = c^2$$

**Trigonometriset funktiot**

$$\sin \alpha = \frac{a}{c}$$

$$\cos \alpha = \frac{b}{c}$$

$$\tan \alpha = \frac{a}{b}$$

- Kantakulmat ovat yhtä suuret.

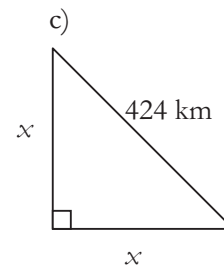
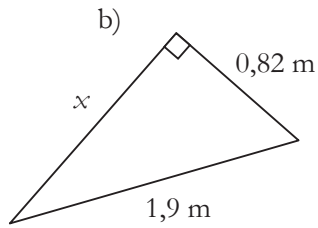
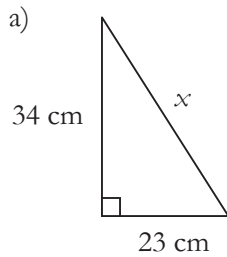
- Korkeusjana puolittaa kannan ja huippukulman.

- Kaikki kulmat ovat yhtä suuria eli  $60^\circ$ .

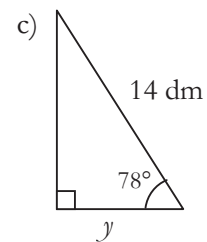
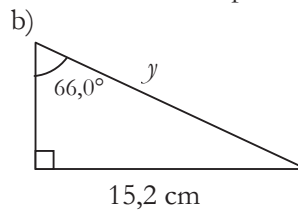
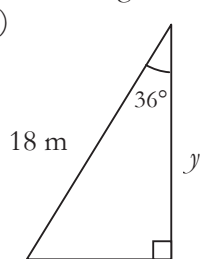
- Korkeusjana puolittaa kannan ja huippukulman.

### Tehtäviä suorakulmaisesta kolmiosta

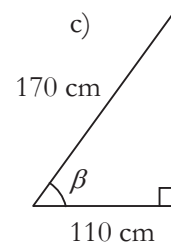
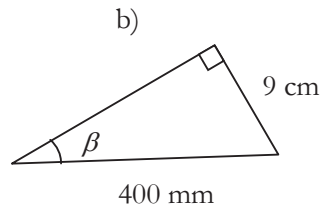
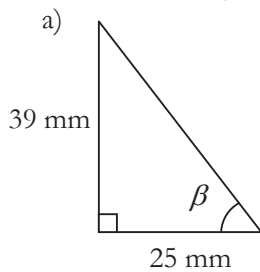
1. Laske sivun pituus  $x$ .



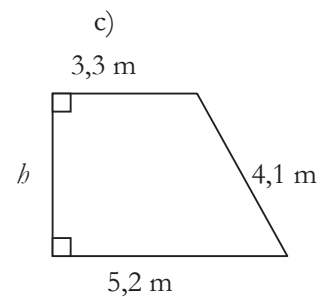
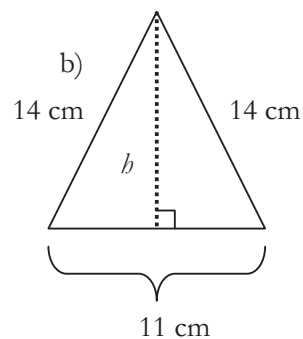
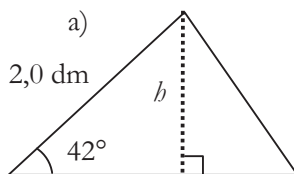
2. Ratkaise trigonometrinen funktioiden avulla sivun pituus  $y$ .



3. Ratkaise kulma  $\beta$  asteen tarkkuudella.



4. Määritä kuvion korkeus  $b$ .

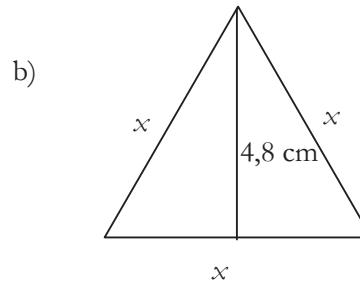
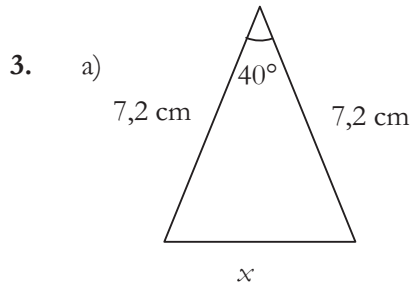
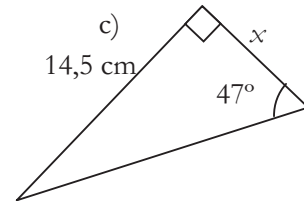
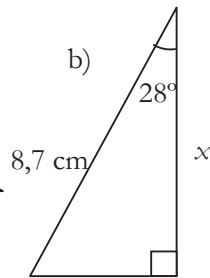
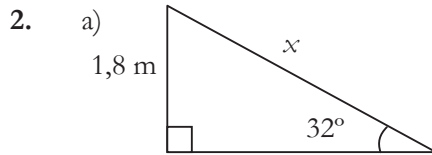
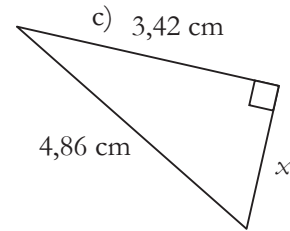
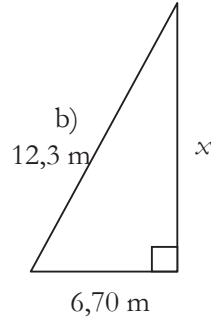
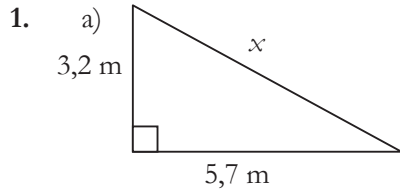


### Vastaukset

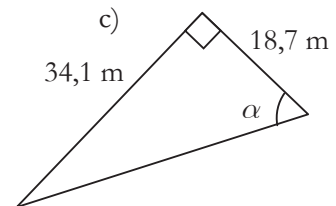
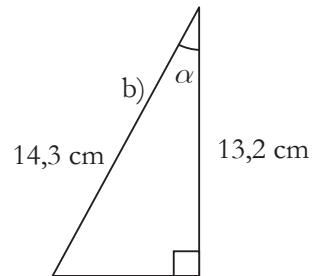
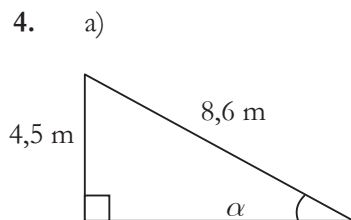
- |    |               |               |               |
|----|---------------|---------------|---------------|
| 1. | a) 41 cm      | b) 1,7 m      | c) 300 km     |
| 2. | a) 15 m       | b) 16,6 cm    | c) 2,9 dm     |
| 3. | a) $57^\circ$ | b) $13^\circ$ | c) $50^\circ$ |
| 4. | a) 1,3 dm     | b) 13 cm      | c) 3,6 m      |

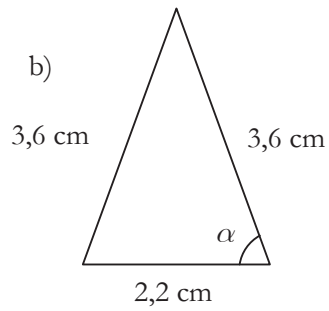
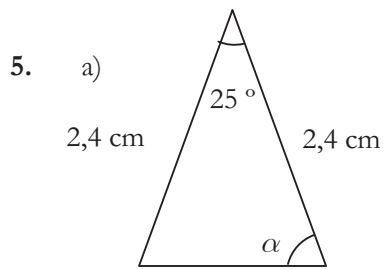
**Tehtäviä kolmiosta**

Laske kolmion sivun pituus  $x$ .

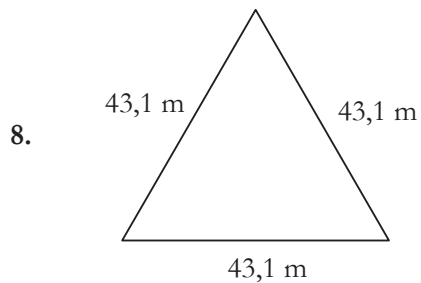
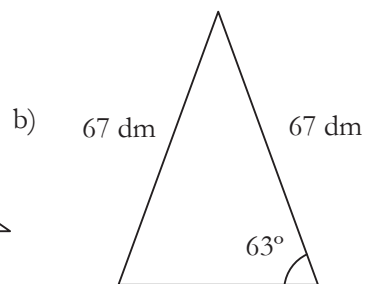
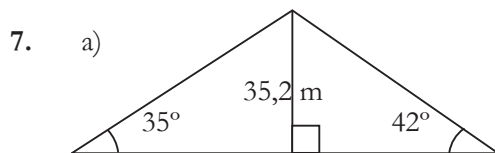
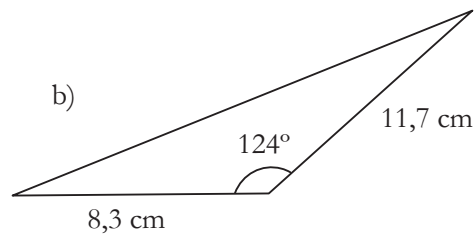
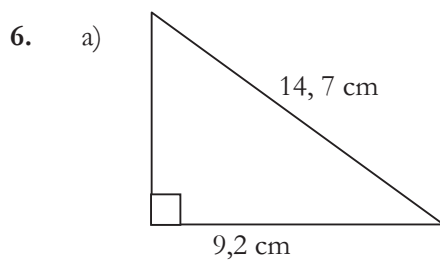


Laske kulman  $\alpha$  suuruus.





Laske kolmion pinta-ala.



**Vastaukset**

- 
- 
- |    |                        |   |            |
|----|------------------------|---|------------|
| 1. | a) 6,5 m               | b) 10,3 m                                   | c) 3,45 cm |
| 2. | a) 3,4 m               | b) 7,7 cm                                   | c) 13,5 cm |
| 3. | a) 4,9 cm              | b) 5,5 cm                                   |            |
| 4. | a) 32°                 | b) 22,6°                                    | c) 61,3°   |
| 5. | a) 77,5°               | b) 72°                                      |            |
| 6. | a) 53 cm <sup>2</sup>  | b) 40 cm <sup>2</sup>                       |            |
| 7. | a) 1570 m <sup>2</sup> | b) 1800 dm <sup>2</sup> = 18 m <sup>2</sup> |            |
| 8. | 804 m <sup>2</sup>     |   |            |