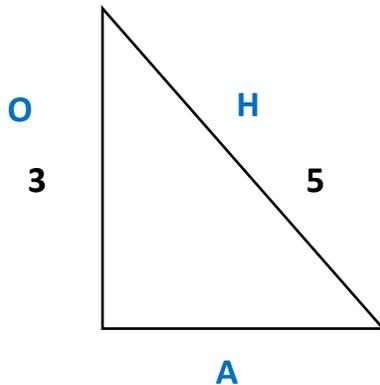**November 12th, 2021**

Solving angle related questions using the **SOH CAH TOA** approach. **By Ebou Janha**

O

H

3

5

A

SOH Sine = Opposite / Hypotenuse
CAH Cos = Adjacent / Hypotenuse
TOA Tan = Opposite / Adjacent

SOH Sine = Opposite divide by Adjacent
CAH Cos = Adjacent divide by Hypotenuse
TOA Tan = Opposite divide by Adjacent

The longest side of the triangle is the hypotenuse **(H)**
The side opposite to the angle is the opposite **(O)**
The remaining side is the adjacent **(A)**

When to use **SOH** or **CAH** or **TOA**

You use **SOH** when the side opposite to the angle and the side of the hypotenuse are given.   **(The corresponding angle or degree is sine**)

You use **CAH** when the hypotenuse and the adjacent are given.
(The corresponding angle or degree is Cos)

You use **TOA** when the opposite and the adjacent are given.
(The corresponding angle or degree is Tan)

Question 1   *Refer to page 4 for the SOH CAH TOA chart*

A

5

3

B

Q
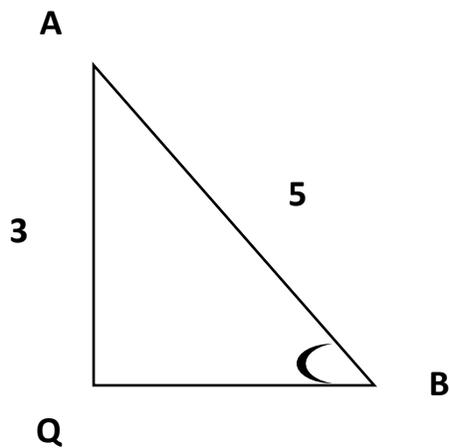
To find the degree for angle **B,** we will use SOH since the opposite and the hypotenuse sides are given. Although we don't know the degree of angle A, angle Q is 90 degrees since it is a right angle.

The hypotenuse is 5

The opposite is 3   So Sine = opposite/ hypotenuse   Sine =3/5 =0.6

Now to determine the degree of the angle, we simply refer to the degree that corresponds to **(sine 0.6)** from the **SOH CAH TOA chart** on page 4.
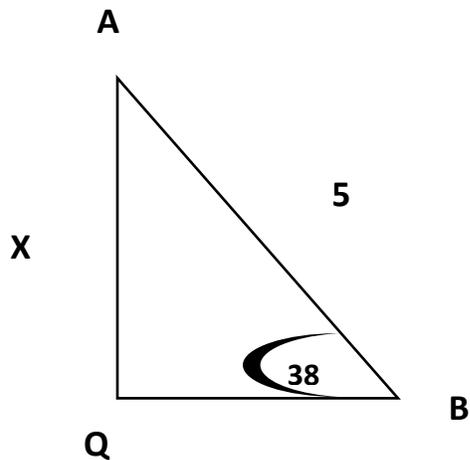
Sine 0.6 is 38 degrees   **(So angle B is 38 degrees)**

Question 2   *Refer to page 4 for the SOH CAH TOA chart*

Now angle B with 38 degrees, we can find the opposite which is X by using SOH

Since SOH is Sine = Opposite / Hypotenuse

Then Sine 38 degree = X/5

Now using the SOH CAH TOA chart find sine 38 degrees

Sine 38 is 0.6 according to the chart

Then 0.6 =X/5

Now you cross multiply

0.6 X 5 =X

X = 0.6 X 5

X = 3

So the opposite is 3

Angle A	Sin(A)	Cos(A)	Tan(A)	Angle A	Sin(A)	Cos(A)	Tan(A)
0	0.000	1.000	0.000	90	1.000	0.000	Undefined
2	0.035	0.999	0.035	92	0.999	-0.035	-28.636
4	0.070	0.998	0.070	94	0.998	-0.070	-14.301
6	0.105	0.995	0.105	96	0.995	-0.105	-9.514
8	0.139	0.990	0.141	98	0.990	-0.139	-7.115
10	0.174	0.985	0.176	100	0.985	-0.174	-5.671
12	0.208	0.978	0.213	102	0.978	-0.208	-4.705
14	0.242	0.970	0.249	104	0.970	-0.242	-4.011
16	0.276	0.961	0.287	106	0.961	-0.276	-3.487
18	0.309	0.951	0.325	108	0.951	-0.309	-3.078
20	0.342	0.940	0.364	110	0.940	-0.342	-2.747
22	0.375	0.927	0.404	112	0.927	-0.375	-2.475
24	0.407	0.914	0.445	114	0.914	-0.407	-2.246
26	0.438	0.899	0.488	116	0.899	-0.438	-2.050
28	0.469	0.883	0.532	118	0.883	-0.469	-1.881
30	0.500	0.866	0.577	120	0.866	-0.500	-1.732
32	0.530	0.848	0.625	122	0.848	-0.530	-1.600
34	0.559	0.829	0.675	124	0.829	-0.559	-1.483
36	0.588	0.809	0.727	126	0.809	-0.588	-1.376
38	0.616	0.788	0.781	128	0.788	-0.616	-1.280
40	0.643	0.766	0.839	130	0.766	-0.643	-1.192
42	0.669	0.743	0.900	132	0.743	-0.669	-1.111
44	0.695	0.719	0.966	134	0.719	-0.695	-1.036
46	0.719	0.695	1.036	136	0.695	-0.719	-0.966
48	0.743	0.669	1.111	138	0.669	-0.743	-0.900
50	0.766	0.643	1.192	140	0.643	-0.766	-0.839
52	0.788	0.616	1.280	142	0.616	-0.788	-0.781
54	0.809	0.588	1.376	144	0.588	-0.809	-0.727
56	0.829	0.559	1.483	146	0.559	-0.829	-0.675
58	0.848	0.530	1.600	148	0.530	-0.848	-0.625
60	0.866	0.500	1.732	150	0.500	-0.866	-0.577
62	0.883	0.469	1.881	152	0.469	-0.883	-0.532
64	0.899	0.438	2.050	154	0.438	-0.899	-0.488
66	0.914	0.407	2.246	156	0.407	-0.914	-0.445
68	0.927	0.375	2.475	158	0.375	-0.927	-0.404
70	0.940	0.342	2.747	160	0.342	-0.940	-0.364
72	0.951	0.309	3.078	162	0.309	-0.951	-0.325
74	0.961	0.276	3.487	164	0.276	-0.961	-0.287
76	0.970	0.242	4.011	166	0.242	-0.970	-0.249
78	0.978	0.208	4.705	168	0.208	-0.978	-0.213
80	0.985	0.174	5.671	170	0.174	-0.985	-0.176
82	0.990	0.139	7.115	172	0.139	-0.990	-0.141
84	0.995	0.105	9.514	174	0.105	-0.995	-0.105
86	0.998	0.070	14.301	176	0.070	-0.998	-0.070
88	0.999	0.035	28.636	178	0.035	-0.999	-0.035
90	1.000	0.000	Undefined	180	0.000	-1.000	0.000