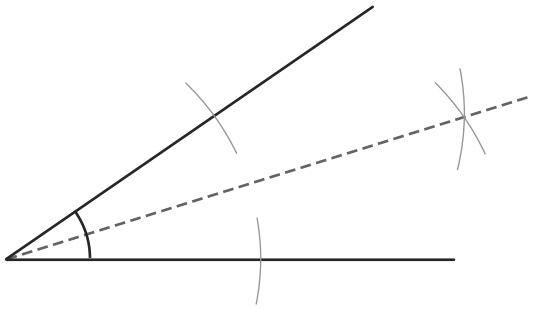
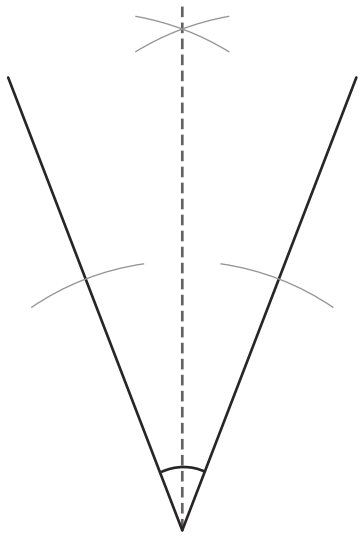
Your turn

1. Construct angle bisectors for the angles shown.

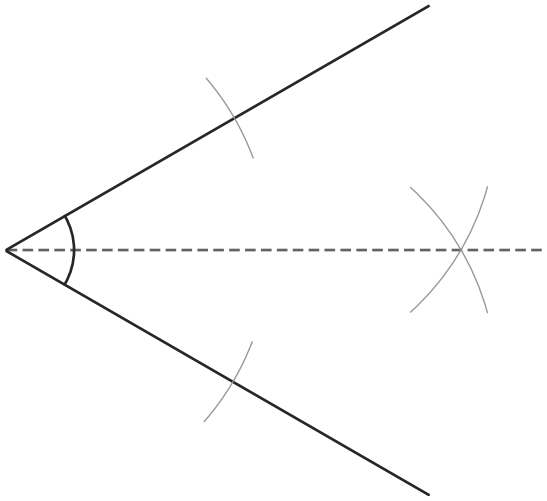
a.



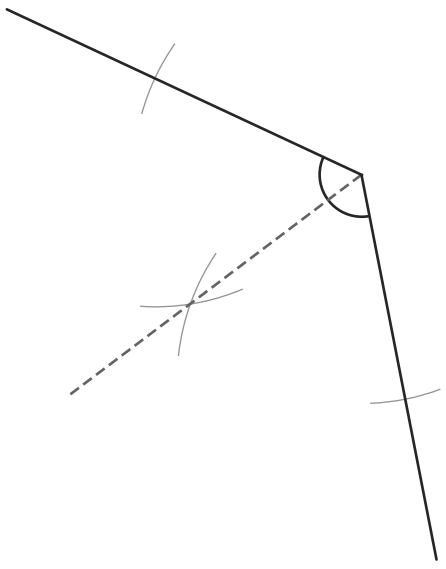
c.



b.

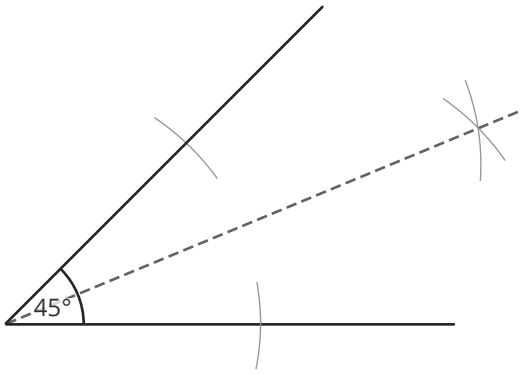


d.

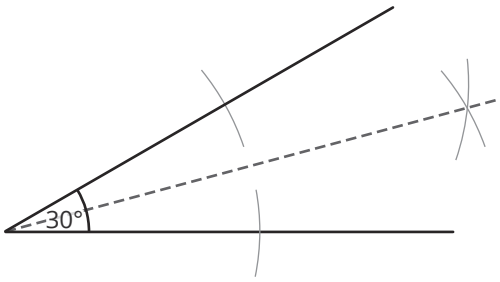


2. Draw the following angles and construct their angle bisectors.

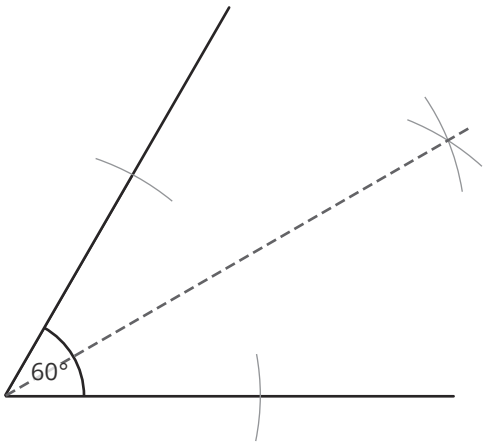
a. 45°



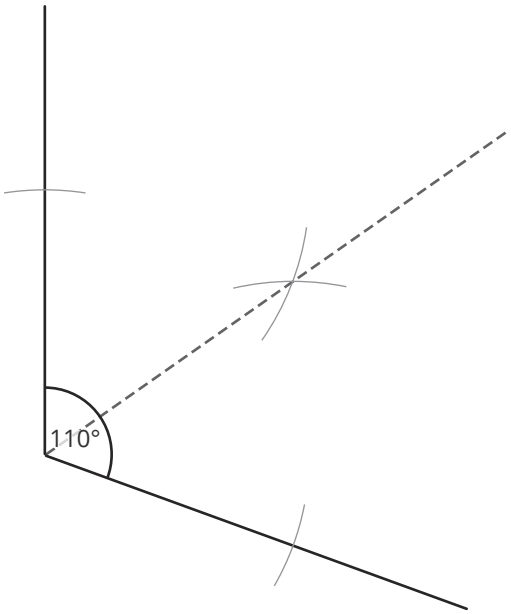
d. 30°



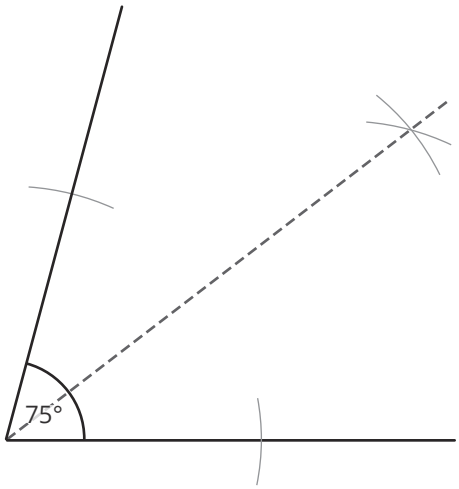
b. 60°



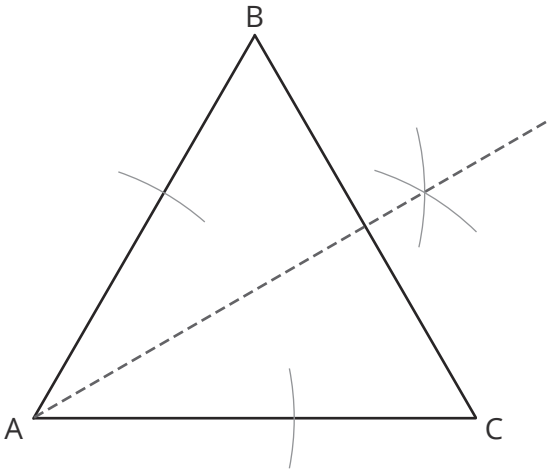
e. 110°



c. 75°

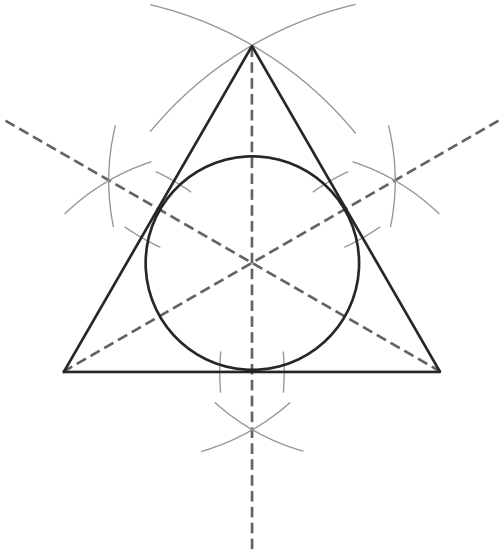


3. Construct the angle bisector of angle BAC in the shape shown below.



Challenge

Draw an equilateral triangle with side length of 5cm. Construct the angle bisector of each vertex. Draw the largest possible circle that does not go outside the triangle.



A pair of compasses should have been used to create the equilateral triangle. The circle inside the triangle must have used the point of intersection as the centre. The circle should just touch the sides of the triangle.

Angle Bisectors

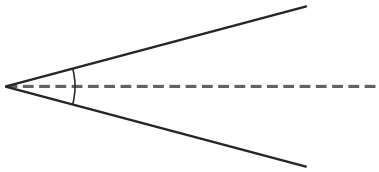
Prior Knowledge:

Before attempting this sheet, students should know how to draw and measure angles using a protractor.

Angle bisectors are a type of **loci** (which is plural for **locus**). A **locus** is a **line** or **region** that **shows all the points** which **fit a given rule**.

An **angle bisector** is the locus of points which are **equidistant** (the same distance) **from two given lines**.

For example



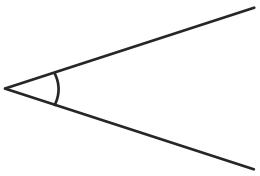
Here, the angle has been bisected. There are now two equal angles. The line (the locus) which has been created is equidistant to the two given lines.

To construct an angle bisector, you will need:

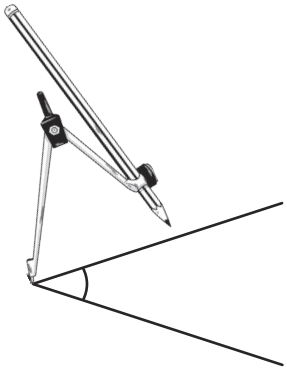
- a pencil
- a ruler
- a pair of compasses

Example

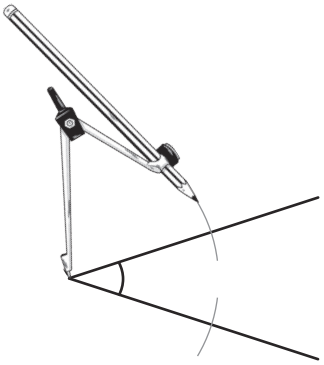
Construct an angle bisector of the angle shown.



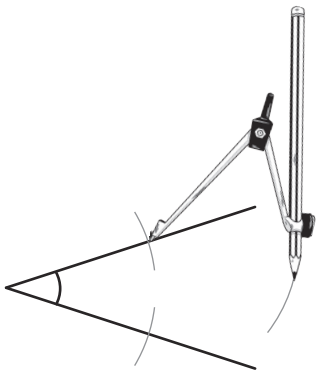
Step 1: Place the compasses at the point where the two lines meet. It is important that you keep the setting of the compasses **the same** while you make all the marks.



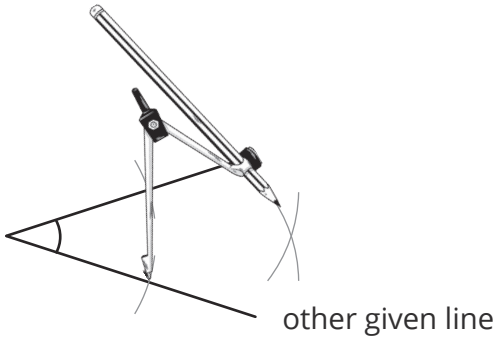
Step 2: Use the compasses to draw an **arc** on each line. You can call these the first compass marks.



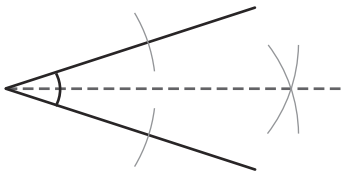
Step 3: Now, place the compasses on one of the first compass marks. More specifically, place it at the point where the arc crosses the given line. Draw another arc in between the two given lines.



Step 4: Again, keeping the setting of the compass the same, place the compasses on the other first compass mark. Draw another arc, which should **intersect** with the arc you have just drawn.



Step 5: Finally, **draw a line** which goes through the **intersected arcs**.



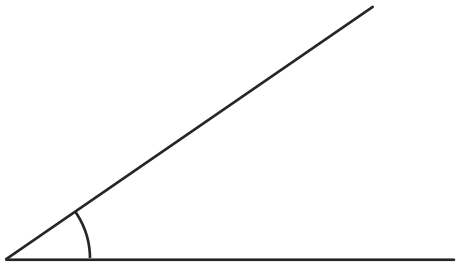
You have successfully **bisected the angle**. It now contains all the points **equidistant** between the two given lines.

NEVER erase your construction marks.

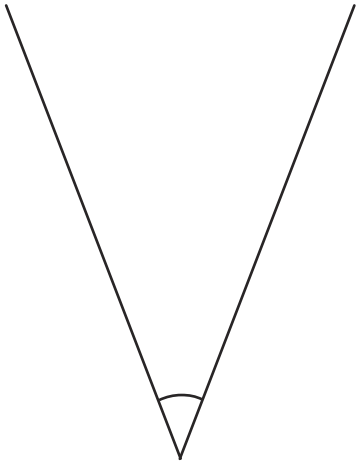
Your turn

1. Construct angle bisectors for the angles shown.

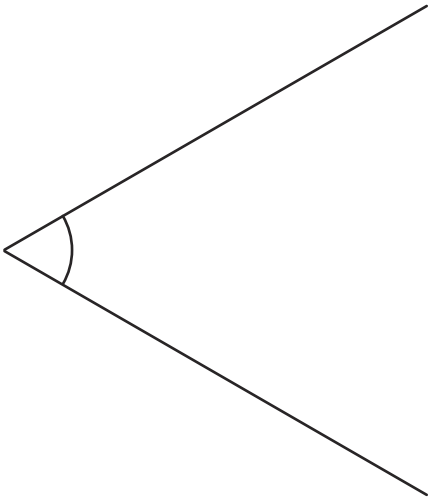
a.



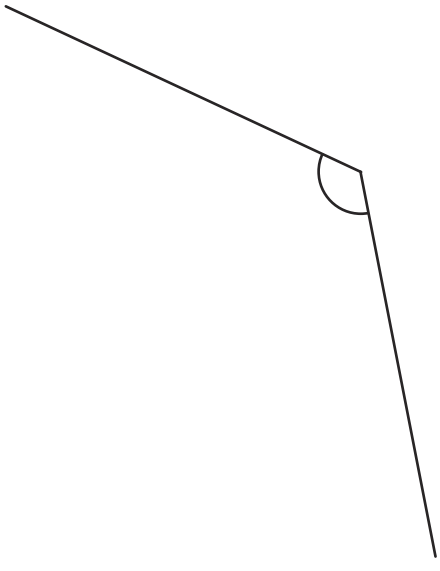
c.



b.



d.



2. Draw the following angles and construct their angle bisectors.

a. 45°	d. 30°
b. 60°	e. 110°
c. 75°	

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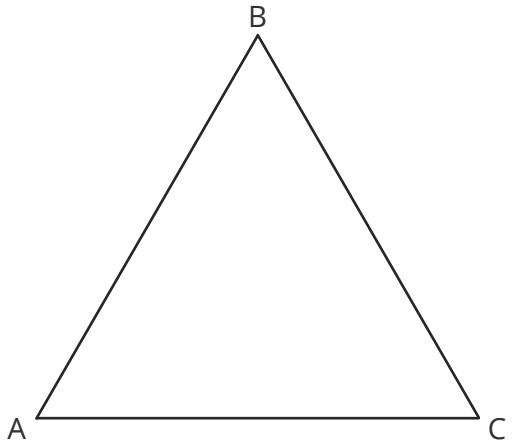

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