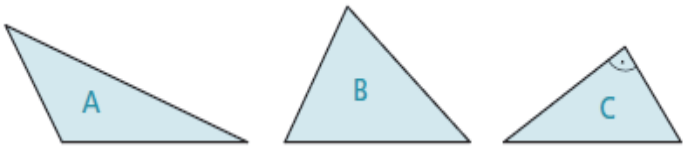
Englische Übungen zu Dreiecke

1. Which of the following triangles A, B, C has

a. three acute angles,

b. one obtuse angle,

c. one right angle?



2. Calculate the size of the third angle of a right-angled triangle ABC with $\gamma = 90°$!

a. $\alpha = 64°$

b. $\beta = 49°$

c. $\alpha = 34°$

d. $\beta = 74.5°$

e. $\alpha = 45.25°$

3. A triangle ABC is given by a = 8.5 cm, b = 4.6 cm and c = 12.3 cm. Construct the triangle and calculate the perimeter.

4. A triangle ABC is given by one side and two angles. Construct the triangle and measure the third angle. Check your construction by calculating the sum of the three angles.
   a. c = 6.5 cm, $\alpha = 49°, \beta = 77°$
   b. b = 12.9 cm, $\alpha = 39°, \gamma = 52°$

5. A triangle ABC is given by two sides and the angle between these sides. Construct the triangle. Check your triangle by measuring the angles and calculating their sum.
   a. a = 7.5 cm, c = 10.8 cm, $\beta = 65°$
   b. a = 8.9 cm, b = 6.1 cm, $\gamma = 112°$

6. Construct a triangle ABC with b = 4.7 cm, c = 7.2 cm, α = 37°. Draw the incircle.

7. Construct a triangle ABC with a = 4.7 cm, β = 62°, γ = 57°. Draw the angle bisectors w_α, w_β and w_γ.

8. A triangle ABC is given by a = 6.7 cm, b = 8.2 cm, c = 7.4 cm.
Construct the triangle and draw the altitudes h_a, h_b and h_c.

9. A triangle ABC is given by a = 5.6 cm, c = 8.1 cm and $\beta = 72°$.
Construct the three altitudes and their point of intersection, the so called orthocentre.

10. A triangle ABC is given by the coordinates of its vertices: A = (2 | 2), B = (12 | 3), C = (3 | 10)

a. Find the coordinates of the circumcentre.
b. Find the coordinates of the incentre.
c. Find the coordinates of the centroid.
d. Find the coordinates of the orthocentre.

11. Construct an isosceles triangle ABC with a = b.

a. a = 6.5 cm, c = 9.2 cm. Draw the perpendicular bisectors of the three sides.
b. c = 10.5, α = 37°. Draw the three angle bisectors of the triangle.
c. a = 7.8 cm, α = 66°. Draw the three medians of the triangle.
d. a = 5.4 cm, γ = 110°. Draw the three altitudes of the triangle.

12. Construct the equilateral triangle with a = 6.4 cm and the three axes of symmetry.

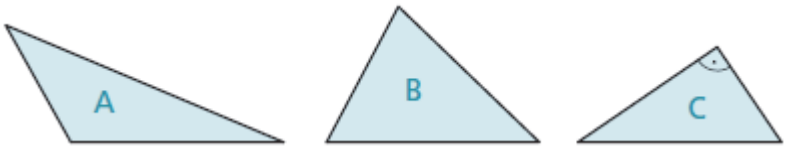
Vocabulary

Englisch	Deutsch
acute angle	spitzer Winkel
obtuse angle	stumpfer Winkel
right angle	rechter Winkel
right-angled triangle	rechtwinkliges Dreieck
perimeter	Umfang
to measure	messen
to prove	überprüfen
sum	Summe
to construct	konstruieren
triangle	Dreieck
to draw	zeichnen
incircle	Innkreis
angle bisector	Winkelsymmetrale
altitude	Höhe
point of intersection	Schnittpunkt
orthocentre	Höhenschnittpunkt
coordinate	Koordinate
vertex (vertices)	Eckpunkt(e)
circumcentre	Umkreismittelpunkt
incentre	Innkreismittelpunkt
centroid	Schwerpunkt
isosceles triangle	gleichschenkliges Dreieck
perpendicular bisector	Streckensymmetrale
median	Schwerlinie
equilateral triangle	gleichseitiges Dreieck
axis (axes) of symmetrie	Symmetrieachse(n)

Solutions

1. Which of the following triangles A, B, C has

a. three acute angles, = B
b. one obtuse angle, = A
c. one right angle? = C



2. Calculate the size of the third angle of a right-angled triangle ABC with γ = 90°!

a. β = 26°
b. α = 41°
c. β = 56°
d. α = 15.5°
e. β = 44.25°

3. α = 27°, u = 25.4 cm

4.

a. γ = 54°
b. β = 89°

5.

a. b = 10.2 cm, $\alpha = 42°, \gamma = 73°$
b. c = 12.5 cm, $\alpha = 41°, \beta = 27°$

6. r = 1.3 cm

7. Compare with page 206 in your book!
w_α = 4.0 cm, w_β = 3.9 cm, w_γ = 4.1 cm

8. h_a = 7.0, h_b = 5.7, h_c = 6.3 cm

9. h_a = 7.7, h_b = 5.2, h_c = 5.4 cm

10.

a. U = (6.7|5.5) b. I = (5|5) c. S = (5.7|5) d. H = (3.6|4)

11.

a. α = 45°
b. $w_\alpha = w_\beta$ = 7.7 cm, w_γ = 4.0 cm
c. c = 6.3 cm
d. c = 8.8 cm

12. Compare with page 216 in your book!