1
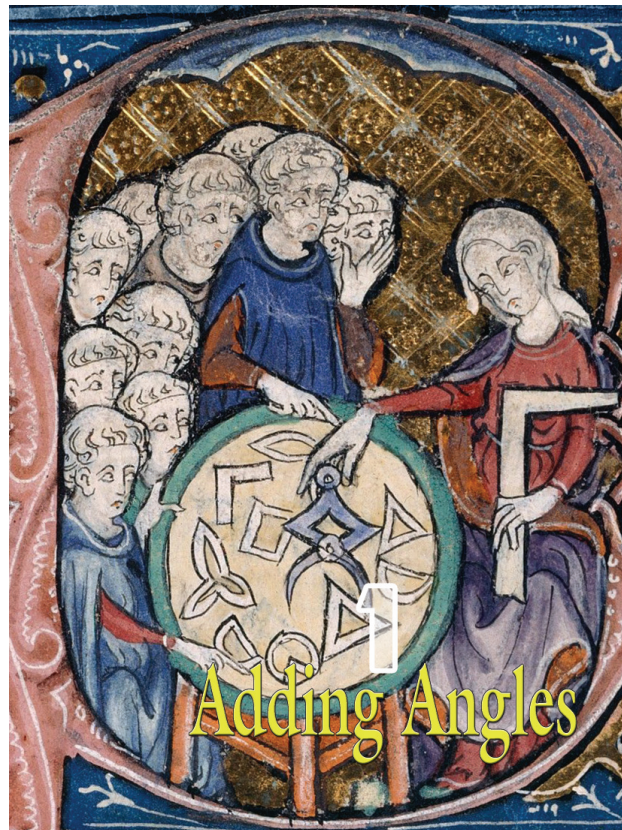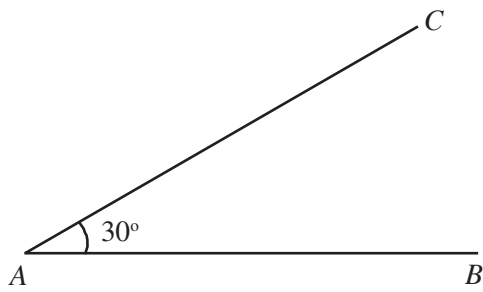
Adding Angles

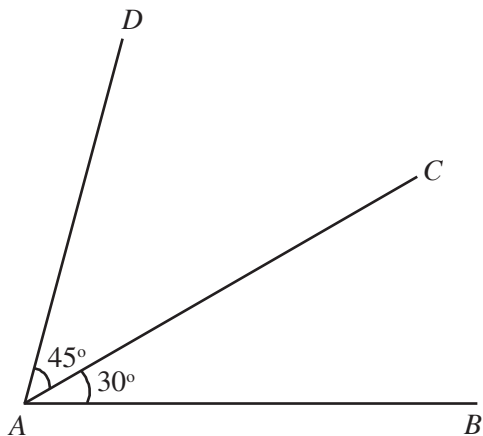## Joining angles

Can you draw this angle?

Draw another angle on top like this:

How many angles at *A* now?

$\angle CAB$ = ...

$\angle DAC$ = ...

Do you see one more large angle?

How much is it?

$\angle DAB$ = ...

How did you compute it?

$\angle DAB = 45° + 30° = 75°$

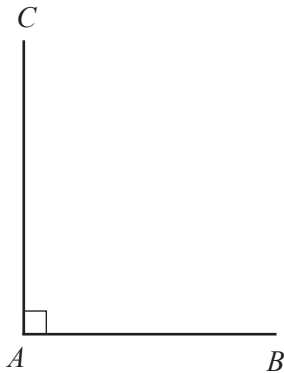In the figures below, the measures of two angles are shown. Write the third angle as a sum or difference and compute its measure:

$\angle DAB$ = ... + ... = ...

$\angle DAB$ = ... + ... = ...

$\angle CAB$ = ... − .... = ...

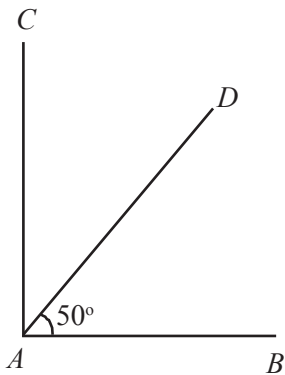$\angle DAC$ = ... − .... = ...
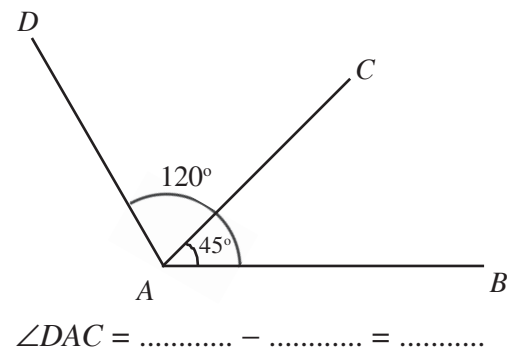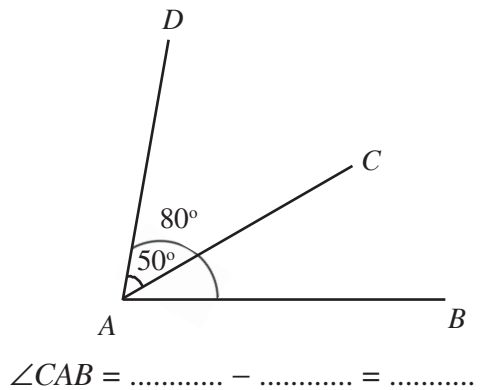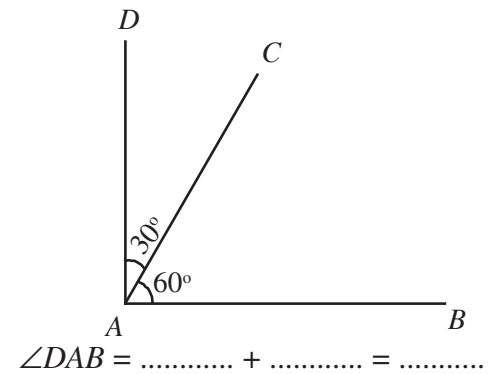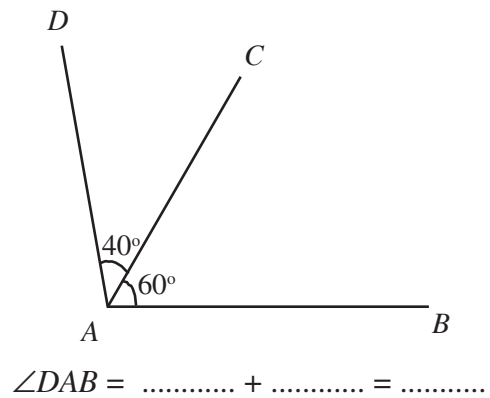
On both sides

Draw a line and a perpendicular to it as below:

Now draw an angle within it like this:
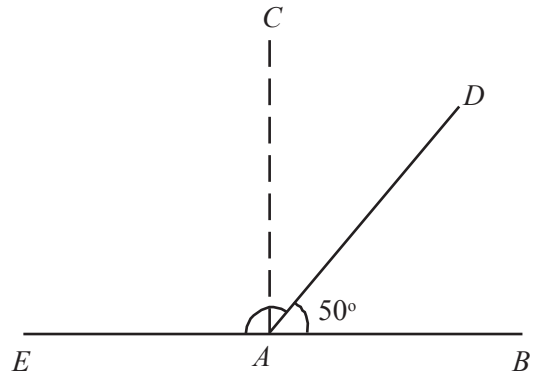

What is the measure of $\angle DAC$?

$$\angle DAC = \text{............} - \text{............} = \text{............}$$

Let's stretch AB a bit to the left:
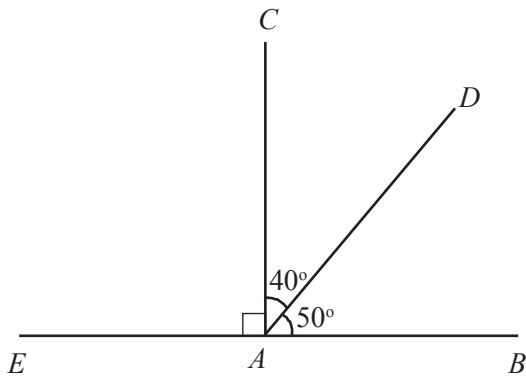
How much is $\angle DAE$?

$$\angle DAE = \text{............} + \text{............} = \text{............}$$

Do you see how $\angle DAE$ is related to $\angle DAB$?
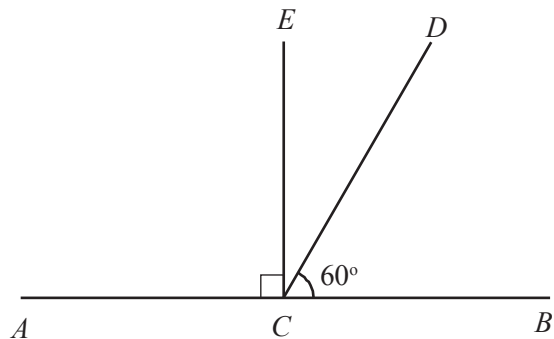

Now look at this figure:
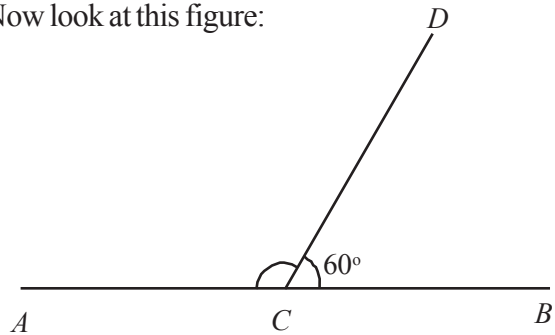
Can you compute $\angle DCA$?

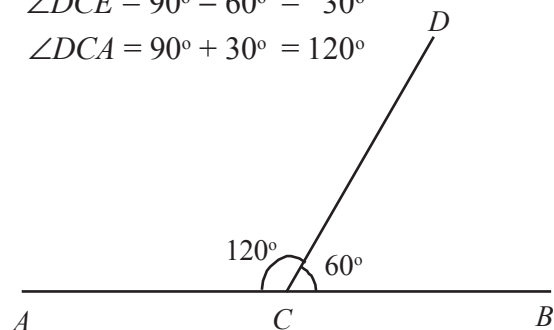How about drawing a perpendicular at C and splitting this angle?
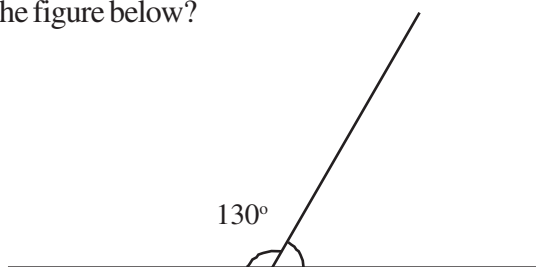

How much is $\angle DCE$?

So, how much is $\angle DCA$?
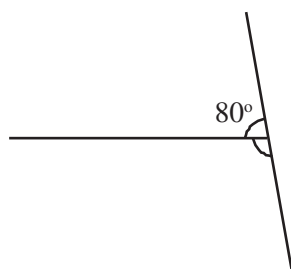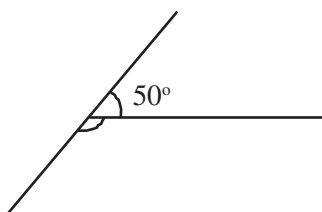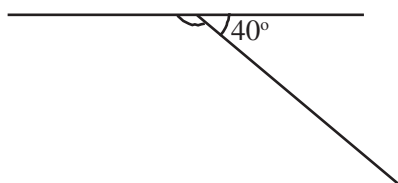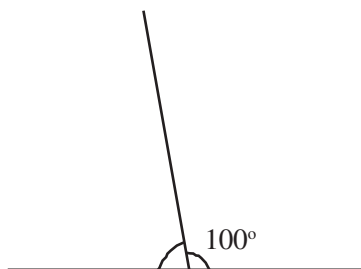
$$\angle DCE = 90^\circ - 60^\circ = 30^\circ$$
$$\angle DCA = 90^\circ + 30^\circ = 120^\circ$$

Like this, can you compute the angle on the right in the figure below?

130º

In the figures below, the angles made on either side by joining two lines are shown; the measure of one angle is given. Compute the measure of the other:
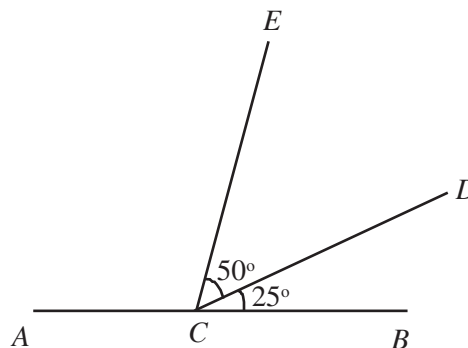
100º

40º

50º

80º

What do we see in all these?

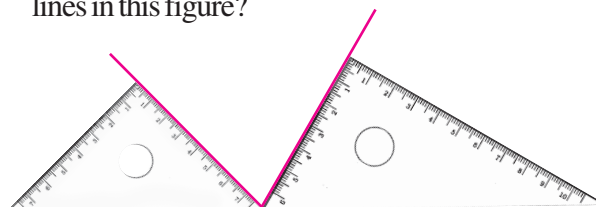> **If a line is drawn from another line, then the sum of the angles on either side is 180º.**

A pair of angles got like this is called a linear pair.
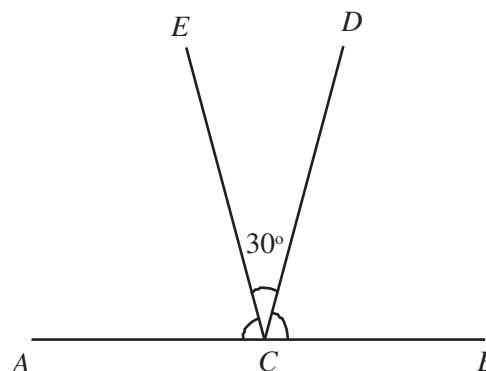
Angle calculation

- How much is ∠*ACE* in this figure?

E

D

50º
25º

A   *C*   *B*

- How much is the angle between the two slanted lines in this figure?

- In the figure below, ∠*ACD* = ∠*BCE*. How much is each?

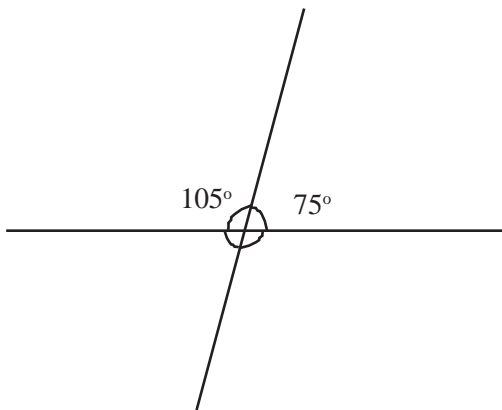E   D

30º

A   *C*   *B*

Cutting across

In the figure below, how much is the angle on the left?
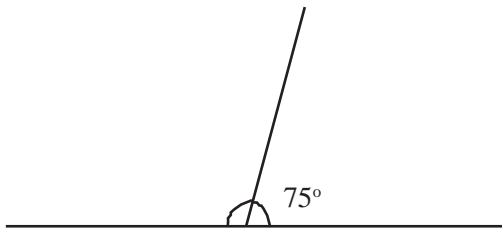
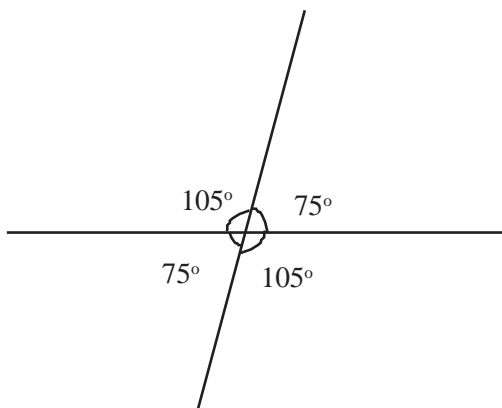Suppose we extend the upper line downwards:

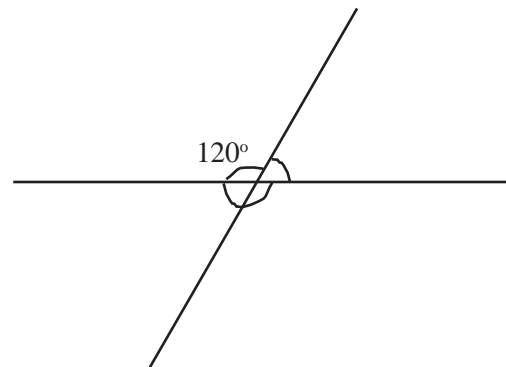Now there are two more angles underneath.

How much is each?

The angles at the top and bottom, on the left of the slanted line form a linear pair.

There is such a linear pair on the right also.

Now can't we compute these angles?

In the figure below also, two lines cut across each other. Can you compute the other three angles marked?

What do we see from all these?

> **Among the four angles made by two lines cutting across each other, the sum of each pair of nearby angles is 180º. Each pair of opposite angles are equal.**
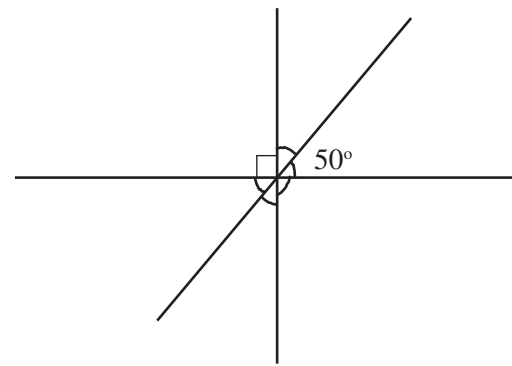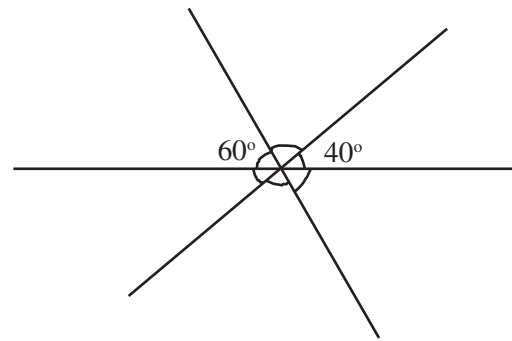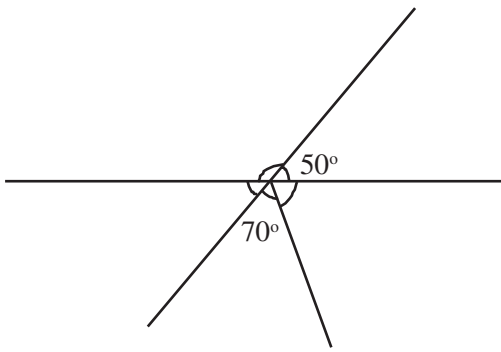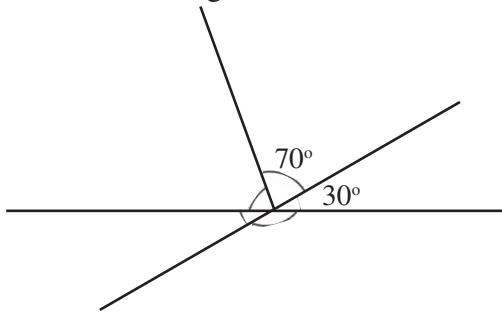
Now can't you calculate the angles marked in each of the figures below? Write them in the figure.
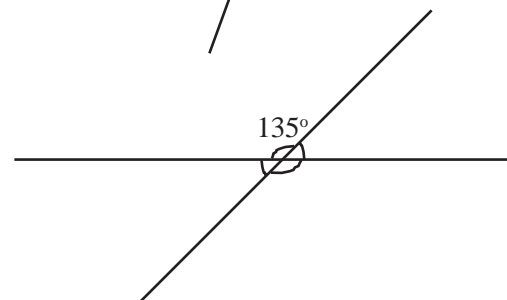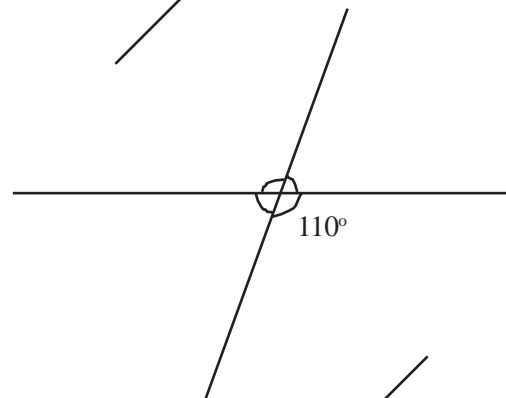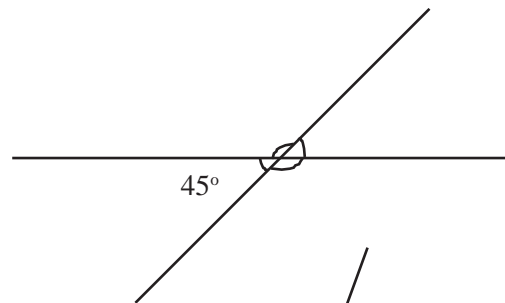
Let's do it!

In each figure some angles are given. Find all other angles.

Looking back

Achievements	On my own	With teacher's help	Must improve
• Applying the geometrical ideas learnt in new contexts.			
• Explaining the concepts of linear pair and opposite angles, using ideas relating to angles.			
• Solving problems using the knowledge relating to angles.			