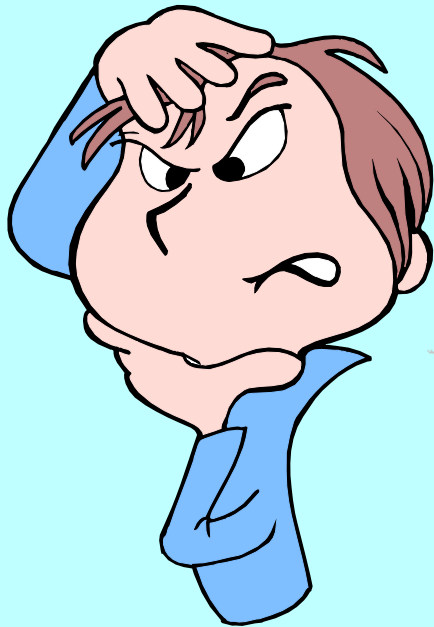
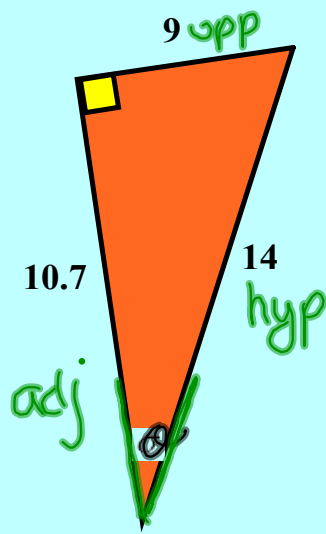


**Trig ratios...**



**Why are they so  
important?**

What is the value of theta?



$$\sin \sigma = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \sigma = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \sigma = \frac{\text{opp}}{\text{adj}}$$

$$\sin \sigma = \frac{9}{14}$$

$$\cos \sigma = \frac{10.7}{14}$$

$$\tan \sigma = \frac{9}{10.7}$$

$$\sin \sigma = 0.6429$$

$$\cos \sigma = 0.7643$$

$$\tan \sigma = 0.8411$$

40°

Deg	Sin	Cos	Tan	Deg
00	.0000	1.0000	.0000	00
01	.0175	.9998	.0175	01
02	.0349	.9994	.0349	02
03	.0523	.9986	.0524	03
04	.0698	.9976	.0699	04
05	.0872	.9962	.0875	05
06	.1045	.9945	.1051	06
07	.1219	.9925	.1228	07
08	.1392	.9903	.1405	08
09	.1564	.9877	.1584	09
10	.1736	.9848	.1763	10
11	.1908	.9816	.1944	11
12	.2079	.9781	.2126	12
13	.2250	.9744	.2309	13
14	.2419	.9703	.2493	14
15	.2588	.9659	.2679	15
16	.2756	.9613	.2867	16
17	.2924	.9563	.3057	17
18	.3090	.9511	.3249	18
19	.3256	.9455	.3443	19
20	.3420	.9397	.3640	20
21	.3584	.9336	.3839	21
22	.3746	.9272	.4040	22
23	.3907	.9205	.4245	23
24	.4067	.9135	.4452	24
25	.4226	.9063	.4663	25

26	.4384	.8988	.4877	26
27	.4540	.8910	.5095	27
28	.4695	.8829	.5317	28
29	.4848	.8746	.5543	29
30	.5000	.8660	.5774	30
31	.5150	.8572	.6009	31
32	.5299	.8480	.6249	32
33	.5446	.8387	.6494	33
34	.5592	.8290	.6745	34
35	.5736	.8192	.7002	35
36	.5878	.8090	.7265	36
37	.6018	.7986	.7536	37
38	.6157	.7880	.7813	38
39	.6293	.7771	.8098	39
40	.6428	.7660	.8391	40
41	.6561	.7547	.8693	41
42	.6691	.7431	.9004	42
43	.6820	.7314	.9325	43
44	.6947	.7193	.9657	44
45	.7071	.7071	1.0000	45

Deg	Sin	Cos	Tan	Deg
-	-	-	-	-
46	.7193	.6947	1.0355	46
47	.7314	.6820	1.0723	47
48	.7431	.6691	1.1106	48
49	.7547	.6561	1.1504	49
50	.7660	.6428	1.1918	50
51	.7771	.6293	1.2349	51
52	.7880	.6157	1.2799	52
53	.7986	.6018	1.3270	53
54	.8090	.5878	1.3764	54
55	.8192	.5736	1.4281	55
56	.8290	.5592	1.4826	56
57	.8387	.5446	1.5399	57
58	.8480	.5299	1.6003	58
59	.8572	.5150	1.6643	59
60	.8660	.5000	1.7321	60
61	.8746	.4848	1.8040	61
62	.8829	.4695	1.8807	62
63	.8910	.4540	1.9626	63
64	.8988	.4384	2.0503	64
65	.9063	.4226	2.1445	65
66	.9135	.4067	2.2460	66
67	.9205	.3907	2.3559	67
68	.9279	.3746	2.4751	68
69	.9336	.3584	2.6051	69
70	.9397	.3420	2.7475	70

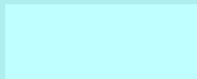
71	.9456	.3256	2.9042	71
72	.9511	.3090	3.0779	72
73	.9563	.2924	3.2709	73
74	.9613	.2756	3.4874	74
75	.96593	.2588	3.7321	75
76	.9703	.2419	4.0108	76
77	.9744	.2250	4.3315	77
78	.9781	.2079	4.7046	78
79	.9816	.1908	5.1446	79
80	.9848	.1736	5.6713	80
81	.9877	.1564	6.3138	81
82	.9903	.1391	7.1154	82
83	.9925	.1219	8.1443	83
84	.9945	.1045	9.5144	84
85	.99625	.0872	11.4301	85
86	.9976	.0698	14.3007	86
87	.99866	.05239	19.0811	87
88	.9994	.0349	28.6363	88
89	.9998	.0175	57.2900	89
90	1.0000	.0000	Infinity	90

Try these:

Find the value of theta.

a)  $\tan \sigma = 2.3559$

$\sigma = 67^\circ$



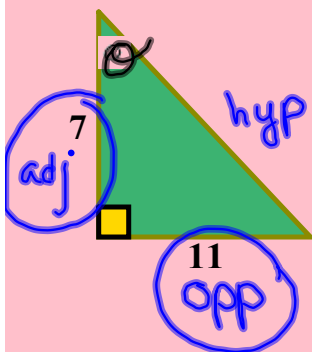
b)  $\cos \sigma = 0.8746$

$\sigma = 29^\circ$



Do you always have to find all three trig ratios?

No!



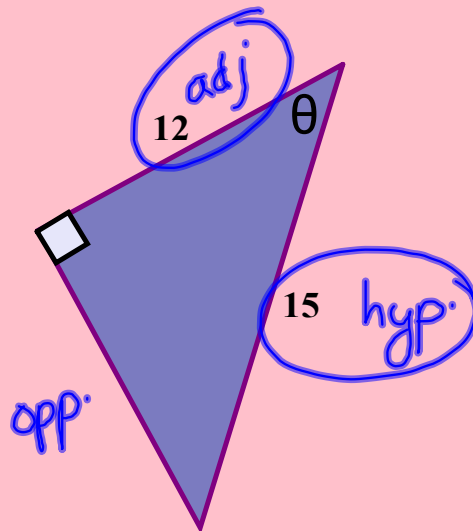
$$\sin \sigma = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \sigma = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \sigma = \frac{\text{opp}}{\text{adj}}$$

$$\begin{aligned} \tan \theta &= \frac{o}{a} \\ \tan \theta &= \frac{11}{7} \\ \theta &= 58^\circ \end{aligned}$$

Find the value of theta.



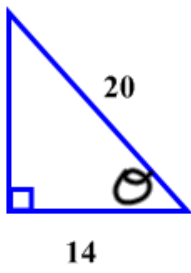
$$\cos \theta = \frac{a}{h}$$

$$\cos \theta = \frac{12}{15}$$

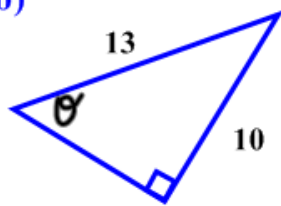
$$\theta = 37^\circ$$

#1

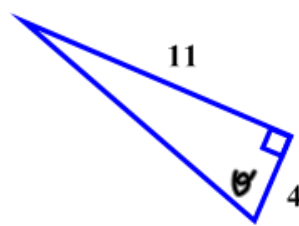
a)



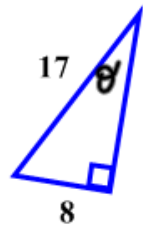
b)



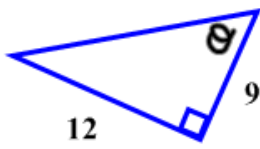
c)



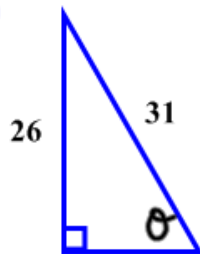
d)



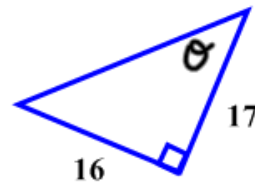
e)



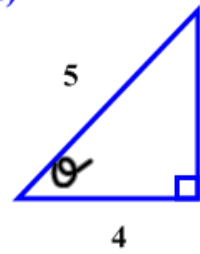
f)



g)

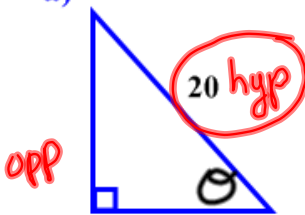


h)



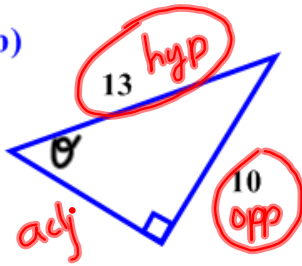
#1

a)



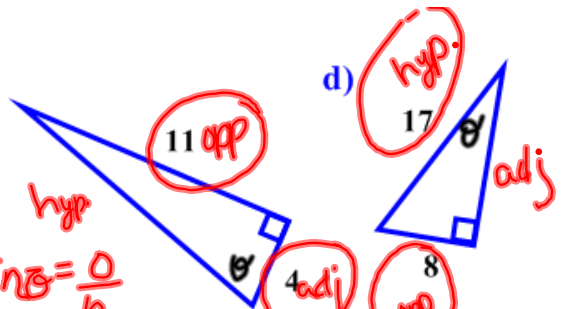
$\cos \theta = \frac{a}{h}$   
 $\cos \theta = \frac{14}{20}$   
 $\theta = 46^\circ$

b)



$\sin \theta = \frac{o}{h}$   
 $\sin \theta = \frac{10}{13}$   
 $\theta = 50^\circ$

c)



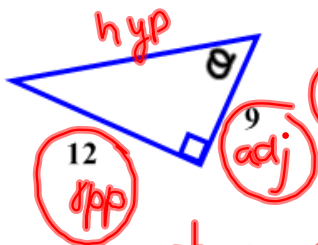
$\tan \theta = \frac{o}{a}$   
 $\tan \theta = \frac{4}{11}$   
 $\theta = 70^\circ$

d)



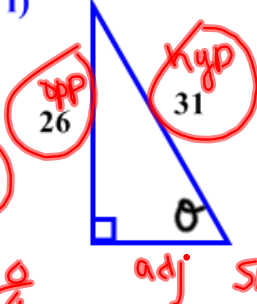
$\sin \theta = \frac{o}{h}$   
 $\sin \theta = \frac{8}{17}$   
 $\theta = 28^\circ$

e)



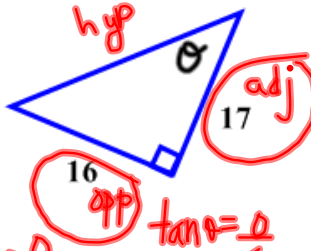
$\tan \theta = \frac{o}{a}$   
 $\tan \theta = \frac{9}{12}$   
 $\theta = 53^\circ$

f)



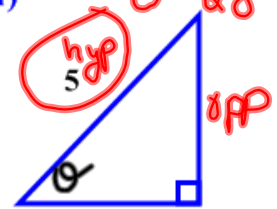
$\sin \theta = \frac{o}{h}$   
 $\sin \theta = \frac{26}{31}$   
 $\theta = 57^\circ$

g)



$\tan \theta = \frac{o}{a}$   
 $\tan \theta = \frac{12}{16}$   
 $\theta = 43^\circ$

h)



$\cos \theta = \frac{a}{h}$   
 $\cos \theta = \frac{4}{5}$   
 $\theta = 37^\circ$