

MATHEMATICS • CLASS 10

CHAPTER 6

Triangles

NCERT SOLUTIONS



EXERCISE 6.1 — Q1

(i) All circles are _____. (congruent, similar)

Answer: similar.

Every circle has the same shape; its radius may differ.

(ii) All squares are _____. (similar, congruent)

Answer: similar.

Their angles are equal and corresponding sides have the same ratio.

(iii) All _____ triangles are similar.
(isosceles, equilateral)

Answer: equilateral.

Every equilateral triangle has three angles of 60° .

(iv) Two polygons with the same number of sides are similar if their corresponding angles are _____ and corresponding sides are _____. (equal, proportional)

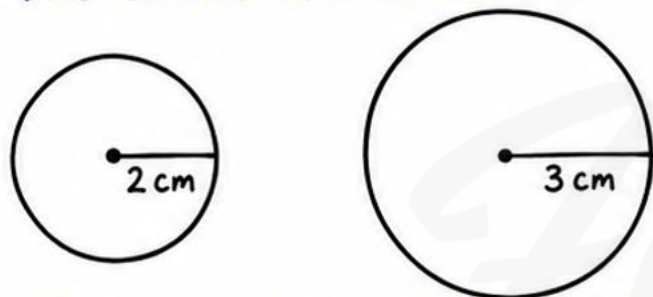
Answer: angles are equal; sides are proportional.
Both conditions are needed for general polygons.

EXERCISE 6.1 – Q2

Q2. Give two different pairs of (i) similar figures and (ii) non-similar figures.

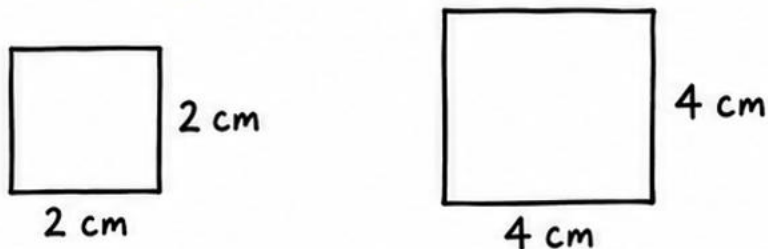
(i) SIMILAR FIGURES

Pair 1: Two circles of radii 2 cm and 3 cm.



They have the same shape, although their sizes differ.

Pair 2: Two squares of sides 2 cm and 4 cm.

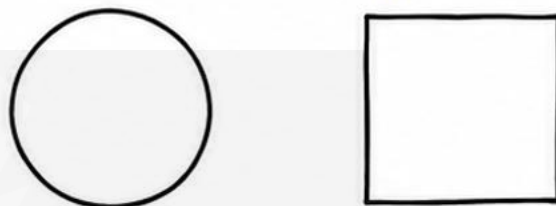


All angles are 90° and every corresponding side ratio is

$$\frac{2}{4} = \frac{1}{2}.$$

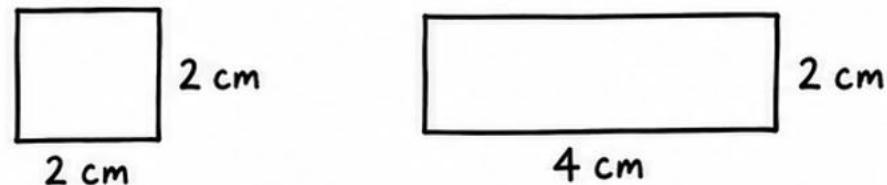
(ii) NON-SIMILAR FIGURES

Pair 1: A circle and a square.



Their shapes are different.

Pair 2: A square of side 2 cm and a rectangle of sides 2 cm and 4 cm.



Their angles are equal, but side ratios

$$\frac{2}{2} = 1 \text{ and } \frac{2}{4} = \frac{1}{2} \text{ are unequal.}$$

EXERCISE 6.1 – Q3

Q3. Are the given quadrilaterals similar?

PQRS is the shown slanting rhombus, with each side 1.5 cm. ABCD is a square, with each side 3 cm.

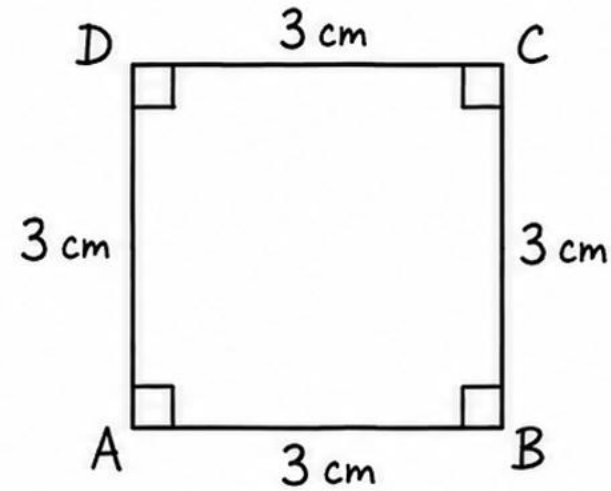
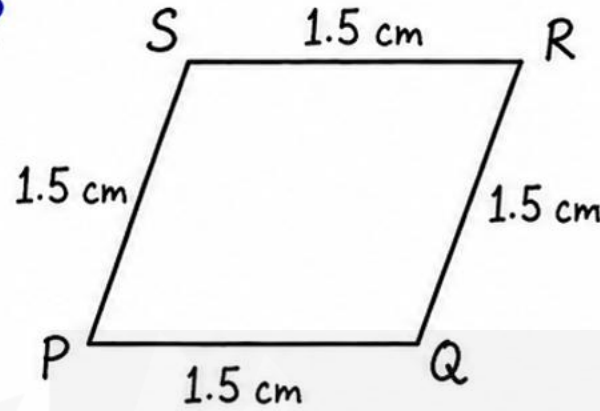
Compare corresponding sides:

$$\frac{PQ}{AB} = \frac{QR}{BC} = \frac{RS}{CD} = \frac{SP}{DA} = \frac{1.5}{3} = \frac{1}{2}$$

- The sides are proportional.
- But every angle of the square is 90° , while the shown rhombus does not have right angles.
- The corresponding angles are not equal.

Answer: The quadrilaterals are NOT similar.

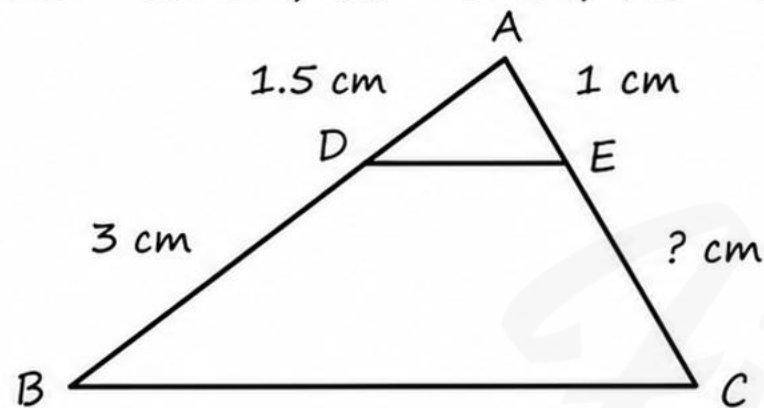
Proportional sides alone do not make two quadrilaterals similar.



EXERCISE 6.2 – Q1

Q1. In both figures, $DE \parallel BC$. Find EC in (i) and AD in (ii).

(i) $AD = 1.5$ cm, $DB = 3$ cm, $AE = 1$ cm.



By the Basic Proportionality Theorem (BPT):

$$\frac{AD}{DB} = \frac{AE}{EC}$$

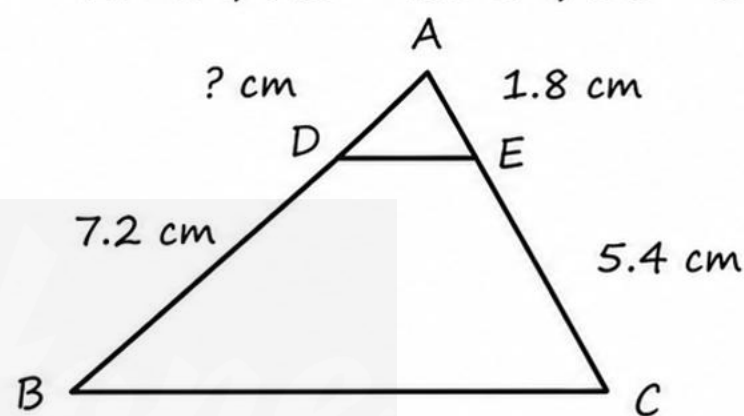
$$\frac{1.5}{3} = \frac{1}{EC}$$

$$1.5 \times EC = 3$$

$$EC = \frac{3}{1.5} = 2 \text{ cm}$$

Answer: $EC = 2$ cm.

(ii) $DB = 7.2$ cm, $AE = 1.8$ cm, $EC = 5.4$ cm.



By BPT:

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{AD}{7.2} = \frac{1.8}{5.4} = \frac{1}{3}$$

$$AD = \frac{7.2}{3} = 2.4 \text{ cm}$$

Answer: $AD = 2.4$ cm.

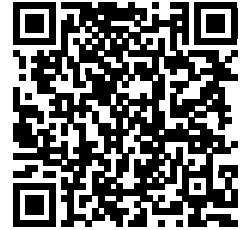


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