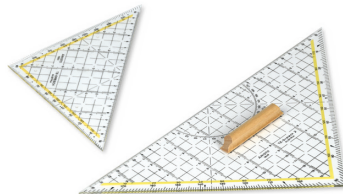




## Englische Übungen zu Ähnlichkeit

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.  $v = 4.5 \text{ cm}$
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

