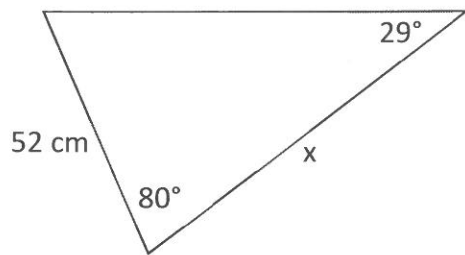


### Example 3

Determine the length of the side labelled  $x$



In this problem, we have a set of partners *given* (the 52 cm and 29°) which means this *is* a sine law problem. BUT, the side we are looking for doesn't have a partner!!! It needs its partner to share a fraction with!

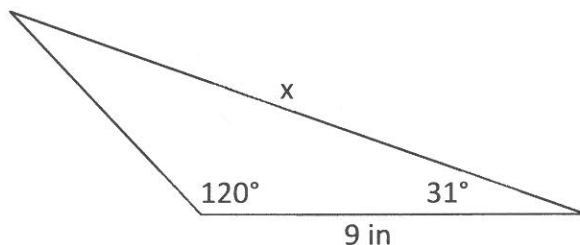
We can *find* the partner to the side labelled ' $x$ ' using the 180-degree rule:  $180^\circ - 80^\circ - 29^\circ = 71^\circ$ . Now use  $x$ 's partner to set up the proportion:

$$\frac{52}{\sin 29^\circ} = \frac{x}{\sin 71^\circ}$$

$$x = 52 \times \sin 71^\circ \div \sin 29^\circ$$
$$x = \mathbf{101.41 \text{ cm}}$$

### Example 4

Determine the length of the side labelled  $x$



In this question, there are no partners *given* – you might think that this is NOT a sine law question; but again the 180° rule comes to the rescue:  $180^\circ - 120^\circ - 31^\circ = 29^\circ$  (the PARTNER to the given side!)

$$\frac{9}{\sin 29^\circ} = \frac{x}{\sin 120^\circ}$$

$$x = 9 \times \sin 120^\circ \div \sin 29^\circ$$
$$x = \mathbf{17.78}$$