# Englische Übungen zu Reelle Zahlen

1. What is the length of the side of a square of the given area?
   a. 729 m²
   b. 2304 m²
   c. 4225 cm²
   d. 1225 cm²
   e. 43,56 m²
   f. 94,09 a
   g. 1 ha 29 a 96 m²
   h. 5 ha 42 a 89 m²

2. The square number $x^2$ of which number $x$ lies between the given bounds?
   a. 15 and 17
   b. 17 and 20
   c. 39 and 41
   d. 95 and 99
   e. 88 and 90
   f. 35 and 36,5
   g. 46 and 48,5
   h. 101 and 105

3. Apply the rule $\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$ and write the term in its simplest form.
   **Example:** $\sqrt{n^2 \cdot k^2} = \sqrt{n^2} \cdot \sqrt{k^2} = n \cdot k$
   a. $\sqrt{4 \cdot a^2}$
   b. $\sqrt{u^2 \cdot v^2}$
   c. $\sqrt{c^2 \cdot 25}$
   d. $\sqrt{9 \cdot x^2 \cdot v^2}$
   e. $5 \cdot \sqrt{25 \cdot a^2}$

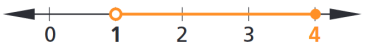
**4.** How many and which integers x lie between the given bounds?

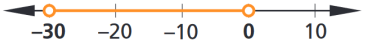
a. $-\sqrt{2} < x < \sqrt{2}$
b. $-\sqrt{1} < x < \sqrt{1}$
c. $-\sqrt{18} < x < 5$
d. $\sqrt{100} < x < \sqrt{200}$

**5.** Find the length of the edge of the given cube. Mind the convention on measured sizes.

e. V = 88,0 cm³
f. V = 100,0 cm³
g. V = 999,0 cm³
h. V = 10 000 cm³

**6.** Which set of numbers is represented in the chart? Express the set of numbers using inequalities.

a. 


b. 


c. 


d. 


**7.** The lengths of two line segments are a = 2,4 cm and b = 1,6 cm. Find the length of line segment x by means of construction. Check by means of calculation.

i. $x = \sqrt{a^2 + b^2}$
j. $x = \sqrt{a^2 - b^2}$
k. $x = \sqrt{\frac{a^2}{4} + b^2}$
l. $x = \sqrt{9a^2 - 4b^2}$
m. $x = \sqrt{9a^2 + b^2}$
n. $x = \sqrt{4a^2 - \frac{b^2}{4}}$

## Vocabulary

| Englisch | Deutsch |
|---|---|
| square | Quadrat |
| bound | Schranke |
| line segment | Strecke |
| convention on measured sizes | Vereinbarung über gemessene Größen |
| integer | ganze Zahl |
| chart | graphische Darstellung |
| set of numbers | Zahlenmenge |
| inequality | Ungleichung |

## Solutions

**1.** The side lengths are

a. 27 m b. 48 m c. 65 m d. 35 m
e. 6,6 m f. 9,7 a g. 114 m h. 233 m

**2.** Possible solutions are:

a. 4 b. 4,5 c. 6,4 d. 9,9
e. 9,4 f. 6 g. 6,9 h. 10,1

Note: These solutions are not unique, others are possible as well.

**3.** a. $2 \cdot a$ b. $u \cdot v$ c. $5 \cdot c$ d. $3 \cdot x \cdot v$ e. $25 \cdot a$

**4.** a. ≈ 4,4 cm b. ≈ 4,6 cm c. ≈ 10,0 cm d. ≈ 21,5 cm

**5.** Between the bounds lie …

a. 3 integers: -1, 0, 1
b. 1 integer: 0
c. 9 integers: -4, -3, -2, -1, 0, 1, 2, 3, 4
d. 4 integers: 11, 12, 13, 14

**6.** The set of numbers is

a. $\{x \in \mathbb{R} \mid 1 < x \leq 4\}$
b. $\{x \in \mathbb{R} \mid -30 < x < 0\}$
c. $\{x \in \mathbb{R} \mid -3 \leq x \leq 3\}$
d. $\{x \in \mathbb{R} \mid x \leq 0\}$

**7.** a. ≈ 2,9 cm b. ≈ 1,8 cm c. 2 cm
d. ≈ 6,4 cm e. ≈ 7,4 cm f. ≈ 4,7cm