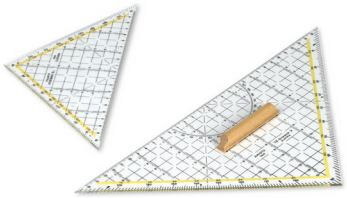
Englische Übungen zu Ähnlichkeit

1. Draw a parallelogram with a = 6 cm, b = 4.5 cm, e = 9 cm.
   Draw a similar parallelogram with e_1 = 6 cm!

2. Why are the two triangles in the picture similar?



3. Divide a line segment PQ of 9 cm into 7 equal segments, applying the First Theorem of Proportional Segments.

4. The ratio of the lengths of two line segments u and v is 3 : 5. The length of u is 2.7

cm.

a. Find the length of v by means of construction (Theorem of Proportional Segments)!
b. Verify the result by means of calculation and measuring!

5. The lengths of the sides of a quadrilateral are a = 3 cm, b = 1.8 cm, c = 1.2 cm, d = 2.4 cm. The perimeter of a similar quadrilateral is u_1 = 11.2 cm.

a. Calculate the lengths of the sides of the similar quadrilateral.
b. What is the ratio of the areas of the two quadrilaterals?

6. Enlarge the line segment PQ ($\overline{PQ}$ = 56 mm) at a ratio of 4 : 5.

7. The shadow of a chimney is

a. 26 m,
b. 35 m,
c. 48 m long.

At the same time the shadow of a man who is 1.80 m tall is 2.25 m long. Calculate the height of the chimney!

Vocabulary

Englisch	Deutsch
similar	ähnlich
line segment	Strecke
First Theorem of Proportional Segments	erster Strahlensatz
ratio	Verhältnis
quadrilateral	Viereck
perimeter	Umfang
to enlarge	vergrößern
shadow	Schatten
chimney	Rauchfang
by means of	mit Hilfe von
to varify	prüfen

Solutions

1. $a_1 = 4\ \text{cm};\ b_1 = 3\ \text{cm}$

2. Because all angles are equal.

3. One segment is approximately 1.3 cm long.

4. v = 4.5 cm

5.
   a. $a_1 = 4\ \text{cm};\ b_1 = 2.4\ \text{cm};\ c_1 = 1.6\ \text{cm};\ d_1 = 3.2\ \text{cm}$
   b. $A : A_1 = 9 : 16$

6. 70 mm

7.
   a. 20.8 m
   b. 28 m
   c. 38.4 m