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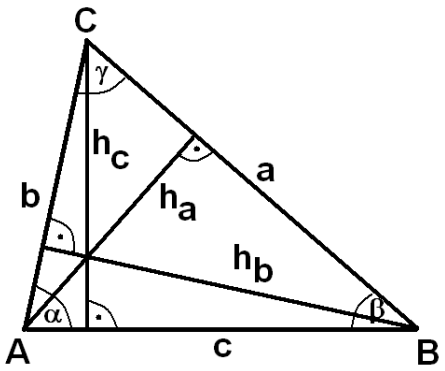
Mathematik-Aufgabenpool
> Berechnungen in allgemeinen Dreiecken II

Einleitung: In einem allgemeinen Dreieck ΔABC mit den Seiten a, b, c und den Höhen h_a, h_b, h_c lassen sich Umfang und Flächeninhalt des Dreiecks berechnen als: $u = a + b + c$, $A = ah_a/2 = bh_b/2 = ch_c/2$. Umstellen der Flächenformel führt auf die Berechnung von Dreiecksseiten bzw. -höhen.



Allgemeines Dreieck: Seiten a, b, c; Höhen h_a, h_b, h_c

Formelsammlung:

Umfang	$u = a + b + c$		
Flächeninhalt	$A = \frac{1}{2}ah_a$	$A = \frac{1}{2}bh_b$	$A = \frac{1}{2}ch_c$
Seiten	$a = \frac{2A}{h_a}$	$b = \frac{2A}{h_b}$	$c = \frac{2A}{h_c}$
Höhen	$h_a = \frac{2A}{a}$	$h_b = \frac{2A}{b}$	$h_c = \frac{2A}{c}$

Aufgabe 1: Berechne Umfang und Flächeninhalt des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 7.1 cm, b = 9.2 cm, c = 13.7 cm, h_b = 6.5 cm
2	a = 3 cm, b = 2.1 cm, c = 4.5 cm, h_c = 1.2 cm
3	a = 8.8 cm, b = 4.9 cm, c = 8.6 cm, h_c = 4.8 cm
4	a = 3.1 cm, b = 6.2 cm, c = 4.9 cm, h_c = 3.1 cm
5	a = 8.2 cm, b = 6.8 cm, c = 12.7 cm, h_a = 6.1 cm
6	a = 1.4 cm, b = 1.2 cm, c = 1.7 cm, h_a = 1.2 cm
7	a = 8.4 cm, b = 7.3 cm, c = 15.1 cm, h_b = 4.4 cm
8	a = 1.4 cm, b = 7.6 cm, c = 7.6 cm, h_c = 1.4 cm
9	a = 2.6 cm, b = 7.1 cm, c = 4.8 cm, h_c = 1.5 cm
10	a = 2.4 cm, b = 3 cm, c = 3.5 cm, h_b = 2.4 cm

11	a = 5.5 cm, b = 7.1 cm, c = 6.3 cm, h_a = 6 cm
12	a = 1.9 cm, b = 2.8 cm, c = 1.7 cm, h_c = 1.9 cm
13	a = 8.7 cm, b = 6.5 cm, c = 12.8 cm, h_a = 5.9 cm
14	a = 3.3 cm, b = 9.9 cm, c = 10.2 cm, h_a = 9.9 cm
15	a = 2.4 cm, b = 2.6 cm, c = 4.1 cm, h_c = 1.4 cm
16	a = 1.5 cm, b = 1.1 cm, c = 1.1 cm, h_a = 0.8 cm
17	a = 8.5 cm, b = 1.2 cm, c = 8.2 cm, h_c = 1.2 cm
18	a = 4.8 cm, b = 7.4 cm, c = 6.2 cm, h_a = 6.2 cm
19	a = 2.2 cm, b = 5.9 cm, c = 8 cm, h_a = 2 cm
20	a = 8 cm, b = 5.2 cm, c = 9.4 cm, h_b = 8 cm

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 7.1 cm, b = 9.2 cm, c = 13.7 cm, h_b = 6.5 cm	u = 30 cm, A = 29.9 cm^2
2	a = 3 cm, b = 2.1 cm, c = 4.5 cm, h_c = 1.2 cm	u = 9.6 cm, A = 2.6 cm^2
3	a = 8.8 cm, b = 4.9 cm, c = 8.6 cm, h_c = 4.8 cm	u = 22.3 cm, A = 20.4 cm^2
4	a = 3.1 cm, b = 6.2 cm, c = 4.9 cm, h_c = 3.1 cm	u = 14.2 cm, A = 7.5 cm^2
5	a = 8.2 cm, b = 6.8 cm, c = 12.7 cm, h_a = 6.1 cm	u = 27.7 cm, A = 25.2 cm^2
6	a = 1.4 cm, b = 1.2 cm, c = 1.7 cm, h_a = 1.2 cm	u = 4.3 cm, A = 0.8 cm^2
7	a = 8.4 cm, b = 7.3 cm, c = 15.1 cm, h_b = 4.4 cm	u = 30.8 cm, A = 16.2 cm^2
8	a = 1.4 cm, b = 7.6 cm, c = 7.6 cm, h_c = 1.4 cm	u = 16.6 cm, A = 5.3 cm^2
9	a = 2.6 cm, b = 7.1 cm, c = 4.8 cm, h_c = 1.5 cm	u = 14.5 cm, A = 3.5 cm^2
10	a = 2.4 cm, b = 3 cm, c = 3.5 cm, h_b = 2.4 cm	u = 8.9 cm, A = 3.5 cm^2
11	a = 5.5 cm, b = 7.1 cm, c = 6.3 cm, h_a = 6 cm	u = 18.9 cm, A = 16.6 cm^2
12	a = 1.9 cm, b = 2.8 cm, c = 1.7 cm, h_c = 1.9 cm	u = 6.4 cm, A = 1.6 cm^2
13	a = 8.7 cm, b = 6.5 cm, c = 12.8 cm, h_a = 5.9 cm	u = 28 cm, A = 25.8 cm^2
14	a = 3.3 cm, b = 9.9 cm, c = 10.2 cm, h_a = 9.9 cm	u = 23.4 cm, A = 16.3 cm^2
15	a = 2.4 cm, b = 2.6 cm, c = 4.1 cm, h_c = 1.4 cm	u = 9.1 cm, A = 2.9 cm^2
16	a = 1.5 cm, b = 1.1 cm, c = 1.1 cm, h_a = 0.8 cm	u = 3.7 cm, A = 0.6 cm^2
17	a = 8.5 cm, b = 1.2 cm, c = 8.2 cm, h_c = 1.2 cm	u = 17.9 cm, A = 4.8 cm^2
18	a = 4.8 cm, b = 7.4 cm, c = 6.2 cm, h_a = 6.2 cm	u = 18.4 cm, A = 14.8 cm^2
19	a = 2.2 cm, b = 5.9 cm, c = 8 cm, h_a = 2 cm	u = 16.1 cm, A = 2.2 cm^2
20	a = 8 cm, b = 5.2 cm, c = 9.4 cm, h_b = 8 cm	u = 22.6 cm, A = 20.8 cm^2

Aufgabe 2: Berechne Umfang und Flächeninhalt des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 18 cm, b = 19.9 cm, c = 27.8 cm, h_b = 18 cm
2	a = 13.7 cm, b = 9.9 cm, c = 21.3 cm, h_c = 5 cm
3	a = 18.5 cm, b = 13.6 cm, c = 10.7 cm, h_c = 13.5 cm
4	a = 13.5 cm, b = 8.5 cm, c = 19.7 cm, h_a = 6.9 cm

5	a = 11.7 cm, b = 17.3 cm, c = 25.5 cm, h_a = 14.7 cm
6	a = 5.1 cm, b = 18.1 cm, c = 13.9 cm, h_c = 3.3 cm
7	a = 15.7 cm, b = 14.3 cm, c = 28.7 cm, h_b = 8.8 cm
8	a = 19.8 cm, b = 6.8 cm, c = 22 cm, h_b = 19.5 cm
9	a = 15 cm, b = 19.3 cm, c = 6.3 cm, h_b = 4 cm
10	a = 19 cm, b = 15.1 cm, c = 29.7 cm, h_c = 8.3 cm
11	a = 12.1 cm, b = 18.7 cm, c = 10.1 cm, h_b = 5.9 cm
12	a = 7.3 cm, b = 15 cm, c = 10.9 cm, h_a = 10.3 cm
13	a = 12.2 cm, b = 8.8 cm, c = 11.1 cm, h_a = 7.7 cm
14	a = 14.6 cm, b = 11.4 cm, c = 14 cm, h_c = 10.7 cm
15	a = 17.1 cm, b = 6.3 cm, c = 12 cm, h_a = 3.1 cm
16	a = 18.1 cm, b = 12 cm, c = 26.4 cm, h_b = 15.5 cm
17	a = 7.6 cm, b = 10.5 cm, c = 13.4 cm, h_a = 10.5 cm
18	a = 7.7 cm, b = 5.6 cm, c = 8.8 cm, h_c = 4.8 cm
19	a = 10.8 cm, b = 12.8 cm, c = 11.7 cm, h_c = 10.1 cm
20	a = 17.8 cm, b = 6.6 cm, c = 12.5 cm, h_b = 8.8 cm

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 18 cm, b = 19.9 cm, c = 27.8 cm, h_b = 18 cm	u = 65.7 cm, A = 178.6 cm^2
2	a = 13.7 cm, b = 9.9 cm, c = 21.3 cm, h_c = 5 cm	u = 44.9 cm, A = 53.2 cm^2
3	a = 18.5 cm, b = 13.6 cm, c = 10.7 cm, h_c = 13.5 cm	u = 42.8 cm, A = 72 cm^2
4	a = 13.5 cm, b = 8.5 cm, c = 19.7 cm, h_a = 6.9 cm	u = 41.7 cm, A = 46.7 cm^2
5	a = 11.7 cm, b = 17.3 cm, c = 25.5 cm, h_a = 14.7 cm	u = 54.5 cm, A = 85.9 cm^2
6	a = 5.1 cm, b = 18.1 cm, c = 13.9 cm, h_c = 3.3 cm	u = 37.1 cm, A = 22.8 cm^2
7	a = 15.7 cm, b = 14.3 cm, c = 28.7 cm, h_b = 8.8 cm	u = 58.7 cm, A = 62.6 cm^2
8	a = 19.8 cm, b = 6.8 cm, c = 22 cm, h_b = 19.5 cm	u = 48.6 cm, A = 66.3 cm^2
9	a = 15 cm, b = 19.3 cm, c = 6.3 cm, h_b = 4 cm	u = 40.6 cm, A = 38.8 cm^2
10	a = 19 cm, b = 15.1 cm, c = 29.7 cm, h_c = 8.3 cm	u = 63.8 cm, A = 123.3 cm^2
11	a = 12.1 cm, b = 18.7 cm, c = 10.1 cm, h_b = 5.9 cm	u = 40.9 cm, A = 55.6 cm^2
12	a = 7.3 cm, b = 15 cm, c = 10.9 cm, h_a = 10.3 cm	u = 33.2 cm, A = 37.5 cm^2
13	a = 12.2 cm, b = 8.8 cm, c = 11.1 cm, h_a = 7.7 cm	u = 32.1 cm, A = 47.1 cm^2
14	a = 14.6 cm, b = 11.4 cm, c = 14 cm, h_c = 10.7 cm	u = 40 cm, A = 74.7 cm^2
15	a = 17.1 cm, b = 6.3 cm, c = 12 cm, h_a = 3.1 cm	u = 35.4 cm, A = 26.3 cm^2
16	a = 18.1 cm, b = 12 cm, c = 26.4 cm, h_b = 15.5 cm	u = 56.5 cm, A = 92.8 cm^2
17	a = 7.6 cm, b = 10.5 cm, c = 13.4 cm, h_a = 10.5 cm	u = 31.5 cm, A = 39.8 cm^2
18	a = 7.7 cm, b = 5.6 cm, c = 8.8 cm, h_c = 4.8 cm	u = 22.1 cm, A = 21.3 cm^2
19	a = 10.8 cm, b = 12.8 cm, c = 11.7 cm, h_c = 10.1 cm	u = 35.3 cm, A = 59.1 cm^2
20	a = 17.8 cm, b = 6.6 cm, c = 12.5 cm, h_b = 8.8 cm	u = 36.9 cm, A = 29.1 cm^2

Aufgabe 3: Berechne Umfang und Flächeninhalt des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 6.9 cm, b = 12.4 cm, c = 17.3 cm, h_b = 5.7 cm
2	a = 15.3 dm, b = 5.5 dm, c = 15.3 dm, h_b = 15.1 dm
3	a = 15.3 mm, b = 18 mm, c = 7.1 mm, h_a = 7 mm
4	a = 23.8 cm, b = 18.8 cm, c = 7.5 cm, h_c = 15.6 cm
5	a = 6.6 mm, b = 11.5 mm, c = 9.9 mm, h_a = 9.9 mm
6	a = 4.8 m, b = 7.7 m, c = 8.5 m, h_b = 4.8 m
7	a = 7.4 dm, b = 22.3 dm, c = 22.7 dm, h_a = 22.2 dm
8	a = 19.8 dm, b = 12.3 dm, c = 21.6 dm, h_a = 12.1 dm
9	a = 11.7 m, b = 9 m, c = 15.9 m, h_c = 6.5 m
10	a = 21.3 mm, b = 13.8 mm, c = 14 mm, h_c = 13.6 mm
11	a = 22.5 dm, b = 14.5 dm, c = 14.3 dm, h_b = 13.9 dm
12	a = 21.4 m, b = 9 m, c = 15.6 m, h_a = 5.8 m
13	a = 20.4 mm, b = 13.1 mm, c = 13.8 mm, h_a = 8.8 mm
14	a = 23 dm, b = 9 dm, c = 25.7 dm, h_c = 8 dm
15	a = 12.7 cm, b = 14.3 cm, c = 23.4 cm, h_a = 12.4 cm
16	a = 17.6 m, b = 16.2 m, c = 32.8 m, h_c = 4.1 m
17	a = 22.4 dm, b = 10.1 dm, c = 24.9 dm, h_b = 22.4 dm
18	a = 20.3 dm, b = 24.2 dm, c = 21 dm, h_a = 19.9 dm
19	a = 23.5 dm, b = 15.3 dm, c = 12 dm, h_c = 13.5 dm
20	a = 9.1 mm, b = 16.8 mm, c = 17.3 mm, h_b = 8.9 mm

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 6.9 cm, b = 12.4 cm, c = 17.3 cm, h_b = 5.7 cm	u = 36.6 cm, A = 35.1 cm^2
2	a = 15.3 dm, b = 5.5 dm, c = 15.3 dm, h_b = 15.1 dm	u = 36.1 dm, A = 41.4 dm^2
3	a = 15.3 mm, b = 18 mm, c = 7.1 mm, h_a = 7 mm	u = 40.4 mm, A = 53.4 mm^2
4	a = 23.8 cm, b = 18.8 cm, c = 7.5 cm, h_c = 15.6 cm	u = 50.1 cm, A = 58.6 cm^2
5	a = 6.6 mm, b = 11.5 mm, c = 9.9 mm, h_a = 9.9 mm	u = 28 mm, A = 32.6 mm^2
6	a = 4.8 m, b = 7.7 m, c = 8.5 m, h_b = 4.8 m	u = 21 m, A = 18.3 m^2
7	a = 7.4 dm, b = 22.3 dm, c = 22.7 dm, h_a = 22.2 dm	u = 52.4 dm, A = 82 dm^2
8	a = 19.8 dm, b = 12.3 dm, c = 21.6 dm, h_a = 12.1 dm	u = 53.7 dm, A = 120.2 dm^2
9	a = 11.7 m, b = 9 m, c = 15.9 m, h_c = 6.5 m	u = 36.6 m, A = 51.9 m^2
10	a = 21.3 mm, b = 13.8 mm, c = 14 mm, h_c = 13.6 mm	u = 49.1 mm, A = 95.1 mm^2
11	a = 22.5 dm, b = 14.5 dm, c = 14.3 dm, h_b = 13.9 dm	u = 51.3 dm, A = 101.1 dm^2
12	a = 21.4 m, b = 9 m, c = 15.6 m, h_a = 5.8 m	u = 46 m, A = 61.7 m^2
13	a = 20.4 mm, b = 13.1 mm, c = 13.8 mm, h_a = 8.8 mm	u = 47.3 mm, A = 89.4 mm^2
14	a = 23 dm, b = 9 dm, c = 25.7 dm, h_c = 8 dm	u = 57.7 dm, A = 102.7 dm^2

15	a = 12.7 cm, b = 14.3 cm, c = 23.4 cm, h_a = 12.4 cm	u = 50.4 cm, A = 78.6 cm^2
16	a = 17.6 m, b = 16.2 m, c = 32.8 m, h_c = 4.1 m	u = 66.6 m, A = 66.9 m^2
17	a = 22.4 dm, b = 10.1 dm, c = 24.9 dm, h_b = 22.4 dm	u = 57.4 dm, A = 113 dm^2
18	a = 20.3 dm, b = 24.2 dm, c = 21 dm, h_a = 19.9 dm	u = 65.5 dm, A = 202.4 dm^2
19	a = 23.5 dm, b = 15.3 dm, c = 12 dm, h_c = 13.5 dm	u = 50.8 dm, A = 80.8 dm^2
20	a = 9.1 mm, b = 16.8 mm, c = 17.3 mm, h_b = 8.9 mm	u = 43.2 mm, A = 74.7 mm^2

Aufgabe 4: Berechne Umfang, Flächeninhalt und die fehlenden Höhen des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 7.1 cm, b = 1.4 cm, c = 7.9 cm, h_a = 1.2 cm
2	a = 7 cm, b = 2.6 cm, c = 7.4 cm, h_a = 2.6 cm
3	a = 6.7 cm, b = 2 cm, c = 7.6 cm, h_a = 1.9 cm
4	a = 8.4 cm, b = 2.7 cm, c = 9.7 cm, h_a = 2.5 cm
5	a = 7.8 cm, b = 6.6 cm, c = 13.5 cm, h_c = 2.5 cm
6	a = 9.3 cm, b = 3.9 cm, c = 11.4 cm, h_b = 8.6 cm
7	a = 9.8 cm, b = 1.6 cm, c = 11.1 cm, h_a = 1 cm
8	a = 5.1 cm, b = 6 cm, c = 9.1 cm, h_c = 3.2 cm
9	a = 2.3 cm, b = 1.3 cm, c = 3.1 cm, h_a = 1.2 cm
10	a = 7.5 cm, b = 2 cm, c = 5.6 cm, h_c = 0.7 cm
11	a = 6.1 cm, b = 7.1 cm, c = 10.9 cm, h_b = 5.7 cm
12	a = 4.4 cm, b = 8.1 cm, c = 9.3 cm, h_c = 3.8 cm
13	a = 4.4 cm, b = 8.5 cm, c = 10.8 cm, h_b = 4.1 cm
14	a = 6.8 cm, b = 5.3 cm, c = 10.7 cm, h_c = 2.8 cm
15	a = 8.1 cm, b = 1 cm, c = 8.2 cm, h_a = 1 cm
16	a = 9.6 cm, b = 6.1 cm, c = 7.1 cm, h_a = 4.5 cm
17	a = 9.5 cm, b = 7.4 cm, c = 10.4 cm, h_c = 6.5 cm
18	a = 2.4 cm, b = 3.2 cm, c = 2.2 cm, h_b = 1.6 cm
19	a = 4 cm, b = 5.9 cm, c = 3.9 cm, h_c = 4 cm
20	a = 2.1 cm, b = 2.1 cm, c = 1.2 cm, h_a = 1.1 cm

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 7.1 cm, b = 1.4 cm, c = 7.9 cm, h_a = 1.2 cm	a = 7.1 cm, b = 1.4 cm, c = 7.9 cm, h_a = 1.2 cm, h_b = 6.1 cm, h_c = 1.1 cm, u = 16.4 cm , A = 4.3 cm^2, u = 16.4 cm
2	a = 7 cm, b = 2.6 cm, c = 7.4 cm, h_a = 2.6 cm	a = 7 cm, b = 2.6 cm, c = 7.4 cm, h_a = 2.6 cm, h_b = 7 cm, h_c = 2.5 cm, u = 17 cm, A = 9.1 cm^2
3	a = 6.7 cm, b = 2 cm, c = 7.6 cm, h_a = 1.9 cm	a = 6.7 cm, b = 2 cm, c = 7.6 cm, h_a = 1.9 cm, h_b = 6.3 cm, h_c = 1.7 cm, u = 16.3 cm, A = 6.3 cm^2
4	a = 8.4 cm, b = 2.7 cm, c = 9.7 cm, h_a = 2.5 cm	a = 8.4 cm, b = 2.7 cm, c = 9.7 cm, h_a = 2.5 cm, h_b = 7.8 cm, h_c = 2.2 cm, u = 20.8 cm, A = 10.6 cm^2

5	a = 7.8 cm, b = 6.6 cm, c = 13.5 cm, h_c = 2.5 cm	a = 7.8 cm, b = 6.6 cm, c = 13.5 cm, h_a = 4.3 cm, h_b = 5.1 cm, h_c = 2.5 cm, u = 27.9 cm, A = 16.8 cm^2
6	a = 9.3 cm, b = 3.9 cm, c = 11.4 cm, h_b = 8.6 cm	a = 9.3 cm, b = 3.9 cm, c = 11.4 cm, h_a = 3.6 cm, h_b = 8.6 cm, h_c = 2.9 cm, u = 24.6 cm, A = 16.7 cm^2
7	a = 9.8 cm, b = 1.6 cm, c = 11.1 cm, h_a = 1 cm	a = 9.8 cm, b = 1.6 cm, c = 11.1 cm, h_a = 1 cm, h_b = 6.1 cm, h_c = 0.9 cm, u = 22.5 cm, A = 4.9 cm^2
8	a = 5.1 cm, b = 6 cm, c = 9.1 cm, h_c = 3.2 cm	a = 5.1 cm, b = 6 cm, c = 9.1 cm, h_a = 5.6 cm, h_b = 4.8 cm, h_c = 3.2 cm, u = 20.2 cm, A = 14.4 cm^2
9	a = 2.3 cm, b = 1.3 cm, c = 3.1 cm, h_a = 1.2 cm	a = 2.3 cm, b = 1.3 cm, c = 3.1 cm, h_a = 1.2 cm, h_b = 2.1 cm, h_c = 0.9 cm, u = 6.7 cm, A = 1.3 cm^2
10	a = 7.5 cm, b = 2 cm, c = 5.6 cm, h_c = 0.7 cm	a = 7.5 cm, b = 2 cm, c = 5.6 cm, h_a = 0.5 cm, h_b = 2 cm, h_c = 0.7 cm, u = 15.1 cm, A = 2 cm^2
11	a = 6.1 cm, b = 7.1 cm, c = 10.9 cm, h_b = 5.7 cm	a = 6.1 cm, b = 7.1 cm, c = 10.9 cm, h_a = 6.6 cm, h_b = 5.7 cm, h_c = 3.7 cm, u = 24.1 cm, A = 20.2 cm^2
12	a = 4.4 cm, b = 8.1 cm, c = 9.3 cm, h_c = 3.8 cm	a = 4.4 cm, b = 8.1 cm, c = 9.3 cm, h_a = 8.1 cm, h_b = 4.4 cm, h_c = 3.8 cm, u = 21.8 cm, A = 17.8 cm^2
13	a = 4.4 cm, b = 8.5 cm, c = 10.8 cm, h_b = 4.1 cm	a = 4.4 cm, b = 8.5 cm, c = 10.8 cm, h_a = 8 cm, h_b = 4.1 cm, h_c = 3.3 cm, u = 23.7 cm, A = 17.6 cm^2
14	a = 6.8 cm, b = 5.3 cm, c = 10.7 cm, h_c = 2.8 cm	a = 6.8 cm, b = 5.3 cm, c = 10.7 cm, h_a = 4.4 cm, h_b = 5.6 cm, h_c = 2.8 cm, u = 22.8 cm, A = 15 cm^2
15	a = 8.1 cm, b = 1 cm, c = 8.2 cm, h_a = 1 cm	a = 8.1 cm, b = 1 cm, c = 8.2 cm, h_a = 1 cm, h_b = 8.1 cm, h_c = 1 cm, u = 17.3 cm, A = 4 cm^2
16	a = 9.6 cm, b = 6.1 cm, c = 7.1 cm, h_a = 4.5 cm	a = 9.6 cm, b = 6.1 cm, c = 7.1 cm, h_a = 4.5 cm, h_b = 7.1 cm, h_c = 6.1 cm, u = 22.8 cm, A = 21.6 cm^2
17	a = 9.5 cm, b = 7.4 cm, c = 10.4 cm, h_c = 6.5 cm	a = 9.5 cm, b = 7.4 cm, c = 10.4 cm, h_a = 7.1 cm, h_b = 9.2 cm, h_c = 6.5 cm, u = 27.3 cm, A = 33.9 cm^2
18	a = 2.4 cm, b = 3.2 cm, c = 2.2 cm, h_b = 1.6 cm	a = 2.4 cm, b = 3.2 cm, c = 2.2 cm, h_a = 2.2 cm, h_b = 1.6 cm, h_c = 2.4 cm, u = 7.8 cm, A = 2.6 cm^2
19	a = 4 cm, b = 5.9 cm, c = 3.9 cm, h_c = 4 cm	a = 4 cm, b = 5.9 cm, c = 3.9 cm, h_a = 3.9 cm, h_b = 2.6 cm, h_c = 4 cm, u = 13.8 cm, A = 7.7 cm^2
20	a = 2.1 cm, b = 2.1 cm, c = 1.2 cm, h_a = 1.1 cm	a = 2.1 cm, b = 2.1 cm, c = 1.2 cm, h_a = 1.1 cm, h_b = 1.1 cm, h_c = 2 cm, u = 5.4 cm, A = 1.2 cm^2

Aufgabe 5: Berechne Umfang, Flächeninhalt und die fehlenden Höhen des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 9.9 cm, b = 14 cm, c = 13.4 cm, h_b = 9 cm
2	a = 13.7 mm, b = 9.5 mm, c = 12.8 mm, h_b = 12.3 mm
3	a = 19.8 dm, b = 11.8 dm, c = 26.1 dm, h_a = 11.2 dm
4	a = 19.1 mm, b = 15.8 mm, c = 20 mm, h_c = 14.1 mm
5	a = 5 mm, b = 13.2 mm, c = 17.6 mm, h_b = 2.7 mm
6	a = 10.1 dm, b = 6 dm, c = 9.2 dm, h_b = 9.1 dm
7	a = 16.8 mm, b = 17 mm, c = 24.7 mm, h_a = 17 mm
8	a = 12.2 mm, b = 12.9 mm, c = 16.2 mm, h_b = 12 mm
9	a = 8.9 mm, b = 8.6 mm, c = 6.4 mm, h_b = 6.1 mm
10	a = 10.3 m, b = 9.5 m, c = 4 m, h_b = 4 m
11	a = 13.5 mm, b = 13.1 mm, c = 8.7 mm, h_b = 8.3 mm
12	a = 19.7 m, b = 15.6 m, c = 22.5 m, h_a = 15.3 m
13	a = 19 cm, b = 13.2 cm, c = 7.1 cm, h_b = 4.9 cm

14	a = 15.9 mm, b = 11.2 mm, c = 17.1 mm, h_a = 10.9 mm
15	a = 17.2 cm, b = 9.1 cm, c = 20.1 cm, h_a = 9.1 cm
16	a = 19.6 dm, b = 15.8 dm, c = 19.1 dm, h_b = 17.7 dm
17	a = 18 m, b = 16.4 m, c = 27.7 m, h_a = 15.7 m
18	a = 6.9 dm, b = 12.5 dm, c = 6.5 dm, h_a = 4.4 dm
19	a = 4.9 mm, b = 18.9 mm, c = 20.7 mm, h_a = 18.3 mm
20	a = 10.4 mm, b = 12.2 mm, c = 12.5 mm, h_b = 9.5 mm

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 9.9 cm, b = 14 cm, c = 13.4 cm, h_b = 9 cm	a = 9.9 cm, b = 14 cm, c = 13.4 cm, h_a = 12.8 cm, h_b = 9 cm, h_c = 9.4 cm, u = 37.3 cm, A = 63.1 cm^2
2	a = 13.7 mm, b = 9.5 mm, c = 12.8 mm, h_b = 12.3 mm	a = 13.7 mm, b = 9.5 mm, c = 12.8 mm, h_a = 8.5 mm, h_b = 12.3 mm, h_c = 9.1 mm, u = 36 mm, A = 58.5 mm^2
3	a = 19.8 dm, b = 11.8 dm, c = 26.1 dm, h_a = 11.2 dm	a = 19.8 dm, b = 11.8 dm, c = 26.1 dm, h_a = 11.2 dm, h_b = 18.8 dm, h_c = 8.5 dm, u = 57.7 dm, A = 110.6 dm^2
4	a = 19.1 mm, b = 15.8 mm, c = 20 mm, h_c = 14.1 mm	a = 19.1 mm, b = 15.8 mm, c = 20 mm, h_a = 14.8 mm, h_b = 17.9 mm, h_c = 14.1 mm, u = 54.9 mm, A = 141 mm^2
5	a = 5 mm, b = 13.2 mm, c = 17.6 mm, h_b = 2.7 mm	a = 5 mm, b = 13.2 mm, c = 17.6 mm, h_a = 7.2 mm, h_b = 2.7 mm, h_c = 2.1 mm, u = 35.8 mm, A = 18 mm^2
6	a = 10.1 dm, b = 6 dm, c = 9.2 dm, h_b = 9.1 dm	a = 10.1 dm, b = 6 dm, c = 9.2 dm, h_a = 5.4 dm, h_b = 9.1 dm, h_c = 5.9 dm, u = 25.3 dm, A = 27.2 dm^2
7	a = 16.8 mm, b = 17 mm, c = 24.7 mm, h_a = 17 mm	a = 16.8 mm, b = 17 mm, c = 24.7 mm, h_a = 17 mm, h_b = 16.8 mm, h_c = 11.5 mm, u = 58.5 mm, A = 142.5 mm^2
8	a = 12.2 mm, b = 12.9 mm, c = 16.2 mm, h_b = 12 mm	a = 12.2 mm, b = 12.9 mm, c = 16.2 mm, h_a = 12.7 mm, h_b = 12 mm, h_c = 9.6 mm, u = 41.3 mm, A = 77.6 mm^2
9	a = 8.9 mm, b = 8.6 mm, c = 6.4 mm, h_b = 6.1 mm	a = 8.9 mm, b = 8.6 mm, c = 6.4 mm, h_a = 5.8 mm, h_b = 6.1 mm, h_c = 8.1 mm, u = 23.9 mm, A = 26 mm^2
10	a = 10.3 m, b = 9.5 m, c = 4 m, h_b = 4 m	a = 10.3 m, b = 9.5 m, c = 4 m, h_a = 3.7 m, h_b = 4 m, h_c = 9.5 m, u = 23.8 m, A = 19 m^2
11	a = 13.5 mm, b = 13.1 mm, c = 8.7 mm, h_b = 8.3 mm	a = 13.5 mm, b = 13.1 mm, c = 8.7 mm, h_a = 8.1 mm, h_b = 8.3 mm, h_c = 12.6 mm, u = 35.3 mm, A = 54.6 mm^2
12	a = 19.7 m, b = 15.6 m, c = 22.5 m, h_a = 15.3 m	a = 19.7 m, b = 15.6 m, c = 22.5 m, h_a = 15.3 m, h_b = 19.3 m, h_c = 13.4 m, u = 57.8 m, A = 150.4 m^2
13	a = 19 cm, b = 13.2 cm, c = 7.1 cm, h_b = 4.9 cm	a = 19 cm, b = 13.2 cm, c = 7.1 cm, h_a = 3.4 cm, h_b = 4.9 cm, h_c = 9.1 cm, u = 39.3 cm, A = 32.2 cm^2
14	a = 15.9 mm, b = 11.2 mm, c = 17.1 mm, h_a = 10.9 mm	a = 15.9 mm, b = 11.2 mm, c = 17.1 mm, h_a = 10.9 mm, h_b = 15.4 mm, h_c = 10.1 mm, u = 44.2 mm, A = 86.4 mm^2
15	a = 17.2 cm, b = 9.1 cm, c = 20.1 cm, h_a = 9.1 cm	a = 17.2 cm, b = 9.1 cm, c = 20.1 cm, h_a = 9.1 cm, h_b = 17.1 cm, h_c = 7.8 cm, u = 46.4 cm, A = 78 cm^2
16	a = 19.6 dm, b = 15.8 dm, c = 19.1 dm, h_b = 17.7 dm	a = 19.6 dm, b = 15.8 dm, c = 19.1 dm, h_a = 14.2 dm, h_b = 17.7 dm, h_c = 14.6 dm, u = 54.5 dm, A = 139.5 dm^2
17	a = 18 m, b = 16.4 m, c = 27.7 m, h_a = 15.7 m	a = 18 m, b = 16.4 m, c = 27.7 m, h_a = 15.7 m, h_b = 17.2 m, h_c = 10.2 m, u = 62.1 m, A = 141 m^2
18	a = 6.9 dm, b = 12.5 dm, c = 6.5 dm, h_a = 4.4 dm	a = 6.9 dm, b = 12.5 dm, c = 6.5 dm, h_a = 4.4 dm, h_b = 2.4 dm, h_c = 4.6 dm, u = 25.9 dm, A = 15.1 dm^2
19	a = 4.9 mm, b = 18.9 mm, c = 20.7 mm, h_a = 18.3 mm	a = 4.9 mm, b = 18.9 mm, c = 20.7 mm, h_a = 18.3 mm, h_b = 4.7 mm, h_c = 4.3 mm, u = 44.5 mm, A = 44.8 mm^2
20	a = 10.4 mm, b = 12.2 mm, c = 12.5 mm, h_b = 9.5 mm	a = 10.4 mm, b = 12.2 mm, c = 12.5 mm, h_a = 11.2 mm, h_b = 9.5 mm, h_c = 9.3 mm, u = 35.1 mm, A = 58.2 mm^2

Aufgabe 6: Berechne die fehlende Seite, die fehlenden Höhen und den Umfang des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	b = 5.8 cm, c = 6.1 cm, h_a = 4.7 cm, A = 17 cm^2
2	b = 6 cm, c = 8.7 cm, h_a = 3.1 cm, A = 4.7 cm^2
3	a = 2.1 cm, c = 7.6 cm, h_b = 1.7 cm, A = 7.2 cm^2
4	a = 8 cm, c = 6.3 cm, h_b = 5.1 cm, A = 25.2 cm^2
5	a = 4.9 cm, c = 8.6 cm, h_b = 4.5 cm, A = 20.8 cm^2
6	b = 3.8 cm, c = 5.4 cm, h_a = 1.3 cm, A = 5.8 cm^2
7	a = 4.9 cm, b = 4.4 cm, h_c = 3.6 cm, A = 10.6 cm^2
8	a = 1 cm, c = 2.9 cm, h_b = 1 cm, A = 1.4 cm^2
9	b = 6.3 cm, c = 6 cm, h_a = 6 cm, A = 4.8 cm^2
10	a = 8.7 cm, b = 9.2 cm, h_c = 6.6 cm, A = 39.9 cm^2
11	a = 6.6 cm, c = 5.5 cm, h_b = 4.7 cm, A = 17.6 cm^2
12	a = 9.2 cm, b = 6.7 cm, h_c = 5.6 cm, A = 30.7 cm^2
13	b = 7.6 cm, c = 3.2 cm, h_a = 3.1 cm, A = 9.7 cm^2
14	a = 7.1 cm, b = 4.6 cm, h_c = 4.1 cm, A = 16.2 cm^2
15	a = 2.5 cm, c = 4.9 cm, h_b = 2.5 cm, A = 5.2 cm^2
16	a = 5.8 cm, c = 7.9 cm, h_b = 5.1 cm, A = 22.3 cm^2
17	a = 2.5 cm, b = 5.3 cm, h_c = 2.5 cm, A = 6 cm^2
18	b = 9.6 cm, c = 8.9 cm, h_a = 7.9 cm, A = 37.6 cm^2
19	a = 7.5 cm, c = 8.7 cm, h_b = 4.8 cm, A = 3.6 cm^2
20	a = 4.4 cm, c = 5 cm, h_b = 4.4 cm, A = 6.3 cm^2

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	**Gegeben:**	**Lösungen:**
1	b = 5.8 cm, c = 6.1 cm, h_a = 4.7 cm, A = 17 cm^2	a = 7.2 cm, b = 5.8 cm, c = 6.1 cm, h_a = 4.7 cm, h_b = 5.9 cm, h_c = 5.6 cm, u = 19.1 cm, A = 17 cm^2
2	b = 6 cm, c = 8.7 cm, h_a = 3.1 cm, A = 4.7 cm^2	a = 3 cm, b = 6 cm, c = 8.7 cm, h_a = 3.1 cm, h_b = 1.6 cm, h_c = 1.1 cm, u = 17.7 cm, A = 4.7 cm^2
3	a = 2.1 cm, c = 7.6 cm, h_b = 1.7 cm, A = 7.2 cm^2	a = 2.1 cm, b = 8.7 cm, c = 7.6 cm, h_a = 6.9 cm, h_b = 1.7 cm, h_c = 1.9 cm, u = 18.4 cm, A = 7.2 cm^2
4	a = 8 cm, c = 6.3 cm, h_b = 5.1 cm, A = 25.2 cm^2	a = 8 cm, b = 9.9 cm, c = 6.3 cm, h_a = 6.3 cm, h_b = 5.1 cm, h_c = 8 cm, u = 24.2 cm, A = 25.2 cm^2
5	a = 4.9 cm, c = 8.6 cm, h_b = 4.5 cm, A = 20.8 cm^2	a = 4.9 cm, b = 9.2 cm, c = 8.6 cm, h_a = 8.5 cm, h_b = 4.5 cm, h_c = 4.8 cm, u = 22.7 cm, A = 20.8 cm^2
6	b = 3.8 cm, c = 5.4 cm, h_a = 1.3 cm, A = 5.8 cm^2	a = 8.8 cm, b = 3.8 cm, c = 5.4 cm, h_a = 1.3 cm, h_b = 3.1 cm, h_c = 2.1 cm, u = 18 cm, A = 5.8 cm^2
7	a = 4.9 cm, b = 4.4 cm, h_c = 3.6 cm, A = 10.6 cm^2	a = 4.9 cm, b = 4.4 cm, c = 5.9 cm, h_a = 4.3 cm, h_b = 4.8 cm, h_c = 3.6 cm, u = 15.2 cm, A = 10.6 cm^2
8	a = 1 cm, c = 2.9 cm, h_b = 1 cm, A = 1.4 cm^2	a = 1 cm, b = 2.8 cm, c = 2.9 cm, h_a = 2.8 cm, h_b = 1 cm, h_c = 1 cm, u = 6.7 cm, A = 1.4 cm^2
9	b = 6.3 cm, c = 6 cm, h_a = 6 cm, A = 4.8 cm^2	a = 1.6 cm, b = 6.3 cm, c = 6 cm, h_a = 6 cm, h_b = 1.5 cm, h_c = 1.6 cm, u = 13.9 cm, A = 4.8 cm^2

10	a = 8.7 cm, b = 9.2 cm, h_c = 6.6 cm, A = 39.9 cm^2	a = 8.7 cm, b = 9.2 cm, c = 12.1 cm, h_a = 9.2 cm, h_b = 8.7 cm, h_c = 6.6 cm, u = 30 cm, A = 39.9 cm^2
11	a = 6.6 cm, c = 5.5 cm, h_b = 4.7 cm, A = 17.6 cm^2	a = 6.6 cm, b = 7.5 cm, c = 5.5 cm, h_a = 5.3 cm, h_b = 4.7 cm, h_c = 6.4 cm, u = 19.6 cm, A = 17.6 cm^2
12	a = 9.2 cm, b = 6.7 cm, h_c = 5.6 cm, A = 30.7 cm^2	a = 9.2 cm, b = 6.7 cm, c = 10.9 cm, h_a = 6.7 cm, h_b = 9.2 cm, h_c = 5.6 cm, u = 26.8 cm, A = 30.7 cm^2
13	b = 7.6 cm, c = 3.2 cm, h_a = 3.1 cm, A = 9.7 cm^2	a = 6.2 cm, b = 7.6 cm, c = 3.2 cm, h_a = 3.1 cm, h_b = 2.5 cm, h_c = 6 cm, u = 17 cm, A = 9.7 cm^2
14	a = 7.1 cm, b = 4.6 cm, h_c = 4.1 cm, A = 16.2 cm^2	a = 7.1 cm, b = 4.6 cm, c = 8 cm, h_a = 4.6 cm, h_b = 7.1 cm, h_c = 4.1 cm, u = 19.7 cm, A = 16.2 cm^2
15	a = 2.5 cm, c = 4.9 cm, h_b = 2.5 cm, A = 5.2 cm^2	a = 2.5 cm, b = 4.2 cm, c = 4.9 cm, h_a = 4.2 cm, h_b = 2.5 cm, h_c = 2.1 cm, u = 11.6 cm, A = 5.2 cm^2
16	a = 5.8 cm, c = 7.9 cm, h_b = 5.1 cm, A = 22.3 cm^2	a = 5.8 cm, b = 8.7 cm, c = 7.9 cm, h_a = 7.7 cm, h_b = 5.1 cm, h_c = 5.7 cm, u = 22.4 cm, A = 22.3 cm^2
17	a = 2.5 cm, b = 5.3 cm, h_c = 2.5 cm, A = 6 cm^2	a = 2.5 cm, b = 5.3 cm, c = 4.8 cm, h_a = 4.8 cm, h_b = 2.3 cm, h_c = 2.5 cm, u = 12.6 cm, A = 6 cm^2
18	b = 9.6 cm, c = 8.9 cm, h_a = 7.9 cm, A = 37.6 cm^2	a = 9.5 cm, b = 9.6 cm, c = 8.9 cm, h_a = 7.9 cm, h_b = 7.8 cm, h_c = 8.4 cm, u = 28 cm, A = 37.6 cm^2
19	a = 7.5 cm, c = 8.7 cm, h_b = 4.8 cm, A = 3.6 cm^2	a = 7.5 cm, b = 1.5 cm, c = 8.7 cm, h_a = 1 cm, h_b = 4.8 cm, h_c = 0.8 cm, u = 17.7 cm, A = 3.6 cm^2
20	a = 4.4 cm, c = 5 cm, h_b = 4.4 cm, A = 6.3 cm^2	a = 4.4 cm, b = 2.9 cm, c = 5 cm, h_a = 2.9 cm, h_b = 4.4 cm, h_c = 2.5 cm, u = 12.3 cm, A = 6.3 cm^2

Aufgabe 7: Berechne die fehlende Seite, die fehlenden Höhen und den Umfang des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	b = 20 cm, c = 17.4 cm, h_a = 15.6 cm, A = 157.2 cm^2
2	a = 10.4 cm, c = 23.9 cm, h_b = 10 cm, A = 122.9 cm^2
3	a = 18.3 cm, c = 15.3 cm, h_b = 13.9 cm, A = 126.8 cm^2
4	b = 11.4 cm, c = 11.3 cm, h_a = 10.8 cm, A = 36.3 cm^2
5	a = 10.8 cm, c = 15.6 cm, h_b = 6.6 cm, A = 18.6 cm^2
6	b = 23.2 cm, c = 29.6 cm, h_a = 23.1 cm, A = 243.3 cm^2
7	a = 11.8 cm, b = 19.1 cm, h_c = 11.8 cm, A = 91.4 cm^2
8	a = 16.7 cm, b = 14 cm, h_c = 13.9 cm, A = 73.2 cm^2
9	a = 16.5 cm, c = 13.9 cm, h_b = 11.2 cm, A = 114 cm^2
10	a = 23.8 cm, b = 17.6 cm, h_c = 8.3 cm, A = 157.4 cm^2
11	b = 16.1 cm, c = 17.3 cm, h_a = 13.9 cm, A = 128 cm^2
12	a = 10.6 cm, c = 22.7 cm, h_b = 10.6 cm, A = 101.4 cm^2
13	b = 11.4 cm, c = 13.4 cm, h_a = 6.4 cm, A = 67.9 cm^2
14	a = 14.7 cm, c = 12.2 cm, h_b = 10.6 cm, A = 86.2 cm^2
15	a = 11.2 cm, c = 15 cm, h_b = 11 cm, A = 69 cm^2
16	b = 8.7 cm, c = 11.4 cm, h_a = 5.7 cm, A = 47 cm^2
17	b = 10.4 cm, c = 10.2 cm, h_a = 7.3 cm, A = 53 cm^2
18	b = 13.7 cm, c = 18.4 cm, h_a = 9.2 cm, A = 26.8 cm^2
19	a = 19.6 cm, c = 29.9 cm, h_b = 19.3 cm, A = 184.8 cm^2
20	a = 13.9 cm, b = 7.3 cm, h_c = 6.3 cm, A = 50.6 cm^2

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	Gegeben:	Lösungen:
1	b = 20 cm, c = 17.4 cm, h_a = 15.6 cm, A = 157.2 cm^2	a = 20.1 cm, b = 20 cm, c = 17.4 cm, h_a = 15.6 cm, h_b = 15.7 cm, h_c = 18.1 cm, u = 57.5 cm, A = 157.2 cm^2
2	a = 10.4 cm, c = 23.9 cm, h_b = 10 cm, A = 122.9 cm^2	a = 10.4 cm, b = 24.6 cm, c = 23.9 cm, h_a = 23.6 cm, h_b = 10 cm, h_c = 10.3 cm, u = 58.9 cm, A = 122.9 cm^2
3	a = 18.3 cm, c = 15.3 cm, h_b = 13.9 cm, A = 126.8 cm^2	a = 18.3 cm, b = 18.2 cm, c = 15.3 cm, h_a = 13.9 cm, h_b = 13.9 cm, h_c = 16.6 cm, u = 51.8 cm, A = 126.8 cm^2
4	b = 11.4 cm, c = 11.3 cm, h_a = 10.8 cm, A = 36.3 cm^2	a = 6.7 cm, b = 11.4 cm, c = 11.3 cm, h_a = 10.8 cm, h_b = 6.4 cm, h_c = 6.4 cm, u = 29.4 cm, A = 36.3 cm^2
5	a = 10.8 cm, c = 15.6 cm, h_b = 6.6 cm, A = 18.6 cm^2	a = 10.8 cm, b = 5.6 cm, c = 15.6 cm, h_a = 3.4 cm, h_b = 6.6 cm, h_c = 2.4 cm, u = 32 cm, A = 18.6 cm^2
6	b = 23.2 cm, c = 29.6 cm, h_a = 23.1 cm, A = 243.3 cm^2	a = 21.1 cm, b = 23.2 cm, c = 29.6 cm, h_a = 23.1 cm, h_b = 21 cm, h_c = 16.4 cm, u = 73.9 cm, A = 243.3 cm^2
7	a = 11.8 cm, b = 19.1 cm, h_c = 11.8 cm, A = 91.4 cm^2	a = 11.8 cm, b = 19.1 cm, c = 15.5 cm, h_a = 15.5 cm, h_b = 9.6 cm, h_c = 11.8 cm, u = 46.4 cm, A = 91.4 cm^2
8	a = 16.7 cm, b = 14 cm, h_c = 13.9 cm, A = 73.2 cm^2	a = 16.7 cm, b = 14 cm, c = 10.5 cm, h_a = 8.8 cm, h_b = 10.5 cm, h_c = 13.9 cm, u = 41.2 cm, A = 73.2 cm^2
9	a = 16.5 cm, c = 13.9 cm, h_b = 11.2 cm, A = 114 cm^2	a = 16.5 cm, b = 20.4 cm, c = 13.9 cm, h_a = 13.8 cm, h_b = 11.2 cm, h_c = 16.4 cm, u = 50.8 cm, A = 114 cm^2
10	a = 23.8 cm, b = 17.6 cm, h_c = 8.3 cm, A = 157.4 cm^2	a = 23.8 cm, b = 17.6 cm, c = 37.8 cm, h_a = 13.2 cm, h_b = 17.9 cm, h_c = 8.3 cm, u = 79.2 cm, A = 157.4 cm^2
11	b = 16.1 cm, c = 17.3 cm, h_a = 13.9 cm, A = 128 cm^2	a = 18.4 cm, b = 16.1 cm, c = 17.3 cm, h_a = 13.9 cm, h_b = 15.9 cm, h_c = 14.8 cm, u = 51.8 cm, A = 128 cm^2
12	a = 10.6 cm, c = 22.7 cm, h_b = 10.6 cm, A = 101.4 cm^2	a = 10.6 cm, b = 19.2 cm, c = 22.7 cm, h_a = 19.1 cm, h_b = 10.6 cm, h_c = 8.9 cm, u = 52.5 cm, A = 101.4 cm^2
13	b = 11.4 cm, c = 13.4 cm, h_a = 6.4 cm, A = 67.9 cm^2	a = 21.2 cm, b = 11.4 cm, c = 13.4 cm, h_a = 6.4 cm, h_b = 11.9 cm, h_c = 10.1 cm, u = 46 cm, A = 67.9 cm^2
14	a = 14.7 cm, c = 12.2 cm, h_b = 10.6 cm, A = 86.2 cm^2	a = 14.7 cm, b = 16.3 cm, c = 12.2 cm, h_a = 11.7 cm, h_b = 10.6 cm, h_c = 14.1 cm, u = 43.2 cm, A = 86.2 cm^2
15	a = 11.2 cm, c = 15 cm, h_b = 11 cm, A = 69 cm^2	a = 11.2 cm, b = 12.6 cm, c = 15 cm, h_a = 12.3 cm, h_b = 11 cm, h_c = 9.2 cm, u = 38.8 cm, A = 69 cm^2
16	b = 8.7 cm, c = 11.4 cm, h_a = 5.7 cm, A = 47 cm^2	a = 16.4 cm, b = 8.7 cm, c = 11.4 cm, h_a = 5.7 cm, h_b = 10.8 cm, h_c = 8.2 cm, u = 36.5 cm, A = 47 cm^2
17	b = 10.4 cm, c = 10.2 cm, h_a = 7.3 cm, A = 53 cm^2	a = 14.6 cm, b = 10.4 cm, c = 10.2 cm, h_a = 7.3 cm, h_b = 10.2 cm, h_c = 10.4 cm, u = 35.2 cm, A = 53 cm^2
18	b = 13.7 cm, c = 18.4 cm, h_a = 9.2 cm, A = 26.8 cm^2	a = 5.8 cm, b = 13.7 cm, c = 18.4 cm, h_a = 9.2 cm, h_b = 3.9 cm, h_c = 2.9 cm, u = 37.9 cm, A = 26.8 cm^2
19	a = 19.6 cm, c = 29.9 cm, h_b = 19.3 cm, A = 184.8 cm^2	a = 19.6 cm, b = 19.2 cm, c = 29.9 cm, h_a = 18.9 cm, h_b = 19.3 cm, h_c = 12.4 cm, u = 68.7 cm, A = 184.8 cm^2
20	a = 13.9 cm, b = 7.3 cm, h_c = 6.3 cm, A = 50.6 cm^2	a = 13.9 cm, b = 7.3 cm, c = 16.1 cm, h_a = 7.3 cm, h_b = 13.9 cm, h_c = 6.3 cm, u = 37.3 cm, A = 50.6 cm^2

Aufgabe 8: Berechne die fehlende Seite, die fehlenden Höhen und den Umfang des allgemeinen Dreiecks (Seiten a, b, c, Höhen h_a, h_b, h_c, u = Umfang, A = Flächeninhalt).

Nr.	*Gegeben:*
1	a = 7.5 cm, c = 25 cm, h_b = 7.4 cm, A = 83.5 cm^2
2	a = 24.4 m, b = 18.8 m, h_c = 17.5 m, A = 89.5 m^2
3	a = 13.8 mm, b = 16.2 mm, h_c = 5.1 mm, A = 71.9 mm^2
4	b = 18.4 m, c = 27.9 m, h_a = 17.8 m, A = 148.3 m^2

5	a = 24.5 cm, b = 13.1 cm, h_c = 8.9 cm, A = 58.6 cm^2
6	a = 8.3 m, c = 4 m, h_b = 3.5 m, A = 9.8 m^2
7	a = 9.5 cm, c = 21 cm, h_b = 8.6 cm, A = 99.7 cm^2
8	a = 15.1 cm, b = 23.4 cm, h_c = 12.7 cm, A = 73.1 cm^2
9	a = 11.8 mm, b = 24.4 mm, h_c = 10.9 mm, A = 95.2 mm^2
10	b = 19.9 mm, c = 11.7 mm, h_a = 11.5 mm, A = 104.9 mm^2
11	b = 9 dm, c = 27.7 dm, h_a = 8.6 dm, A = 102.8 dm^2
12	b = 9.4 m, c = 12.6 m, h_a = 7.4 m, A = 59.2 m^2
13	a = 11.1 m, b = 12.8 m, h_c = 11 m, A = 28.7 m^2
14	b = 21.9 dm, c = 28.4 dm, h_a = 11.3 dm, A = 41.3 dm^2
15	b = 14.3 dm, c = 6.7 dm, h_a = 6.1 dm, A = 47.9 dm^2
16	a = 8 m, c = 23.3 m, h_b = 8 m, A = 84 m^2
17	b = 10.7 m, c = 6.5 m, h_a = 3.7 m, A = 8.7 m^2
18	a = 22.4 cm, c = 29.9 cm, h_b = 22.4 cm, A = 212.7 cm^2
19	b = 10.5 mm, c = 10.5 mm, h_a = 9.8 mm, A = 37.2 mm^2
20	a = 7.9 dm, b = 22.2 dm, h_c = 7.8 dm, A = 85.4 dm^2

Vorgehensweise: Zur Ermittlung der fehlenden Größen beim allgemeinen Dreieck ist die obige Formelsammlung anzuwenden.

Lösungen:

Nr.	*Gegeben:*	*Lösungen:*
1	a = 7.5 cm, c = 25 cm, h_b = 7.4 cm, A = 83.5 cm^2	a = 7.5 cm, b = 22.6 cm, c = 25 cm, h_a = 22.3 cm, h_b = 7.4 cm, h_c = 6.7 cm, u = 55.1 cm, A = 83.5 cm^2
2	a = 24.4 m, b = 18.8 m, h_c = 17.5 m, A = 89.5 m^2	a = 24.4 m, b = 18.8 m, c = 10.2 m, h_a = 7.3 m, h_b = 9.5 m, h_c = 17.5 m, u = 53.4 m, A = 89.5 m^2
3	a = 13.8 mm, b = 16.2 mm, h_c = 5.1 mm, A = 71.9 mm^2	a = 13.8 mm, b = 16.2 mm, c = 28.2 mm, h_a = 10.4 mm, h_b = 8.9 mm, h_c = 5.1 mm, u = 58.2 mm, A = 71.9 mm^2
4	b = 18.4 m, c = 27.9 m, h_a = 17.8 m, A = 148.3 m^2	a = 16.7 m, b = 18.4 m, c = 27.9 m, h_a = 17.8 m, h_b = 16.1 m, h_c = 10.6 m, u = 63 m, A = 148.3 m^2
5	a = 24.5 cm, b = 13.1 cm, h_c = 8.9 cm, A = 58.6 cm^2	a = 24.5 cm, b = 13.1 cm, c = 13.2 cm, h_a = 4.8 cm, h_b = 8.9 cm, h_c = 8.9 cm, u = 50.8 cm, A = 58.6 cm^2
6	a = 8.3 m, c = 4 m, h_b = 3.5 m, A = 9.8 m^2	a = 8.3 m, b = 5.6 m, c = 4 m, h_a = 2.4 m, h_b = 3.5 m, h_c = 4.9 m, u = 17.9 m, A = 9.8 m^2
7	a = 9.5 cm, c = 21 cm, h_b = 8.6 cm, A = 99.7 cm^2	a = 9.5 cm, b = 23.3 cm, c = 21 cm, h_a = 21 cm, h_b = 8.6 cm, h_c = 9.5 cm, u = 53.8 cm, A = 99.7 cm^2
8	a = 15.1 cm, b = 23.4 cm, h_c = 12.7 cm, A = 73.1 cm^2	a = 15.1 cm, b = 23.4 cm, c = 11.5 cm, h_a = 9.7 cm, h_b = 6.2 cm, h_c = 12.7 cm, u = 50 cm, A = 73.1 cm^2
9	a = 11.8 mm, b = 24.4 mm, h_c = 10.9 mm, A = 95.2 mm^2	a = 11.8 mm, b = 24.4 mm, c = 17.4 mm, h_a = 16.1 mm, h_b = 7.8 mm, h_c = 10.9 mm, u = 53.6 mm, A = 95.2 mm^2
10	b = 19.9 mm, c = 11.7 mm, h_a = 11.5 mm, A = 104.9 mm^2	a = 18.2 mm, b = 19.9 mm, c = 11.7 mm, h_a = 11.5 mm, h_b = 10.5 mm, h_c = 17.9 mm, u = 49.8 mm, A = 104.9 mm^2
11	b = 9 dm, c = 27.7 dm, h_a = 8.6 dm, A = 102.8 dm^2	a = 23.8 dm, b = 9 dm, c = 27.7 dm, h_a = 8.6 dm, h_b = 22.8 dm, h_c = 7.4 dm, u = 60.5 dm, A = 102.8 dm^2
12	b = 9.4 m, c = 12.6 m, h_a = 7.4 m, A = 59.2 m^2	a = 15.9 m, b = 9.4 m, c = 12.6 m, h_a = 7.4 m, h_b = 12.6 m, h_c = 9.4 m, u = 37.9 m, A = 59.2 m^2
13	a = 11.1 m, b = 12.8 m, h_c = 11 m, A = 28.7 m^2	a = 11.1 m, b = 12.8 m, c = 5.2 m, h_a = 5.2 m, h_b = 4.5 m, h_c = 11 m, u = 29.1 m, A = 28.7 m^2
14	b = 21.9 dm, c = 28.4 dm, h_a = 11.3 dm, A = 41.3 dm^2	a = 7.3 dm, b = 21.9 dm, c = 28.4 dm, h_a = 11.3 dm, h_b = 3.8 dm, h_c = 2.9 dm, u = 57.6 dm, A = 41.3 dm^2

15	b = 14.3 dm, c = 6.7 dm, h_a = 6.1 dm, A = 47.9 dm^2	a = 15.7 dm, b = 14.3 dm, c = 6.7 dm, h_a = 6.1 dm, h_b = 6.7 dm, h_c = 14.3 dm, u = 36.7 dm, A = 47.9 dm^2
16	a = 8 m, c = 23.3 m, h_b = 8 m, A = 84 m^2	a = 8 m, b = 21.1 m, c = 23.3 m, h_a = 21 m, h_b = 8 m, h_c = 7.2 m, u = 52.4 m, A = 84 m^2
17	b = 10.7 m, c = 6.5 m, h_a = 3.7 m, A = 8.7 m^2	a = 4.7 m, b = 10.7 m, c = 6.5 m, h_a = 3.7 m, h_b = 1.6 m, h_c = 2.7 m, u = 21.9 m, A = 8.7 m^2
18	a = 22.4 cm, c = 29.9 cm, h_b = 22.4 cm, A = 212.7 cm^2	a = 22.4 cm, b = 19 cm, c = 29.9 cm, h_a = 19 cm, h_b = 22.4 cm, h_c = 14.2 cm, u = 71.3 cm, A = 212.7 cm^2
19	b = 10.5 mm, c = 10.5 mm, h_a = 9.8 mm, A = 37.2 mm^2	a = 7.6 mm, b = 10.5 mm, c = 10.5 mm, h_a = 9.8 mm, h_b = 7.1 mm, h_c = 7.1 mm, u = 28.6 mm, A = 37.2 mm^2
20	a = 7.9 dm, b = 22.2 dm, h_c = 7.8 dm, A = 85.4 dm^2	a = 7.9 dm, b = 22.2 dm, c = 21.8 dm, h_a = 21.6 dm, h_b = 7.7 dm, h_c = 7.8 dm, u = 51.9 dm, A = 85.4 dm^2