**Lesson Element – 10.05c Exact trigonometric ratios**

**Task 1 – Special Triangles**

We are going to look at two special triangles:

**Triangle 1**

**1**

**1**

1. What type of triangle is this?
2. Explain why two of the angles are 45°.
3. What is the length of the remaining side in the triangle?

**Triangle 2**

Now take an equilateral triangle, with a side of 2 units and cut it in half vertically to create two identical right-angled triangles, as shown:

**1**

**1**

**2**

**2**

**2**

The horizontal side has been cut in two, so the base of each triangle is now labelled 1 unit.

(Now you know why we started with an equilateral triangle with a side of 2 units.)

1. Explain why two of the angles in the right-angled triangle are 60° and 30°.
2. What is the height of the triangle?

**Task 2 – Exact Value Card Sort**

By using the special triangles and your knowledge of techniques for working with right-angled triangles, match the respective trigonometric ratio with its exact value.

✁

|  |  |  |
| --- | --- | --- |
|  |  | sin 60° |
| cos 45° | cos 30° |  |
| tan 45° |  | tan 60° |
|  | cos 60° |  |
|  |  | sin 30° |
| tan 30° | sin 45° |  |

**Extension**

What patterns can you spot in your results?