```
> # As I graduated from high school 31 years ago, and this is 2024, I will start with some
      background comments
> # for a right triangle, we have angle a, angle b, and a 90 degree angle
> # now review complementary angles
> compAngle := proc(a)
  return 90 - a
  end proc
```

$$compAngle := \mathbf{proc}(a)\ \mathbf{return}\ 90 - a\ \mathbf{end\ proc} \tag{1}$$

```
> compAngle(30)
```

$$60 \tag{2}$$

```
> compAngle(2)
```

$$88 \tag{3}$$

```
> compAngle(5)
```

$$85 \tag{4}$$

```
> #hopefully, you get the idea.
> # When measured in degrees (not radians), the sum of two complementary angles is 90 degrees.
> # Also the sum of all three angles of any triangle, in a flat plane, is 180 degrees, also called a
      straight angle.
> # Furthur
> # we have a right triangle with adjacent side down, right angle on the right side, and angle 'a'
      on the left side.
> # for the side adjacent, we have
> evalf( cos( (90*3.141592654)/180 ) )
```

$$-2.051033808\ 10^{-10} \tag{5}$$

```
> # so we see the Maple cos() function is in degrees, so we must convert to radians, with round
      off error.
>
> # we have tan(a) = A divided by B
> # so B = A divided by ( tan(a) )
>
>
> # A is length measure of side opposite angle 'a'
> # a is measured in degrees
> sideOpp := proc(a, A)
  local B;
  B := A / tan( (a*3.141592654)/180 );
  return B
  end proc
```

$$sideOpp := \mathbf{proc}(a, A)\ \mathbf{local}\ B;\ B := A / \tan(a * 3.141592654 / 180);\ \mathbf{return}\ B\ \mathbf{end\ proc} \tag{6}$$

```
> # note this factor of (pi over 180) needs to be stressed for students first learning about the
      tangent function in radians.
> sideOpp(10, 2)
```

$$11.34256364 \tag{7}$$

```
> # so the base of this triangle is about 11.3, a little longer than the height, (which is the side
      opposite the known angle
> sideOpp(45, 3)
```

3.000000001 **(8)**

```
> # here we have an isocolese triangle with a very small round off error due to our aproximation
      to pi.
>
> # as it is no good to re-invent the wheel, see
> #  https://www.calculator.net/triangle-calculator.html
>
> # have a nice day
>
```