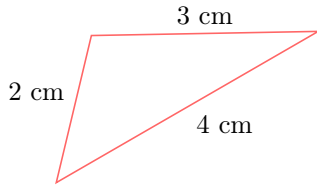


# PROPERTIES OF TRIANGLES

## A TYPES OF TRIANGLES

### A.1 CLASSIFYING TRIANGLES BY SIDE LENGTHS

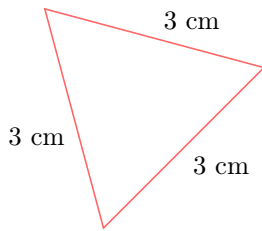
**MCQ 1:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

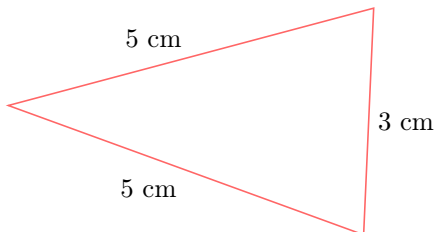
**MCQ 2:** Classify the triangle:



Choose two answers:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

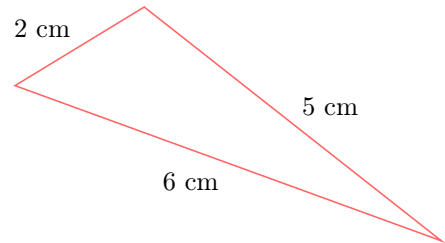
**MCQ 3:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

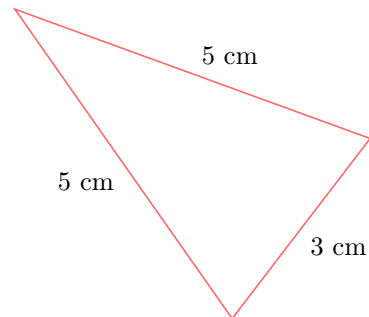
**MCQ 4:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

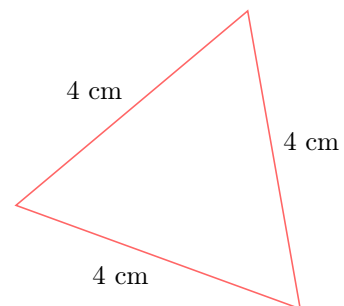
**MCQ 5:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

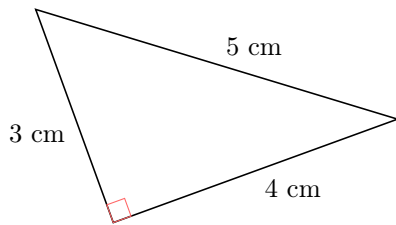
**MCQ 6:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

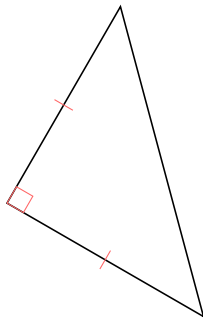
**MCQ 7:** Classify the triangle:



Choose one answer:

- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

**MCQ 8:** Classify the triangle:



Choose one or two answers:

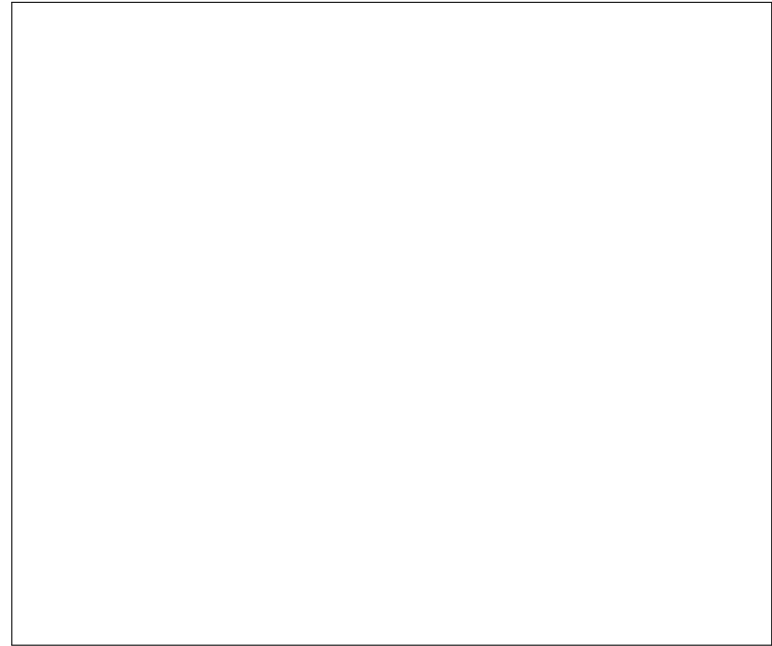
- ☐ Scalene
- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle

## A.2 CONSTRUCTING TRIANGLES WITH A RULER AND COMPASS

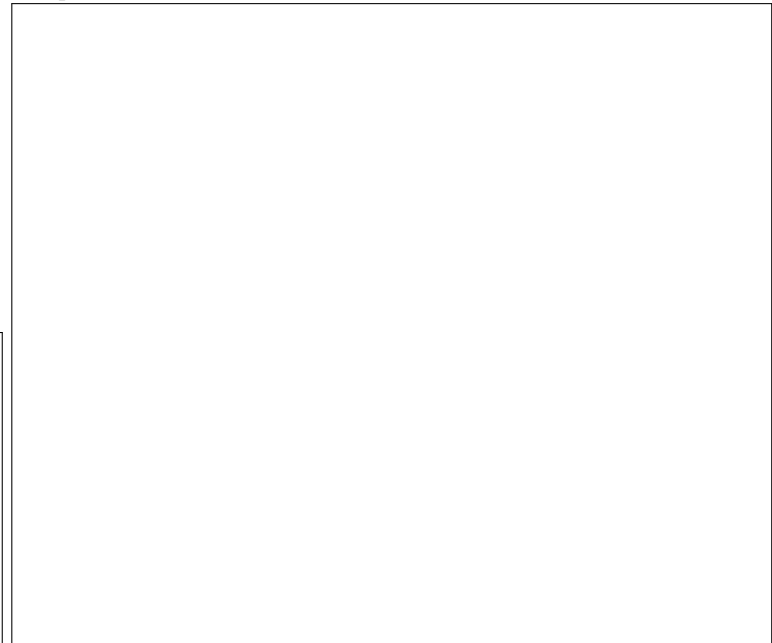
**Ex 9:** Construct a triangle  $ABC$  with  $AB = 3$  cm,  $AC = 6$  cm, and  $BC = 5$  cm, leaving the construction marks visible, using a ruler and a compass.



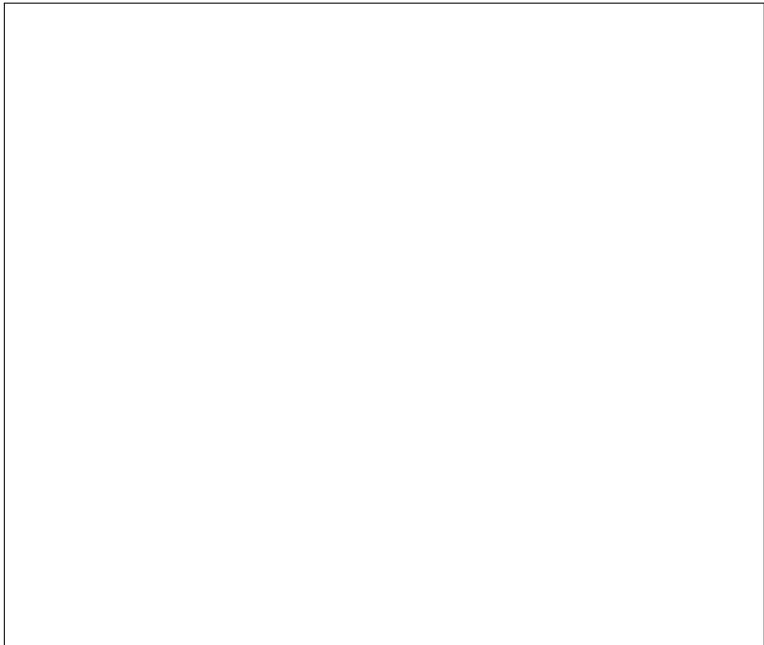
**Ex 10:** Construct a triangle  $ABC$  with  $AB = 4$  cm,  $AC = 3$  cm, and  $BC = 5$  cm, leaving the construction marks visible, using a ruler and a compass.



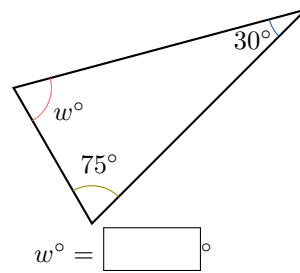
**Ex 11:** Construct an equilateral triangle  $ABC$  with  $AB = 4$  cm, leaving the construction marks visible, using a ruler and a compass.



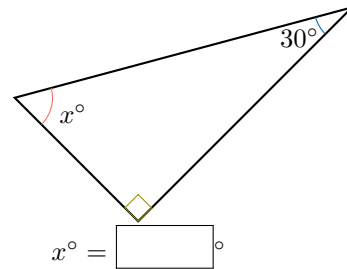
**Ex 12:** Construct an isosceles triangle  $ABC$  with  $AB = 4$  cm,  $AC = 3$  cm, and  $BC = 3$  cm, leaving the construction marks visible, using a ruler and a compass.



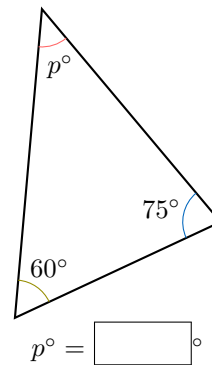
**Ex 16:** Find the unknown angle in the triangle below:



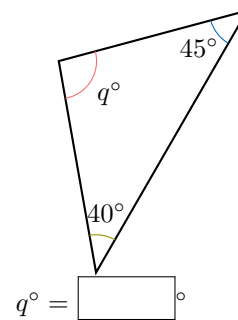
**Ex 17:** Find the unknown angle in the triangle below:



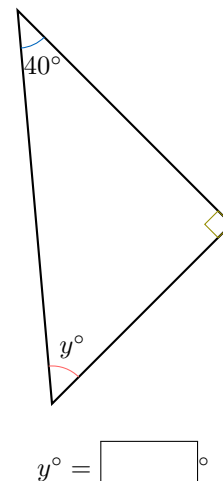
**Ex 18:** Find the unknown angle in the triangle below:



**Ex 19:** Find the unknown angle in the triangle below:



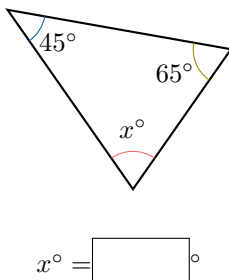
**Ex 20:** Find the unknown angle in the triangle below:



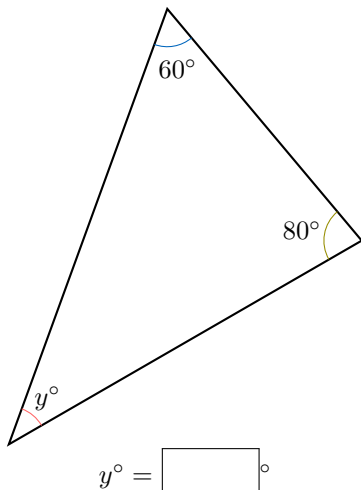
## B ANGLES

### B.1 FINDING AN UNKNOWN ANGLE

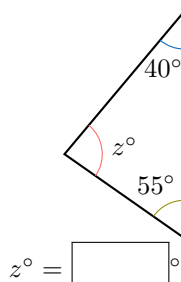
**Ex 13:** Find the unknown angle in the triangle below:



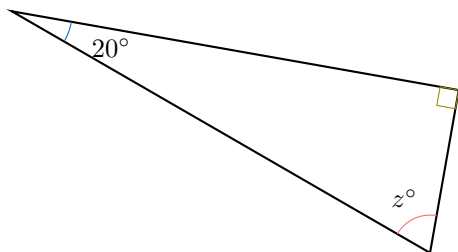
**Ex 14:** Find the unknown angle in the triangle below:



**Ex 15:** Find the unknown angle in the triangle below:



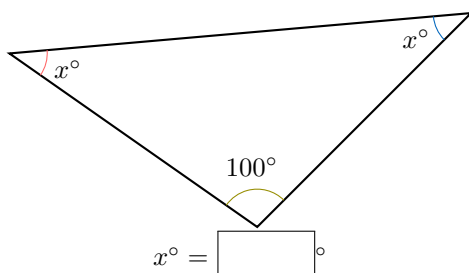
**Ex 21:** Find the unknown angle in the triangle below:



$$z^\circ = \boxed{\phantom{00}}^\circ$$

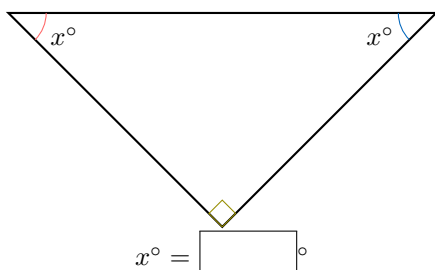
## B.2 FINDING ANGLES IN ISOSCELES TRIANGLES

**Ex 22:** Find the unknown angle in the triangle below:



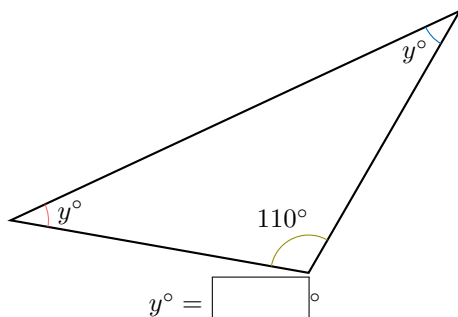
$$x^\circ = \boxed{\phantom{00}}^\circ$$

**Ex 23:** Find the unknown angle in the triangle below:



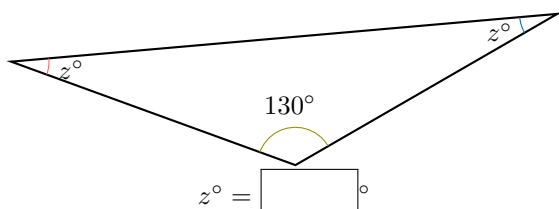
$$x^\circ = \boxed{\phantom{00}}^\circ$$

**Ex 24:** Find the unknown angle in the triangle below:



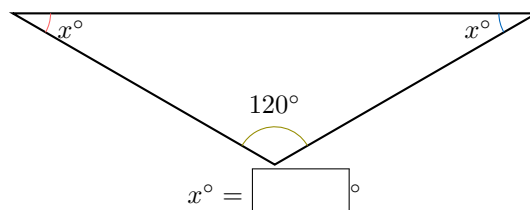
$$y^\circ = \boxed{\phantom{00}}^\circ$$

**Ex 25:** Find the unknown angle in the triangle below:



$$z^\circ = \boxed{\phantom{00}}^\circ$$

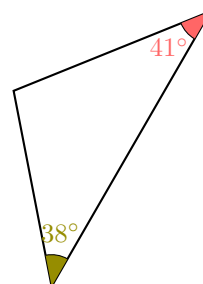
**Ex 26:** Find the unknown angle in the triangle below:



$$x^\circ = \boxed{\phantom{00}}^\circ$$

## B.3 CLASSIFYING ANGLES

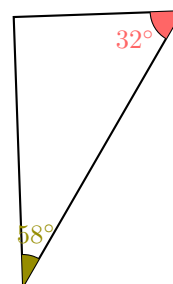
**MCQ 27:** Classify the triangle:



Choose one answer:

- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle
- ☐ Scalene

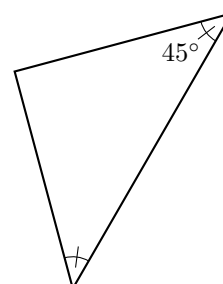
**MCQ 28:** Classify the triangle:



Choose one answer:

- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle
- ☐ Scalene

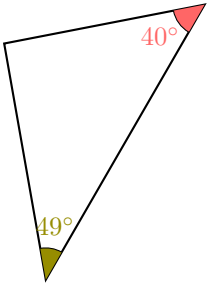
**MCQ 29:** Classify the triangle:



Choose two answers:

- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle
- ☐ Scalene

MCQ 30: Classify the triangle:



Choose one answer:

- ☐ Isosceles
- ☐ Equilateral
- ☐ Right-angle
- ☐ Scalene

B.4 EVALUATING ANGLE PROPERTIES

MCQ 31: An equilateral triangle can be a right-angled triangle.

Choose one answer:

- ☐ True
- ☐ False

MCQ 32: An isosceles triangle can be a right-angled triangle.

Choose one answer:

- ☐ True
- ☐ False

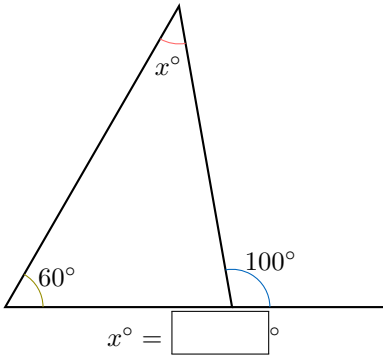
MCQ 33: A triangle can have two right angles.

Choose one answer:

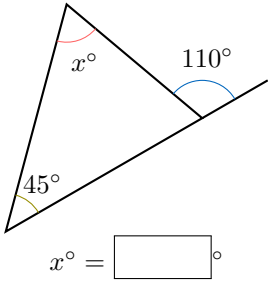
- ☐ True
- ☐ False

B.5 DEDUCTING ANGLES IN TRIANGLE CONFIGURATIONS

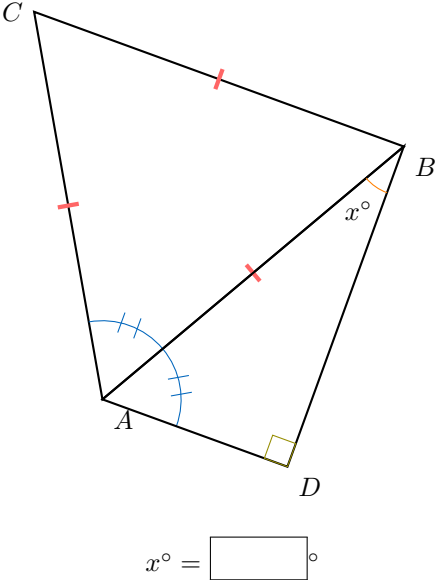
Ex 34: Find the unknown angle in the triangle below:



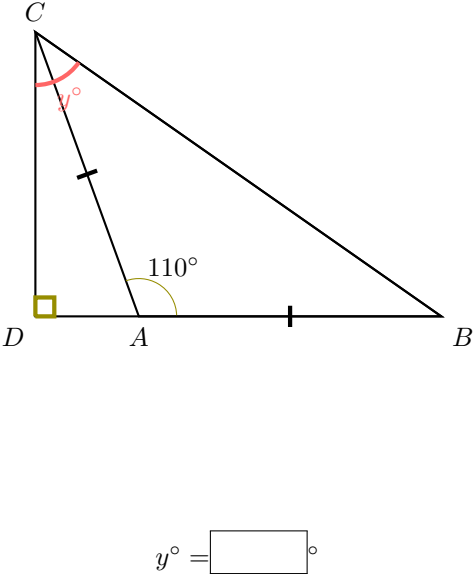
Ex 35: Find the unknown angle in the triangle below:



Ex 36: Find the unknown angle in the triangle below:



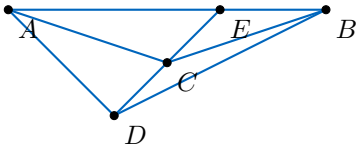
Ex 37: Find the unknown angle in the triangle below:



C TRIANGLE INEQUALITY THEOREM

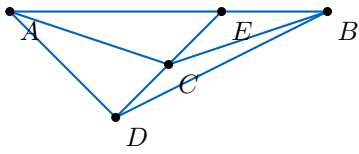
C.1 WRITING INEQUALITIES

Ex 38:



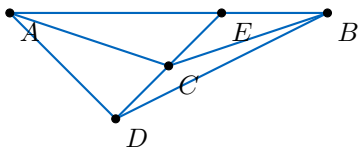
$$\begin{aligned} & \square > \\ AD & \square < AC + CD \\ & \square = \end{aligned}$$

Ex 39:



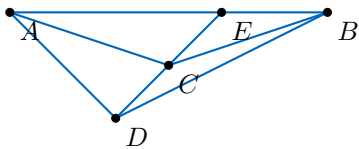
$$\begin{aligned} & \square < \\ BC + CA & \square > AB \\ & \square = \end{aligned}$$

Ex 40:



$$\begin{aligned} & \square < \\ BE + EA & \square > BA \\ & \square = \end{aligned}$$

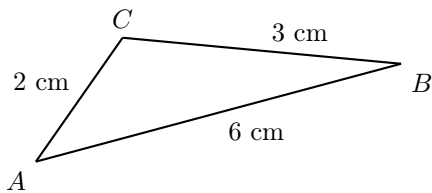
Ex 41:



$$\begin{aligned} & \square < \\ AE + ED & \square > AD \\ & \square = \end{aligned}$$

## C.2 DETERMINING TRIANGLE EXISTENCE

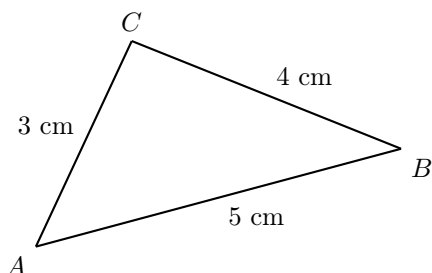
MCQ 42:



Could these be the side lengths of a triangle?

- ☐ Yes  
☐ No

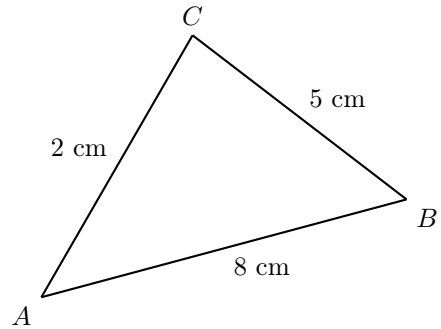
MCQ 43:



Could these be the side lengths of a triangle?

- ☐ Yes  
☐ No

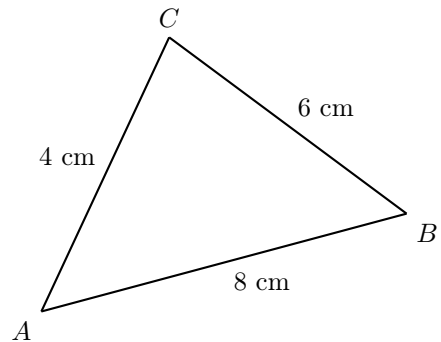
MCQ 44:



Could these be the side lengths of a triangle?

- ☐ Yes  
☐ No

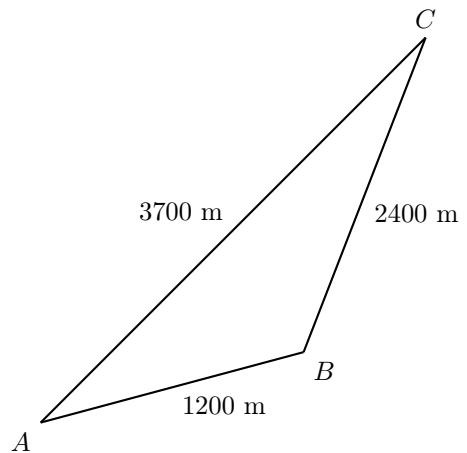
MCQ 45:



Could these be the side lengths of a triangle?

- ☐ Yes  
☐ No

MCQ 46:

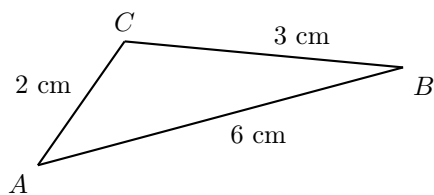


Could these be the side lengths of a triangle?

- ☐ Yes  
☐ No

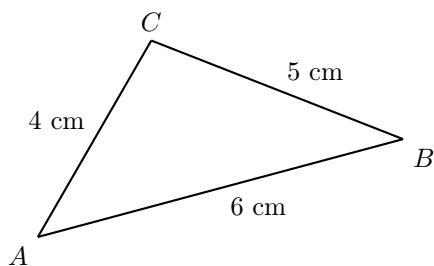
### C.3 DETERMINING TRIANGLE EXISTENCE

Ex 47:



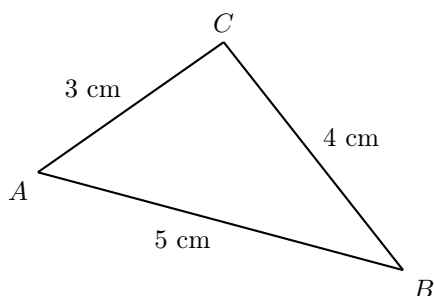
Could these side lengths form a triangle? Justify your answer.

Ex 48:



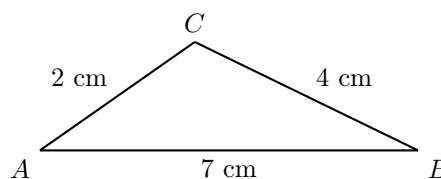
Could these side lengths form a triangle? Justify your answer.

Ex 49:



Could these side lengths form a triangle? Justify your answer.

Ex 50:



Could these side lengths form a triangle? Justify your answer.

### C.4 EXPLORING TRIANGLE EXISTENCE

**Ex 51:**  $ABC$  is an isosceles triangle with  $C$  as the vertex of the equal sides. The perimeter is 10 cm, and  $AB = 3$  cm. Can this triangle be constructed? Justify your answer.

**Ex 52:**  $ABC$  is an isosceles triangle with  $C$  as the vertex of the equal sides. The perimeter is 10 cm, and  $AC = 2$  cm. Can this triangle be constructed? Justify your answer.

**Ex 53:** In triangle  $ABC$ ,  $AB = 5$  cm and  $AC = 3$  cm. What are the possible integer lengths for segment  $BC$ ? Justify your answer.

